February 2024 | Draft Environmental Impact Report

CONTRA COSTA COUNTY 2045 GENERAL PLAN AND CLIMATE ACTION PLAN DRAFT EIR

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ABBREVIATIONS AND ACRONYMS

AAQS	ambient air quality standards
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACM	asbestos-containing materials
ADT	average daily traffic
amsl	above mean sea level
AQMP	air quality management plan
AST	aboveground storage tank
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BAU	business as usual
bgs	below ground surface
BMP	best management practices
CAA	Clean Air Act
CAFE	corporate average fuel economy
CalARP	California Accidental Release Prevention Program
CalEMA	California Emergency Management Agency
Cal/EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
Cal/OSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources, Recycling, and Recovery
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCCFPD	Contra Costa County Fire Protection District
CCCOS	Contra Costa County Office of the Sheriff
CCR	California Code of Regulations
CCWD	Contra Costa Water District

Abbreviations and Acronyms

CDE	California Department of Education
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CGS	California Geologic Survey
CMP	congestion management program
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
Corps	US Army Corps of Engineers
CSO	combined sewer overflows
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
ECCFPD	East Contra Costa Fire Protection District
EIR	environmental impact report
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	greenhouse gas
GWP	global warming potential
HCM	Highway Capacity Manual

Abbreviations and Acronyms

HCP	Habitat Conservation Plan
HQTA	high quality transit area
HVAC	heating, ventilating, and air conditioning system
IPCC	Intergovernmental Panel on Climate Change
L_{dn}	day-night noise level
L_{eq}	equivalent continuous noise level
LBP	lead-based paint
LCFS	low-carbon fuel standard
LOS	level of service
LST	localized significance thresholds
M_W	moment magnitude
MCL	maximum contaminant level
MEP	maximum extent practicable
mgd	million gallons per day
MMT	million metric tons
MPO	metropolitan planning organization
MT	metric ton
MTC	Metropolitan Transportation Commission
MWD	Metropolitan Water District of Southern California
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NO_X	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
O_3	ozone
OES	California Office of Emergency Services
PDA	Priority Development Area
PM	particulate matter
$PM_{2.5}$	fine particulate matter
POTW	publicly owned treatment works
ppm	parts per million
PPV	peak particle velocity
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition

Abbreviations and Acronyms

RMP	risk management plan
RMS	root mean square
ROG	reactive organic gas
RPS	renewable portfolio standard
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SFBAAB	San Francisco Bay Area Air Basin
SIP	state implementation plan
SLM	sound level meter
SoCAB	South Coast Air Basin
SO_X	sulfur oxides
SQMP	stormwater quality management plan
SRA	source receptor area [or state responsibility area]
SUSMP	standard urban stormwater mitigation plan
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TNM	transportation noise model
TPA	Transit Priority Area
tpd	tons per day
TRI	toxic release inventory
TTCP	traditional tribal cultural places
ULL	Urban Limit Line
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
UWMP	urban water management plan
V/C	volume-to-capacity ratio

Abbreviations and Acronyms

VdB	velocity decibels
VHFHSZ	very high fire hazard severity zone
VMT	vehicle miles traveled
VOC	volatile organic compound
WQMP	water quality management plan
WSA	water supply assessment

Abbreviations and Acronyms

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1. Executive Summary

1.1 INTRODUCTION

This Draft Environmental Impact Report (EIR) addresses the environmental effects associated with implementation of the proposed Contra Costa County 2045 General Plan and Climate Action Plan (CAP) (proposed project). The California Environmental Quality Act (CEQA) requires that local government agencies consider the environmental impacts before acting on projects over which they have discretionary approval authority. An EIR analyzes potential environmental impacts in order to inform the public and support informed decisions by local and State governmental agency decision makers.

This Draft EIR has been prepared pursuant to the requirements of CEQA, the State's CEQA Guidelines, and Contra Costa County's CEQA Guidelines. Contra Costa County, as the lead agency, has reviewed and revised all submitted drafts, technical studies, and reports as necessary to reflect its own independent judgment, including reliance on County technical personnel from other departments and review of all technical subconsultant reports.

Data for this Draft EIR derive from discussions with affected agencies; analysis of adopted plans and policies; review of available studies, reports, data, and similar literature; and specialized environmental assessments (e.g., aesthetics, agricultural resources, air quality, biological resources, cultural resources, geological resources, hazards and hazardous materials, hydrology and water quality, land use, mineral resources, noise, population and housing, public services, recreation, transportation, and utilities and service systems).

1.2 ENVIRONMENTAL PROCEDURES

This Draft EIR has been prepared pursuant to CEQA to assess the environmental impacts associated with implementation of the proposed project, as well as anticipated future discretionary actions and approvals. CEQA establishes six main objectives for an EIR:

1. Disclose to decision-makers and the public the significant environmental effects of proposed activities.
2. Identify ways to avoid or reduce environmental damage.
3. Prevent environmental damage by requiring implementation of feasible alternatives or mitigation measures.
4. Disclose to the public reasons for agency approval of projects with significant environmental effects.
5. Foster interagency coordination in the review of projects.
6. Enhance public participation in the planning process.

1. Executive Summary

An EIR is the most comprehensive form of environmental documentation prepared pursuant to CEQA and the CEQA Guidelines; it is intended to provide an objective, factually supported analysis and full disclosure of the environmental impacts of a proposed project with the potential to result in significant, adverse environmental impacts.

An EIR is one of various decision-making tools used by a lead agency to consider the merits and disadvantages of a project that is subject to its discretionary authority. Before approving a proposed project, the lead agency must consider the information in the EIR, determine whether the EIR was prepared in accordance with CEQA and the CEQA Guidelines, determine that it reflects the independent judgment of the lead agency, adopt findings concerning the project's significant environmental impacts and alternatives, and adopt a statement of overriding considerations if significant impacts cannot be avoided.

1.2.1 EIR Format

Chapter 1. Executive Summary: Summarizes the background and description of the proposed project, the format of this EIR, project alternatives, any critical issues remaining to be resolved, and the potential environmental impacts and mitigation measures identified for the project.

Chapter 2. Introduction: Describes the purpose of this EIR, background on the project, the Notice of Preparation (NOP), the use of incorporation by reference, and Final EIR certification.

Chapter 3. Project Description: A detailed description of the project, including its objectives, its area and location, approvals anticipated to be required as part of the project, necessary environmental clearances, and the intended uses of this EIR.

Chapter 4. Environmental Setting: A description of the physical environmental and regulatory conditions in the vicinity of the project as they existed at the time the NOP was published, from local and regional perspectives. These provide the baseline physical and regulatory conditions from which the lead agency determines the significance of the project's environmental impacts.

Chapter 5. Environmental Analysis: Each environmental topic is analyzed in a separate section that discusses: the thresholds used to determine if a significant impact would occur; the methodology to identify and evaluate the potential impacts of the project; the existing environmental setting; the potential adverse and beneficial effects of the project; the level of impact significance before mitigation; the mitigation measures for the proposed project; the level of significance after mitigation is incorporated; and the potential cumulative impacts of the proposed project combined with other existing, approved, and proposed development in the area.

Chapter 6. Unavoidable Impacts, Irreversible Changes, and Growth-Inducing Impacts: Describes the significant unavoidable adverse impacts of the proposed project, irreversible environmental changes associated with the project, and ways in which the proposed project would cause increases in population that could result in new physical or environmental impacts.

Chapter 7. Alternatives to the Proposed Project: Describes alternatives and compares their impacts to the impacts of the proposed project. Alternatives include the No Project/Existing Plans Alternative, Increased Density Near Transit Priority Areas (TPAs) Alternative, No Urban Development within High or Very High Fire Hazard Severity Zone (FHSZ) Alternative, and Increased TPA Density and No Urban FHSZ Development Combined Alternative.

Chapter 8. Organizations and Persons Consulted and Qualifications of Persons Preparing EIR: Lists the people and organizations that were contacted during preparation of this EIR and the people who prepared this EIR.

Appendices: The appendices for this document comprise these supporting documents:

- Appendix 2-1: NOP and NOP Comments
- Appendix 5.3-1: Air Quality and Greenhouse Gas Emissions Data
- Appendix 5.4-1: Contra Costa County General Plan Update: Biological Resources Existing Conditions Report
- Appendix 5.4-2: California Department of Fish and Wildlife: RareFind Report, Contra Costa County
- Appendix 5.5-1: Contra Costa County General Plan Update: Cultural Resources Existing Conditions Report
- Appendix 5.5-2: Tribal Correspondence
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- Appendix 5.13-1: Noise Appendix
- Appendix 5.16-1: Vehicle Miles Traveled (VMT) Analysis Methodology and Results for the Contra Costa County General Plan Update Memorandum

1.2.2 Type and Purpose of This Draft EIR

This Draft EIR fulfills the requirements for a Program EIR. Although the legally required contents of a Program EIR are the same as for a Project EIR, Program EIRs are typically more conceptual than Project EIRs, with a more general discussion of impacts, alternatives, and mitigation measures. According to Section 15168 of the CEQA Guidelines, a Program EIR may be prepared on a series of actions that can be characterized as one large project. Use of a Program EIR gives the lead agency an opportunity to consider broad policy alternatives and program-wide mitigation measures, as well as greater flexibility to address project-specific and cumulative environmental impacts on a comprehensive scale.

Agencies prepare Program EIRs for programs or a series of related actions that are linked geographically; logical parts of a chain of contemplated events, rules, regulations, or plans that govern the conduct of a continuing program; or individual activities carried out under the same authority and having generally similar environmental effects that can be mitigated in similar ways.

Once a Program EIR has been prepared, subsequent activities within the program must be evaluated to determine whether an additional CEQA document is necessary. However, if the Program EIR addresses the program's effects as specifically and comprehensively as possible, many subsequent activities may be within the

Program EIR's scope, and additional environmental documents may not be required (CEQA Guidelines Section 15168[c]). When a lead agency relies on a Program EIR for a subsequent activity, it must incorporate feasible mitigation measures and alternatives from the Program EIR into the subsequent activities (CEQA Guidelines Section 15168[c][3]). If a subsequent activity would have effects outside the scope of the Program EIR, the lead agency must prepare a new Initial Study leading to a Negative Declaration, Mitigated Negative Declaration, or EIR. Even in this case, the Program EIR still serves a valuable purpose as the first-tier environmental analysis. The CEQA Guidelines encourage the use of Program EIRs, citing five advantages:

- Provide a more exhaustive consideration of impacts and alternatives than would be practical in an individual EIR;
- Focus on cumulative impacts that might be slighted in a case-by-case analysis;
- Avoid continual reconsideration of recurring policy issues;
- Consider broad policy alternatives and programmatic mitigation measures at an early stage when the agency has greater flexibility to deal with them;
- Reduce paperwork by encouraging the reuse of data (through tiering). (CEQA Guidelines Section 15168[h])

1.3 PROJECT LOCATION

Contra Costa County is on the northeastern side of the San Francisco Bay; adjacent to Alameda County to the south, San Joaquin County to the east, Solano and Sacramento Counties to the north across San Pablo Bay and Suisun Bay, and San Francisco County to the west. North to south regional access is provided by Interstate (I-) 80, I-680, and State Route (SR-) 242; east to west regional access is provided through I-580, SR-4, and SR-24. Figure 3-1, *Regional Location*, shows Contra Costa County's regional location.

The proposed project defines the project area as unincorporated Contra Costa County. This EIR focuses on the analysis of potential impacts on lands only in unincorporated Contra Costa County, including land in and outside the Urban Limit Line (ULL) and in each municipality's sphere of influence (SOI), but not inside municipality limits. This area is referred to as the "EIR Study Area" in this document and is shown in Figure 3-2, *EIR Study Area Boundaries*.

1.4 PROJECT SUMMARY

Contra Costa County 2045 General Plan

The project is an update of Contra Costa County's General Plan. The General Plan is a State-required legal document that provides guidance to decision-makers regarding allocation of resources and determining the future physical form and character of development within the unincorporated county. The proposed General Plan will serve as the County's primary land use regulatory tool and basis for all planning-related decisions made by County staff, the Zoning Administrator, the Planning Commission, and the Board of Supervisors. The proposed General Plan includes the Stronger Communities; Land Use; Transportation; Conservation, Open Space, and Working Lands; Public Facilities and Services; Health and Safety; and Growth Management Elements. The Contra Costa County Housing Element was updated separately from the rest of the General

Plan. The Housing Element was adopted on December 12, 2023, and certified by the California Department of Housing and Community Development on January 22, 2024.

Climate Action Plan

The Contra Costa County CAP is a comprehensive plan for the reduction of greenhouse gas (GHG) emissions through a series of actions and strategies that would be undertaken by the County. The CAP identifies strategies and measures to meet the State's GHG reductions targets. The CAP also includes an adaptation plan that recommends actions to reduce the community's vulnerability to the anticipated impacts of climate change. The proposed CAP does not include any development proposals and would not directly result in physical environmental effects related to construction or operation of facilities.

1.5 SUMMARY OF PROJECT ALTERNATIVES

The CEQA Guidelines (Section 15126.6[a]) state that an EIR must address "a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives." The alternatives in this Draft EIR were based, in part, on their potential ability to reduce or eliminate the impacts determined to be significant and unavoidable for implementation of the proposed project. Project alternatives are assessed in further detail in Chapter 7, *Alternatives to the Proposed Project*.

1.5.1 No-Project/Existing Plans Alternative

The No Project/Existing Plans Alternative is required to discuss the existing conditions at the time the notice of preparation is published and evaluate what would reasonably be expected to occur in the foreseeable future if the proposed project is not approved (CEQA Guidelines, Section 15126.6[e]). Pursuant to CEQA, this Alternative is based on current plans and consistent with available infrastructure and community services. Therefore, the No Project/Existing Plans Alternative assumes that the proposed General Plan and CAP would not be adopted, the development intensity assumed in the existing General Plan would be followed, and existing General Plan and CAP goals, policies, strategies, implementation programs, and actions would remain unchanged.

1.5.2 Increased Density Near Transit Priority Areas

The EIR Study Area includes two TPAs, as defined by California Public Resource Code, Section 21099, along a Bay Area Rapid Transit (BART) line. This includes one in Contra Costa Centre and one in Bay Point/Pittsburg. This Alternative proposes a policy to increase the minimum density of all new development and redevelopment within these two TPAs, which include all potential development sites within a half-mile of the BART stations in Contra Costa Centre and Bay Point. Under this Alternative, all projects within these boundaries would be required to develop at 90 percent or more of their site's maximum allowed density.

1.5.3 No Urban Development within a High or Very High FHSZ Alternative

This Alternative prohibits urban development within High or Very High FHSZs, as designated by the Office of the State Fire Marshal and the California Department of Forestry and Fire Protection (CAL FIRE). The EIR Study Area contains 163,524 acres of land within CAL FIRE's High or Very High FHSZs, with 18,677 acres within the County's Urban Limit Line. Urban development under the proposed General Plan would occur in High and Very High FHSZs, posing significant and unavoidable wildfire hazards risks. This Alternative ensures no urban development occurs within these hazard areas.

1.5.4 Increased TPA Density and No Urban FHSZ Development Combined Alternative

This Alterative would combine the two proposed actions in the "Increased Density Near Transit Priority Areas" and "No Urban Development within a High or Very High FHSZ" Alternatives. As such, this Alternative would involve requiring residential development projects within the county's two TPAs to achieve at least 90 percent of their sites' maximum allowed density in addition to prohibiting future urban development within the High or Very High FHSZs. This Alternative would have the benefit of increasing density near transit, thereby potentially reducing VMT and related impacts, in addition to reducing the wildfire hazard risk for new development.

1.6 AREAS OF CONTROVERSY

In accordance with Section 15123(b)(2) of the CEQA Guidelines, the EIR summary must identify areas of controversy known to the lead agency, including issues raised by agencies and the public. The County has no knowledge of expressed opposition to the project as a whole. However, some members of the public have expressed opposition to proposed residential density increases in certain unincorporated communities while others have indicated that additional density increases, particularly in existing low-density areas, are warranted. Members of the public have also expressed opposition to proposed policy guidance related to oil and natural gas extraction.

1.7 SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE AFTER MITIGATION

Table 1-1, *Summary of Environmental Impacts, Mitigation Measures, and Levels of Significance After Mitigation,* summarizes the conclusions of the environmental analysis contained in this EIR. Impacts are identified as significant or less than significant, and mitigation measures are identified for all significant impacts. The level of significance after imposition of the mitigation measures is also presented.

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
5.1 AESTHETICS			
Impact 5.1-1: Development in accordance with the proposed project would not substantially alter or damage scenic vistas or substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.1-2: Development under the proposed project would alter visual appearance in the county but would not substantially degrade its existing visual character or quality.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.1-3: The proposed project would not generate substantial light and glare.	Less than Significant	No mitigation measures are required	Less than Significant
5.2 AGRICULTURE AND FORESTRY RESOURCES			
I**mpact 5.2-1**: The proposed project could convert approximately 13,816 acres of Important Farmland to nonagricultural use.	Potentially Significant	No feasible mitigation measures.	Significant and Unavoidable
Impact 5.2-2: The proposed project would not conflict with Williamson Act contracts.	Less than Significant	No mitigation measures are required	Less than Significant
Impact 5.2-3: The proposed project would not conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).	No Impact	No mitigation measures are required	No Impact
Impact 5.2-4: The proposed project would result in the loss of forest land or conversion of forest land to non-forest use.	Potentially Significant	No feasible mitigation measures.	Significant and Unavoidable
Impact 5.2-5: The proposed project could potentially result in other agricultural impacts not related to the above, such as diminishing available water quality and supply for agricultural uses	Less than Significant	No mitigation measures are required	Less than Significant
5.3 AIR QUALITY			
Impact 5.3-1: Implementation of the proposed project would not conflict with or obstruct implementation of the BAAQMD Clean Air Plan.	Less than Significant	No mitigation measures are required	Less than Significant

1. Executive Summary

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 5.3-2: Short-term construction activities associated with the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State ambient air quality standards.	Potentially Significant	AQ-1 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more shall prepare and submit a technical assessment evaluating potential project construction-related air quality impacts to the County Department of Conservation and Development for review and approval. The evaluation shall be prepared in conformance with the Bay Area Air Quality Management District (BAAQMD) methodology for assessing air quality impacts identified in their CEQA Air Quality Guidelines. If construction-related criteria air pollutants are determined to have the potential to exceed the BAAQMD–adopted construction screening criteria and thresholds of significance, the Department of Conservation and Development shall require feasible mitigation measures to reduce air quality emissions. Potential measures may include: ▪ Require implementation of the BAAQMD Best Management Practices for fugitive dust control, such as: o All exposed surfaces (e.g., parking areas, staging areas, soil piles, grading areas, and unpaved access roads) shall be watered two times per day. o All haul trucks transporting soil, sand, or other loose material off-site shall be covered. o All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. o All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph). o All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.	Significant and Unavoidable

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		○ All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph. ○ All trucks and equipment, including their tires, shall be washed off prior to leaving the site. ○ Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel. ○ Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations. Measures shall be incorporated into appropriate construction documents (e.g., construction management plans) submitted to the County and shall be verified by the Department of Conservation and Development.	
Impact 5.3-3: Development under the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State AAQS.	Potentially Significant	AQ-2 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future project applicants shall prepare and submit a technical assessment evaluating potential project operation-phase-related air quality impacts to the Department of Conservation and Development for review and approval. The evaluation shall be prepared in conformance with Bay Area Air Quality Management District (BAAQMD) methodology in assessing air quality impacts identified in their CEQA Air Quality Guidelines. If operation-related air pollutants are determined to have the potential to exceed the BAAQMD–adopted operational screening criteria and thresholds of significance, the Department of Conservation and Development shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant	Significant and Unavoidable

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures		Level of Significance After Mitigation
			emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce long-term emissions could include, but are not limited to the following: ▪ Implementing commute trip reduction programs. ▪ Unbundling residential parking costs from property costs. ▪ Expanding bikeway networks. ▪ Expanding transit network coverage or hours. ▪ Using cleaner-fueled vehicles. ▪ Exceeding the current Title 24 Building Envelope Energy Efficiency Standards. ▪ Establishing on-site renewable energy generation systems. ▪ Requiring all-electric buildings. ▪ Replacing gas-powered landscaping equipment with zero-emission alternatives. ▪ Expanding urban tree planting	
Impact 5.3-4: Construction activities associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations.	Potentially Significant	AQ-3	Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more within 1,000 feet of residential and other sensitive land uses (e.g., hospitals, nursing homes, schools, and day care centers) in the unincorporated county, shall submit a health risk assessment (HRA) to the County Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds the respective threshold established by the BAAQMD—project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000	Less than Significant

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures		Level of Significance After Mitigation
			feet of a BAAQMD Overburdened Community; ten in a million in all other areas; $PM_{2.5}$ emissions that exceed 0.3 $\mu g/m^3$; or the appropriate noncancer hazard index exceeds 1.0—the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks below the respective threshold, including appropriate enforcement mechanisms. Measures to reduce risk may include, but are not limited to: ▪ Use of construction equipment rated as US EPA Tier 4 Interim or higher for equipment of 50 horsepower or more. ▪ Use of construction equipment fitted with Level 3 Diesel Particulate Filters for all equipment of 50 horsepower or more. Measures identified in the HRA shall be included in the environmental document and/or incorporated into the site development plan as a component of the proposed project. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the Department of Conservation and Development clearly show incorporation of all applicable mitigation measures.	
Impact 5.3-5: Operational-phase emissions associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations.	Potentially Significant	AQ-4	Prior to discretionary approval by the County, project applicants for new industrial or warehousing development projects that 1) have the potential to generate 100 or more diesel truck trips per day or have 40 or more trucks with operating diesel-powered transport refrigeration units, and 2) are within 1,000 feet of a sensitive land use (e.g., residential, schools, hospitals, nursing homes) or Impacted Community, as measured from the property line of the project to the property line of the nearest sensitive use, shall submit a health risk assessment (HRA) to the Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age	Significant and Unavoidable

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the cumulative and project-level incremental cancer risk, noncancer hazard index, and/or PM2.5 exceeds the respective threshold, as established by BAAQMD (all areas of the unincorporated county) and project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000 feet of a BAAQMD Overburdened Community; ten in a million in all other areas; PM2.5 emissions that exceed 0.3 µg/m3; or the appropriate noncancer hazard index exceeds 1.0, the project applicant will be required to identify best available control technologies for toxics (T BACTs) and appropriate enforcement mechanisms, and demonstrate that they are capable of reducing potential cancer, noncancer risks, and PM2.5 to an acceptable level. T-BACTs may include but are not limited to: ▪ Restricting idling on-site beyond Air Toxic Control Measures idling restrictions ▪ Electrifying warehousing docks ▪ Requiring use of newer equipment ▪ Requiring near-zero or zero-emission trucks for a portion of the vehicle fleet based on opening year ▪ Truck Electric Vehicle (EV) Capable trailer spaces ▪ Restricting off-site truck travel through the creation of truck routes T-BACTs identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site plan.	
Impact 5.3-6: The proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	Less than Significant	No mitigation measures are required	Less than Significant

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
5.4 BIOLOGICAL RESOURCES			
Impact 5.4-1: Implementation of the proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plan, policies, or regulations or by the CDFW or USFWS.	Less than Significant	No mitigation measures are required	Less than Significant
Impact 5.4-2: Implementation of the proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.4-3: Implementation of the proposed project would not have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.4-4: Implementation of the proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	Potentially Significant	BIO-1 Prior to the issuance of a building permit for projects not exempt from the California Environmental Quality Act, the County shall require a habitat connectivity/wildlife corridor evaluation for future development that may impact existing connectivity areas and wildlife linkages. The evaluation shall identify project design features that would reduce potential impacts and maintain habitat and wildlife movement. To this end, the County shall incorporate the following measures, to the extent practicable, for projects impacting wildlife movement corridors: • Encourage clustering of development • Avoid known sensitive biological resources • Provide shielded lighting adjacent to sensitive habitat areas • Encourage development plans that maximize wildlife movement • Provide buffers between development and wetland/riparian areas	Less than significant

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		• Protect wetland/riparian areas through regulatory agency permitting process • Encourage wildlife-passable fence designs (e.g., three-strand barbless wire fence) on property boundaries. • Encourage preservation of native habitat on developed parcels • Minimize road/roadway development to help prevent loss of habitat due to roadkill and habitat loss • Use native, drought-resistant plant species in landscape design • Encourage participation in local/regional recreational trail design efforts	
Impact 5.4-5: The proposed project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan.	Less than Significant	No mitigation measures are required.	Less than Significant
5.5 CULTURAL RESOURCES			
Impact 5.5-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.	Potentially Significant	No feasible mitigation measures.	Significant and Unavoidable
Impact 5.5-2: Implementation of the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines, Section 15064.5.	Potentially Significant	CUL-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County, the project applicant may be required to enter into a cultural resources treatment agreement with the culturally affiliated tribe. If required, the agreement would address the treatment and disposition of cultural resources and human remains that may be impacted as a result of the development as well as provisions for tribal monitors. If an agreement is required, the applicant must provide a copy of the cultural resources treatment agreement to the County prior to issuance of a grading or building	Less than Significant

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		permit. If an agreement is not required, then documentation of the appropriate disposition of the cultural resource(s) will be required prior to construction activities. If cultural resources are discovered during project construction, all work in the area shall cease and a qualified archaeologist and representatives of the culturally affiliated tribe shall be retained by the project sponsor to investigate the find and make recommendations as to treatment and mitigation.	
Impact 5.5-3: Implementation of the proposed project would not disturb any human remains, including those interred outside of dedicated cemeteries.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.5-4: Implementation of the proposed project could cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or a local register of historical resources, as defined in Public Resources Code Section 5020.1(k), or determined to be significant pursuant to the criteria set forth in Public Resources Code Section 5024.1(c).	Potentially significant	Implement Mitigation Measure CUL-1 TCR-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County, the project applicant may be required to enter into a cultural resources treatment agreement with the culturally affiliated tribe. If required, the agreement would address the treatment and disposition of cultural resources and human remains that may be impacted as a result of the development as well as provisions for tribal monitors. If an agreement is required, the applicant must provide a copy of the cultural resources treatment agreement to the County prior to issuance of a grading or building permit. Regardless of whether an agreement is required, if cultural resources are discovered during project construction, all work in the area shall cease and a qualified archaeologist and representatives of the culturally affiliated tribe shall be retained by the project sponsor to investigate the find and make recommendations as to treatment and mitigation. TCR-2 Tribal monitors from the culturally affiliated tribe shall be allowed to monitor all grading, excavation, and ground-breaking activities, including archaeological surveys, testing, and studies for discretionary projects that are not exempt from CEQA and that would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County.	Less than Significant

1. Executive Summary

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
5.6 ENERGY			
Impact 5.6-1: Implementation of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.6-2: Implementation of the proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.6-3: Implementation of the proposed project would not require or result in the relocation or construction of new or expanded energy facilities, the construction or relocation of which could cause significant environmental effects.	Less than Significant	No mitigation measures are required.	Less than Significant
5.7 GEOLOGY AND SOILS			
Impact 5.7-1: The proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; ii) Strong seismic ground shaking; iii) Seismic-related ground failure, including liquefaction; or iv) Landslides, mudslides, or other similar hazards. [Threshold G-1i, G-1ii, G-1iii and G-1iv]).	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.7-2: Development under the proposed project would not result in substantial soil erosion or the loss of topsoil.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.7-3: Development under the proposed project would not subject people or structures to hazards from unstable soil or expansive soil conditions.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.7-4: Development under the proposed project would connect to existing sewer lines or comply with State and local regulations for on-site septic tanks or alternative wastewater disposal systems.	Less than Significant	No mitigation measures are required.	Less than Significant

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 5.7-5: Development under the proposed project could directly or indirectly destroy a unique paleontological resource or unique geologic feature.	Potentially Significant	GEO-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County, the project applicant shall be required to retain a Qualified Professional Paleontologist to determine the project's potential to significantly impact paleontological resources according to Society of Vertebrate Paleontology standards. If necessary, the Qualified Professional Paleontologist shall recommend mitigation measures to reduce potential impacts to paleontological resources to a less-than-significant level.	Less than Significant
5.8 GREENHOUSE GAS EMISSIONS			
Impact 5.8-1: Implementation of the proposed project is not projected to result in emissions that would exceed the unincorporated county's GHG reduction target established under SB 32 and progress toward the State's carbon neutrality goal.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.8-2: Implementation of the proposed project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions.	Less than Significant	No mitigation measures are required.	Less than Significant
5.9 HAZARDS AND HAZARDOUS MATERIALS			
Impact 5.9-1: Implementation of the proposed project, including construction and operation activities, could involve the transport, use, and/or disposal of hazardous materials; however, compliance with existing local, State, and federal regulations would ensure impacts are minimized.	Less than Significant	No mitigation measures are required.	Less than Significant

1. Executive Summary

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 5.9-2: Implementation of the proposed project could facilitate development of a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 but would not create a significant hazard to the public or the environment.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.9-3: Development under the proposed project would not result in a safety hazard or excessive noise for people residing or working within two miles of an airport.	Less than Significant	No mitigation measures are required	Less than Significant
Impact 5.9-4: Development under the proposed project would not affect the implementation of an emergency responder or evacuation plan.	Less than Significant	No mitigation measures are required	Less than Significant
5.10 HYDROLOGY AND WATER QUALITY			
Impact 5.10-1: Implementation of the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.10-2: Implementation of the proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.10-3: Implementation of the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off-site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows.	Less than Significant	No mitigation measures are required.	Less than Significant

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 5.10-4: Implementation of the proposed project would not risk release of pollutants due to project inundation if in a flood hazard, tsunami, or seiche zones.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.10-5: The proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan	Less than Significant	No mitigation measures are required.	Less than Significant
5.11 LAND USE AND PLANNING			
Impact 5.11-1: Project implementation would not divide an established community.	Less Than Significant	No mitigation measures are required.	Less Than Significant
Impact 5.11-2: Project implementation would not conflict with applicable plans adopted for the purpose of avoiding or mitigating an environmental effect.	Less Than Significant	No mitigation measures are required.	Less Than Significant
5.12 MINERAL RESOURCES			
Impact 5.12-1: Implementation of the proposed project could result in the loss of availability of a known mineral resource.	Potentially Significant	No feasible mitigation measures.	Significant and Unavoidable
5.13 NOISE			
Impact 5.13-1: Construction activities would result in temporary noise increases in the vicinity of the proposed project.	Potentially Significant	N-1 Require construction contractors to implement the following measures for construction activities. Demolition, grading, and construction plans submitted to the County shall identify these measures and the County Department of Conservation and Development shall verify that the submitted plans include these notations prior to issuance of demolition, grading, and/or construction permits: • During the entire active construction period, equipment and trucks used for project construction shall use the best-available noise control techniques (e.g., improved mufflers, equipment re-design, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) available. • Impact tools (e.g., jack hammers and breakers) shall be hydraulically or electrically powered wherever possible. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air	Significant and Unavoidable

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		exhaust shall be used along with external noise jackets on the tools. • Stationary equipment, such as generators and air compressors, shall be as far as feasible from nearby noise-sensitive uses. • Stockpiling shall be as far as feasible from nearby noise-sensitive receptors. • Construction traffic shall be limited, to the extent feasible, to approved haul routes approved by the County Conservation and Development and Public Works Departments. • At least 10 days prior to the start of construction activities, a sign shall be posted at the entrance(s) to the job site, clearly visible to the public, that includes permitted construction days and hours, as well as the telephone numbers of the County's and contractor's authorized representatives that are assigned to respond in the event of a noise or vibration complaint. If the authorized contractor's representative receives a complaint, they shall investigate, take appropriate corrective action, and report the action to the County. • Signs shall be posted at the job site entrance(s), within the on-site construction zones, and along queueing lanes (if any) to reinforce the prohibition of unnecessary engine idling. All other equipment shall be turned off if not in use for more than 5 minutes. • During the entire active construction period and to the extent feasible, the use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only. The construction manager shall use smart back-up alarms, which automatically adjust the alarm level based on the background noise level or switch off back-up alarms and replace with human spotters in compliance with all safety requirements and laws. • Erect temporary noise barriers (at least as high as the exhaust of equipment and breaking line-of-sight between noise sources and sensitive receptors), as	

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		necessary and feasible, to maintain construction noise levels at or below the performance standard of 80 dBA Leq. Barriers shall be constructed with a solid material that has a density of at least 4 pounds per square foot with no gaps from the ground to the top of the barrier.	
Impact 5.13-2: Project implementation would generate a substantial traffic noise increase on local roadways and could locate sensitive receptors near rail in areas that exceed established noise standards.	Potentially Significant	No feasible mitigation measures.	Significant and Unavoidable
Impact 5.13-3: Individual construction developments for future projects may expose sensitive uses to excessive levels of groundborne vibration	Potentially Significant	N-2 Prior to issuance of a building permit for a project requiring pile driving during construction within 135 feet of fragile structures, such as historical resources, 100 feet of non-engineered timber and masonry buildings (e.g., most residential buildings), or within 75 feet of engineered concrete and masonry (no plaster); or a vibratory roller within 25 feet of any structure, the project applicant shall prepare a noise and vibration analysis to assess and mitigate potential noise and vibration impacts related to these activities. This noise and vibration analysis shall be conducted by a qualified and experienced acoustical consultant or engineer. The vibration levels shall not exceed FTA architectural damage thresholds (i.e., 0.12 inches per second [in/sec] peak particle velocity [PPV] for fragile or historical resources, 0.2 in/sec PPV for non-engineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry). If vibration levels would exceed this threshold, alternative uses such as drilling piles as opposed to pile driving and static rollers as opposed to vibratory rollers shall be used. If necessary, construction vibration monitoring shall be conducted to ensure vibration thresholds are not exceeded.	Less than Significant

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		N-3 During the project-level CEQA process for industrial development projects or other projects that could generate substantial vibration levels near sensitive uses, such as residential uses, a noise and vibration analysis shall be conducted to assess and mitigate potential noise and vibration impacts related to the operations of that individual development. This noise and vibration analysis shall be conducted by a qualified and experienced acoustical consultant or engineer and shall follow the latest CEQA guidelines, practices, and precedents.	
Impact 5.13-4: Implementation of the proposed project would not expose future residents to excessive levels of airport-related noise	Less than Significant	No mitigation measures are required.	Less than Significant
5.14 POPULATION AND HOUSING			
Impact 5.14-1: The proposed project would not induce substantial unplanned population growth in the EIR Study Area.	Less Than Significant	No mitigation measures are required.	Less Than Significant
Impact 5.14-2: The proposed project would not result in the displacement of people and/or housing.	Less Than Significant	No mitigation measures are required.	Less Than Significant
5.15 PUBLIC SERVICES AND RECREATION			
FIRE PROTECTION AND EMERGENCY SERVICES			
Impact 5.15-1: The proposed project could introduce new structures and residents into the CCCFPD, RHFPD, SRVFPD, KFPD, and CCFPD's service boundaries, thereby increasing the requirement for fire protection facilities and personnel.	Less than Significant	No mitigation measures are required.	Less than Significant
POLICE PROTECTION			
Impact 5.15-2: The proposed project could introduce new structures and residents into the CCCOS service boundaries, thereby potentially increasing the requirement for police protection facilities and personnel.	Less than Significant	No mitigation measures are required.	Less than Significant

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
SCHOOL SERVICES			
Impact 5.15-3: Development under the proposed project could generate new students who would impact the school enrollment capacities of area schools and result in the need for new and/or expanded school facilities, the construction of which could result in environmental impacts.	Less Than Significant	No mitigation measures are required.	Less Than Significant
LIBRARY SERVICES			
Impact 5.15-4: Development under the proposed project could generate new residents in the county and result in the need for new and/or expanded library facilities, the construction of which could result in environmental impacts.	Less Than Significant	No mitigation measures are required.	Less Than Significant
PARKS			
Impact 5.15-5: The proposed project could generate additional residents that would increase the use of existing park and recreational facilities but would not require the immediate provision of new and/or expanded recreational facilities.	Less Than Significant	No mitigation measures are required.	Less Than Significant
5.16 TRANSPORTATION			
Impact 5.16-1: Implementation of the proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.16-2: Implementation of the proposed project would conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).	Potentially Significant	No feasible mitigation measures.	Significant and Unavoidable
Impact 5.16-3: Implementation of the proposed would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.16-4: Development associated with the proposed project would not result in inadequate emergency access.	Less than Significant	No mitigation measures are required.	Less than Significant

1. Executive Summary

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
5.17 UTILITIES AND SERVICE SYSTEMS			
Impact 5.17-1: Sewer and wastewater treatment systems are adequate to meet project requirements.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.17-2: Water supply and delivery systems are adequate to meet project requirements.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.17-3: The proposed project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.17-4: Existing and/or proposed storm drainage systems are adequate to serve the drainage requirements of the proposed project.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.17-5: Existing and/or proposed facilities would be able to accommodate project-generated solid waste.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.17-6: The proposed project would comply with federal, State, and local statutes and regulations related to solid waste.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.17-7: Existing telecommunication facilities are adequate to meet project requirements.	Less than Significant	No mitigation measures are required.	Less than Significant
5.18 WILDFIRE			
Impact 5.18-1: Development under the proposed project in or near SRAs or lands classified as Very High FHSZs and a single access roadway or in an Evacuation-Constrained Area could substantially impair an adopted emergency response plan or emergency evacuation plan.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.18-2: Development under the proposed project in or near SRAs or lands classified as Very High FHSZs could exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire.	Potentially Significant	No feasible mitigation measures.	Significant and Unavoidable

Table 1-1 Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 5.18-3: Development under the proposed project in or near SRAs or lands classified as Very High FHSZs could require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities), but it would not exacerbate fire risk or result in temporary or ongoing impacts to the environment.	Less than Significant	No mitigation measures are required.	Less than Significant
I**mpact 5.18-4:** The project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.	Less than Significant	No mitigation measures are required.	Less than Significant
Impact 5.18-5: Development in designated High or Very FHZSs could expose structures and/or residences to fire danger.	Potentially Significant	No feasible mitigation measures.	Significant and Unavoidable

1. Executive Summary

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2. Introduction

2.1 PURPOSE OF THE ENVIRONMENTAL IMPACT REPORT

The California Environmental Quality Act (CEQA) requires that all State and local governmental agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects. This draft Environmental Impact Report (EIR) has been prepared to satisfy CEQA and the CEQA Guidelines. The EIR is a public document designed to provide decision makers and the public with an analysis of the environmental effects of the proposed project, to indicate possible ways to reduce or avoid environmental damage, and to identify alternatives to the project. The EIR must also disclose significant environmental impacts that cannot be avoided; growth-inducing impacts; effects not found to be significant; and significant cumulative impacts of all past, present, and reasonably foreseeable future projects.

The lead agency means "the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment" (CEQA Section 21067). Contra Costa County has the principal responsibility for approval of the proposed project. For this reason, Contra Costa County is the CEQA lead agency for this project.

The Draft EIR intends to provide sufficient information on the potential environmental impacts of the proposed project to allow Contra Costa County to make an informed decision regarding the approval of the project. Specific discretionary actions to be reviewed by the County are described in Section 3.9, *Intended Uses of the EIR and Proposed Project*.

This Draft EIR has been prepared in accordance with requirements of the:

- California Environmental Quality Act (CEQA) of 1970, as amended (Public Resources Code, Section 21000 et seq.)
- State Guidelines for the Implementation of the CEQA of 1970 (CEQA Guidelines), as amended (California Code of Regulations, Section 15000 et seq.)
- Contra Costa County Guidelines for Administering the California Environmental Quality Act

The overall purpose of this Draft EIR is to inform the lead agency, responsible agencies, decision makers, and the general public about the environmental effects of the development and operation of the proposed project. This Draft EIR addresses effects that may be significant and adverse, evaluates alternatives to the project, and identifies mitigation measures to reduce or avoid adverse effects.

2.2 NOTICE OF PREPARATION

Contra Costa County determined that an EIR would be required for this project and issued a Notice of Preparation (NOP) (see Appendix 2-1 to this Draft EIR). The NOP process helps determine the scope of the environmental issues to be addressed in the Draft EIR. Comments were received during the first NOP public review period from Wednesday, September 20, 2023, through Friday, October 20, 2023. All comments received during the public review period are included in Appendix 2-1 and summarized in Table 2-1, *NOP Comment Letters and Scoping Meeting Summary*.

A total of six agencies and interested parties responded to the NOP and made comments at the scoping meeting. CEQA does not require a formal response to these comments.

Table 2-1 NOP Comment Letters and Scoping Meeting Summary

Agency/Organization/Individual	Date	Summary of Comments	Section of EIR Comment is Addressed
Native American Heritage Commission	09/25/2023	▪ Recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic region of the proposed project. ▪ Outlines steps to comply with laws Assembly Bill 52 and Senate Bill 18. ▪ Recommends various actions for cultural resource assessments, including the preparation of an archaeological inventory survey and provides resources to assist the process.	Section 5.5, *Cultural and Tribal Resources*
California Geological Survey (CGS)	09/28/2023	▪ Recommends that the CGS zones of required investigation for liquefaction, land sliding, surface fault rupture, and ground shaking be shown and discussed in the Draft EIR and supporting documents as they relate to planned development. ▪ Recommends that the Draft EIR discuss that some areas may be within a Tsunami Design Zone and that the California Building Code requires certain design standards for essential/critical or larger structures.	Section 5.7, *Geology and Soils* Section 5.10, *Hydrology and Water Quality*
Bay Area Rapid Transit District (BART)	10/16/2023	▪ Recommends that the County review BART's Transit-Oriented (TOD) Guidelines. ▪ Encourages staff to ensure that updates align with the Metropolitan Transportation Commission's Transit-Oriented Communities Policy.	Section 5.16, *Transportation*
East Bay Municipal Utility District (EBMUD)	10/16/2023	▪ Lists policies and regulations that future projects will be subject to regarding water service and Mokelumne aqueducts. ▪ Requests coordination with the County and developers to explore options to promote use of recycled water in the General Plan. ▪ Requests that the County include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance." ▪ Provides the agency's applicant pipeline design criteria. ▪ Lists the authorized uses of pipeline rights-of-way, including the procedures and criteria for review and authorization of overhead, surface, and subsurface use of	Section 5.10, *Hydrology and Water Quality*

Table 2-1 NOP Comment Letters and Scoping Meeting Summary

Agency/Organization/Individual	Date	Summary of Comments	Section of EIR Comment is Addressed
		District-owned and easement-established property containing raw and distribution water aqueducts and pipelines for purposes other than installation, maintenance, and operation of District pipelines. ▪ Lists the requirements for entry or use of pipeline right-of-way.	
Delta Stewardship Council	10/20/2023	▪ States that the proposed project may meet the definition of a covered project under Water Code Section 85057.5(a), which includes projects that would occur within the boundaries of the Delta or Suisun Marsh; that are carried out, approved, or funded by a State or a local public agency; covered by one of the provisions of the Delta Plan; and would have a significant impact on the achievement of the goals of the Delta Plan or the implementation of government-sponsored flood-control programs to reduce risks to people, property, and State interests in the Delta. ▪ States that the State or local agency approving, funding, or carrying out the proposed project must determine if that project is a covered action and, if so, file a certification of consistency with the Council before initiating project implementation. ▪ Invites the County to continue to engage Council staff in early consultation to discuss project features and mitigation measures that would promote consistency with the Delta Plan.	Section 5.10, *Hydrology and Water Quality* Section 5.11, *Land Use and Planning*
California Department of Transportation (Caltrans)	10/20/2023	▪ States that projects that do not screen from vehicle miles traveled (VMT) analysis should perform an analysis that includes the following: o Projects that result in automobile VMT being above the threshold of significance, should incorporate mitigation measures that support the use of transit or active transportation modes. o A schematic illustration of walking, biking, and auto conditions at the project site and study area roadways. Potential traffic safety issues to the State Transportation Network may be assessed by Caltrans via the Interim Safety Guidance. o The project's primary and secondary effects on pedestrians, bicycles, travelers with disabilities, and transit performance should be evaluated, including countermeasures and trade-offs resulting from mitigating VMT increases. Access to pedestrians, bicycles, and transit facilities must be maintained. ▪ Recommends including references to the Caltrans District 4 Pedestrian Plan (2021) and the Caltrans District 4 Bike Plan (2018) in the Draft EIR.	Section 5.16, *Transportation*

2.3 SCOPE OF THIS EIR

The County determined the scope for this EIR based on the review of the proposed project, agency consultation, the NOP, and comments in response to the NOP. According to Sections 15126.2 and 15126.4 of the CEQA Guidelines, the EIR should identify any potentially significant adverse impacts to the environment and incorporate mitigation that would reduce or eliminate these impacts to levels of insignificance.

This EIR evaluates potential impacts associated with the implementation of the proposed project. The information in Chapter 3, *Project Description,* establishes the basis for analyzing future project-related environmental impacts in this EIR. The General Plan Update policies and mitigation measures have been identified that either eliminate or reduce potentially significant impacts.

2.3.1 Potentially Significant Adverse Impacts

The County determined that nine environmental factors have potentially significant impacts if the proposed project is implemented.

- Agriculture and Forestry Services
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Mineral Resources
- Noise
- Transportation
- Wildfire

2.3.2 Unavoidable Significant Adverse Impacts

This Draft EIR identifies 12 significant and unavoidable adverse impacts, as defined by CEQA, that would result from implementation of the proposed project. The County must prepare a "statement of overriding considerations" before it can approve the project, attesting that the decision-making body has balanced the benefits of the proposed project against its unavoidable significant environmental effects and has determined that the benefits outweigh the adverse effects, and therefore the adverse effects are considered acceptable. The impacts that were found in the Draft EIR to be significant and unavoidable are:

- **Impact 5.2-1**: The proposed project could convert approximately 13,816 acres of Important Farmland to nonagricultural use.

- **Impact 5.2-4**: The proposed project would result in the loss of forest land or conversion of forest land to non-forest use.

- **Impact 5.3-2**: Short-term construction activities associated with the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State ambient air quality standards.

- **Impact 5.3-3**: Development under the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State AAQS.
- **Impact 5.3-5**: Operational-phase emissions associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations.
- **Impact 5.5-1**: Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.
- **Impact 5.12-1**: Implementation of the proposed project could result in the loss of availability of a known mineral resource.
- **Impact 5.13-1**: Construction activities would result in temporary noise increases in the vicinity of the proposed project.
- **Impact 5.13-2**: Project implementation would generate a substantial traffic noise increase on local roadways and could locate sensitive receptors near rail in areas that exceed established noise standards.
- **Impact 5.16-2**: Implementation of the proposed project would conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).
- **Impact 5.18-2**: Development under the proposed project in or near SRAs or lands classified as Very High FHSZs could exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire.
- **Impact 5.18-5**: Development in designated High or Very FHZSs could expose structures and/or residences to fire danger.

2.4 INCORPORATION BY REFERENCE

Some documents are incorporated by reference into this Draft EIR, consistent with Section 15150 of the CEQA Guidelines, and are available for review at the County.

- Contra Costa County 2005-2020 General Plan and EIR (State Clearinghouse Number 1988071904)
- Contra Costa County Ordinance Code

2.5 FINAL EIR CERTIFICATION

This Draft EIR is being circulated for public review for 60 days from February 9, 2024, through April 8, 2024. Interested agencies and members of the public are invited to provide written comments on the Draft EIR to the address of the County Department of Conservation and Development:

> Department of Conservation and Development
> Attn: Will Nelson
> 30 Muir Road
> Martinez, CA 94553

After the 60-day review period, the County will consider all written comments received and prepare written responses for each. A Final EIR will incorporate the received comments, responses to the comments, and any changes to the Draft EIR that result from comments. The Final EIR will be presented to the County Board of Supervisors for potential certification as the environmental document for the project. All persons who comment on the Draft EIR and provide adequate contact information will be notified of the availability of the Final EIR and the date of the public hearing before the County.

The Draft EIR is available to the public for review at the following locations:

- Online: https://envisioncontracosta2040.org/documents
- In-Person: Department of Conservation and Development – 30 Muir Road, Martinez, CA 94553

2.6 MITIGATION MONITORING

Public Resources Code Section 21081.6 requires that agencies adopt a monitoring or reporting program for any project for which it has made findings pursuant to Public Resources Code Section 21081 or adopted a Negative Declaration pursuant to Public Resources Code 21080(c). Such a program is intended to ensure implementation of all mitigation measures adopted through the preparation of an EIR or Negative Declaration.

The Mitigation Monitoring and Reporting Program for the proposed project will be completed as part of the Final EIR, prior to consideration of the project by the Contra Costa County Board of Supervisors.

3. Project Description

This chapter of the Draft Environmental Impact Report (EIR) describes the proposed Contra Costa County 2045 General Plan (proposed General Plan Update) and the Climate Action Plan (CAP), hereinafter referred to as the "proposed project," pursuant to the California Environmental Quality Act (CEQA).[1] The proposed project would replace the County's existing General Plan, which was adopted in 1991 and reconsolidated twice (once for 1990-2005 and again for 2005-2020), and the 2015 CAP. A public review draft of each project component was published on October 17, 2023.

This chapter provides a detailed description of the proposed project, including the location, setting, and characteristics of the study area, as well as the project objectives, the principal project features, and required permits and approvals. A more detailed description of the environmental setting is provided in Chapter 4, *Environmental Setting*, and additional descriptions of the environmental setting as they relate to each of the environmental issues analyzed in Chapter 5, *Environmental Assessment*, of this Draft EIR, are included in the environmental setting discussions contained in Sections 5.1 through 5.18.

3.1 OVERVIEW

Every city and county in California is required to have an adopted comprehensive long-range general plan for the physical development of the county or city and, in some cases, land outside the city or county boundaries.[2] It is the community's overarching policy document that defines a vision for future change and sets the "ground rules" for locating and designing new projects, expanding the local economy, conserving resources, improving public services and safety, and fostering community health. The proposed General Plan functions as the County's primary land use regulatory tool. It will be used as the basis for all planning-related decisions made by County staff, the Planning Commission, and the Board of Supervisors.

Per State law, the General Plan must address eight mandated topics: land use, circulation, housing, conservation, open space, noise, environmental justice, and safety. Typically, General Plans cover a timeframe or forecast of 15 to 20 years. However, State law also requires that Housing Elements be updated every eight years, so the Contra Costa County Housing Element was updated before the rest of the General Plan and evaluated by a separate EIR.[3]

In addition to the eight topics required by State Law, the proposed General Plan addresses two optional topics: growth management and public facilities and services.

[1] CEQA Guidelines Section 15126.
[2] California Government Code Section 65300.
[3] SCH # 2022070481.

The proposed General Plan encompasses the required and optional topics in the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
- Conservation, Open Space, and Working Lands Element
- Public Facilities and Services Element
- Health and Safety Element
- Growth Management Element

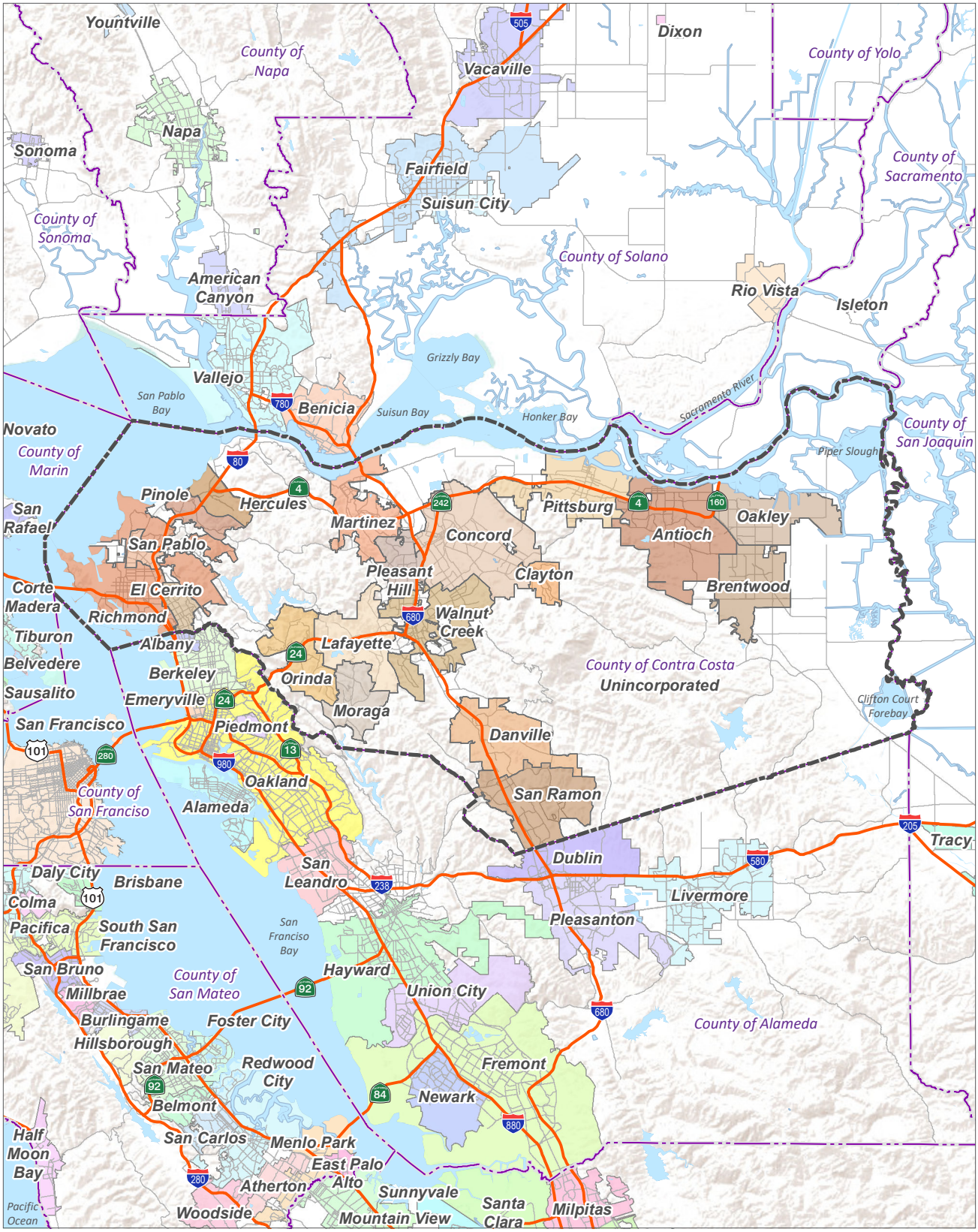
All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a project, and final development approval decisions are made on a project-by-project basis by County staff, the Zoning Administrator, the Planning Commission, and/or the Board of Supervisors.

The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce greenhouse gas (GHG) emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

In compliance with CEQA, this EIR describes the potential environmental impacts associated with adoption and implementation of the proposed project. CEQA Guidelines Section 15125 establishes that the physical environmental conditions at the time of the issuance of the Notice of Preparation (NOP) constitute the baseline conditions by which it is determined whether an impact is significant. The NOP for this EIR was published on September 20, 2023 (State Clearinghouse No. 2023090467). The Contra Costa County Department of Conservation and Development is the Lead Agency for the environmental review of the proposed project.

3.2 LOCATION AND SETTING

Contra Costa County is on the northeastern side of the San Francisco Bay; adjacent to Alameda County to the south, San Joaquin County to the east, Solano and Sacramento Counties to the north across San Pablo Bay and Suisun Bay, and San Francisco County to the west. North to south regional access is provided by Interstate 80, Interstate 680, and State Route 242; east to west regional access is provided by Interstate 580, State Route 4, and State Route 24. Figure 3-1, *Regional Location*, shows Contra Costa County's regional location.



Source: ESRI, 2022

Contra Costa County Boundary

County Boundary

0 8

Scale (Miles)

Figure 3-1

Regional Location

3. Project Description

Contra Costa County, which is Spanish for "opposite coast," is across the San Francisco Bay from San Francisco and is bordered by San Francisco Bay to the west and San Pablo Bay and Suisun Bay to the north. Two major transcontinental railroads (Burlington Northern Santa Fe, or BNSF, and Union Pacific Railroad, or UPRR) follow the county's northern shoreline, also serving ports and major rail facilities in Oakland and Richmond. The Buchanan Field Airport, in unincorporated Concord, and Byron Airport, located south of Byron in eastern Contra Costa County, provide domestic aviation services, along with air cargo service and other operations.

There is a long history of people living in what is now Contra Costa County and using the land for a variety of purposes. Members of the Bay Miwok, Northern Valley Yokuts, and Ohlone Tribes were the first inhabitants. Spanish colonization of what is now California began in 1769. Spain controlled the area until Mexico won its independence in 1821. Under Mexican rule, much of the county was divided amongst 15 land grants, or ranchos. Acalanes, Pacheco, El Sobrante, and many other locations in the county derive their names from the ranchos or their owners. The county, along with the rest of California, was ceded to the United States in 1848 following the Mexican-American War. Contra Costa County was established in 1850 as one of California's original 27 counties, with Martinez as the county seat. Fewer than 5,000 people lived in the county at the time.

The current physical form and character of the county has largely been defined by the pattern of urban development sparked by rapid industrialization during World War II and the economic expansion and diversification that followed:

- West County was the first area to develop with urban and industrial uses. Several cities and unincorporated communities existed in the area before World War II, but they were relatively small (Richmond, by far the largest city in the county at the time, had a population of 23,093 in the 1940 Census). However, West County became a hub of industrial activity during the war (Kaiser Shipyards in Richmond produced nearly 750 ships, more than any other shipyard complex in the country), leading to fast and extensive urbanization. By 1950, Richmond's population approached 100,000.
- Central County experienced a wave of suburbanization during the prosperous post-World War II economy of the 1950s and 1960s. Rural agricultural communities were transformed into cities as middle- and upper-class residents, most of whom were White, were provided the opportunity to live in newly constructed housing tracts and commute via the expanding freeway network. Construction of the Bay Area Rapid Transit (BART) system in the 1960s and 1970s enhanced the area's desirability and facilitated additional development.
- The suburban development pattern began extending into the agricultural landscape of East County in the 1980s. Small cities such as Brentwood grew rapidly, and a new city, Oakley, was incorporated in 1999. Residents were attracted to East County by lower housing costs and scenic open spaces, as well as the extension of BART to the Pittsburg/Bay Point Station in 1996.

As of 2020, the population of unincorporated Contra Costa County was approximately 174,000 people; there were about 60,300 homes, and the average household size was 2.83 people per household (DOF 2020). Over the next 20 years, Contra Costa County is likely to see continued growth, including residential and employment expansion.

3.3 EIR STUDY AREA

The proposed General Plan defines the project area as unincorporated Contra Costa County. Land inside the city or town limits of incorporated municipalities is not under Contra Costa County's jurisdiction. Contra Costa County is home to 19 incorporated municipalities ranging from the City of Concord, which is 30.5 square miles, to the City of Clayton, which is 3.8 square miles.

In 1990, voters adopted Measure C-1990, which created the 65/35 Land Preservation Standard and Urban Limit Line (ULL). Together these play a major role in shaping land use and community character across the county. The 65/35 Standard limits the amount of land that can be designated for urban development, while the ULL limits the areas where such development can occur.

The 65/35 Standard limits urban development to no more than 35 percent of the land area of the county. The remaining 65 percent must be preserved for agriculture, open space, wetlands, parks, and other non-urban uses. Institutional/public uses such as schools, transit facilities, fire and police stations, water and wastewater treatment plants, correctional facilities, and airports are also categorized as non-urban.

The ULL's function is to protect the majority of the county from urban development. The urbanized areas of the county, including incorporated cities and unincorporated communities, are contained within the ULL. Urban and non-urban uses are allowed inside the ULL while only non-urban uses are allowed outside. Any expansion of the ULL that exceeds 30 acres is subject to a four-fifths vote of the Board of Supervisors and requires countywide voter approval.

This EIR focuses on the analysis of potential impacts on lands only in unincorporated Contra Costa County, including land in and outside the ULL and inside each municipality's sphere of influence (SOI), but not inside municipality limits. This area is referred to as the "EIR Study Area" in this document and is shown in Figure 3-2, *EIR Study Area Boundaries*.

3.4 PUBLIC ENGAGEMENT PROCESS

The process to update the existing General Plan began in December 2017 when the Board of Supervisors directed the Department of Conservation and Development (DCD) to oversee updates to the General Plan and Zoning Code. The Board of Supervisors subsequently directed DCD to concurrently update the County's 2015 Climate Action Plan. Substantive work on the project began in September 2018 and public outreach kicked off in February 2019. Over the next four years, the County held or participated in over 130 public and community-organized meetings with residents, community advocates, stakeholders, and public officials, including:

- Meetings of the Board of Supervisors, Planning Commission, Sustainability Commission, Library Commission, Hazardous Materials Commission, Arts and Culture Commission, Sustainability Committee, Historic Landmarks Advisory Committee, Aviation Advisory Committee, and all 13 Municipal Advisory Councils.
- Almost 50 community meetings, workshops, and open houses held across the county.

- Stakeholder meetings on environmental justice, community health, sustainability, and economic development.
- Native American tribal consultations.
- Over 20 meetings with various community-based organizations representing a wide range of interests in the county.

In addition, throughout the process the Envision Contra Costa website provided information about upcoming meetings, access to draft documents, and online tools that community members used to share their thoughts. The online tools were especially important during the COVID-19 pandemic, as they allowed community members to remain engaged and even attend meetings virtually. Input and direction from the public and County officials were incorporated into each component of the General Plan.

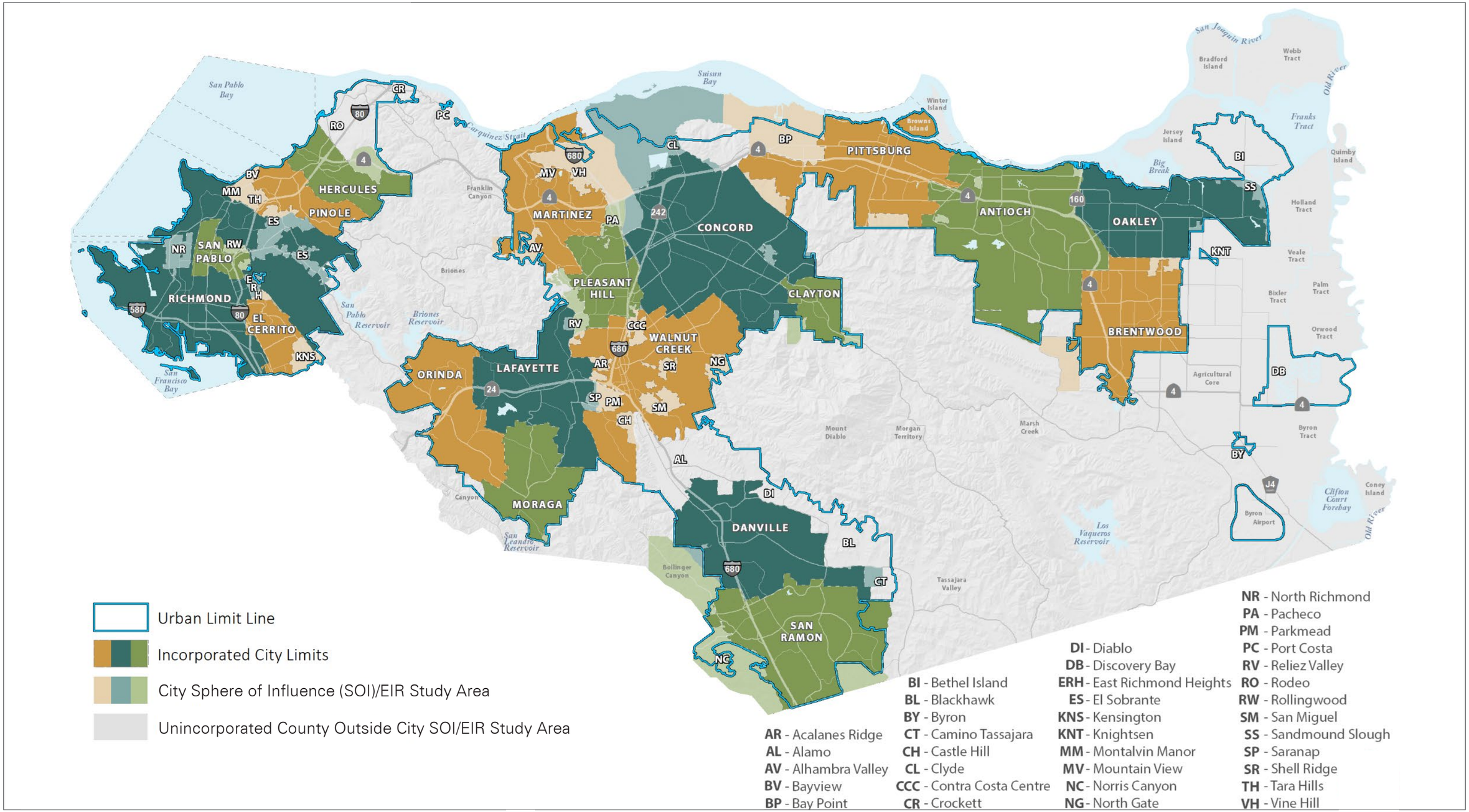


Figure 3-2
EIR Study Boundaries

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3.5 PROJECT OBJECTIVES

The primary purposes of the proposed project are to extend the General Plan planning horizon to year 2045 and establish a legally adequate General Plan and CAP that meet State requirements through a community-based planning process.

Through the updates to the land use map, the General Plan also aims to align the map with land uses that already exist on the ground today, while also focusing more mixed-use development and higher density housing within community cores, where infrastructure and services are available.

The policy objectives of the proposed General Plan are enumerated in Chapter 1 of the General Plan. It was conceived as a modern, visionary, and nimble policy document intended to address the opportunities and challenges of the 21st century. In addition, because the county spans a wide geography with diverse communities that have different visions, goals, and opportunities for growth, another important objective was to plan at a community scale, rather than relying on a one-size-fits-all policy approach throughout the county. Finally, as part of its decision to update the General Plan, the Board of Supervisors directed County staff to incorporate four themes: environmental justice, community health, economic development, and sustainability. These themes are described herein:

- **Environmental Justice.** Environmental justice policies and actions intend to reduce the unique or compounded health risks in communities that experience the highest levels of pollution and negative health outcomes, such as asthma and low birth weight babies, and the greatest social and economic disadvantages, such as poverty and housing instability. The General Plan refers to these areas as "Impacted Communities" and focuses on improving environmental justice for the people living there by promoting meaningful community engagement and prioritizing improvements that address their needs. Environmental justice is a new topic that was not discussed in the prior General Plan. State law now requires that general plans address environmental justice and it is a matter of great concern to many county residents. While this topic is addressed throughout the General Plan, the Stronger Communities Element provides detailed information about Impacted Communities and environmental justice.
- **Community Health.** The physical and mental health of community members is inextricably linked to where and how communities are developed. Therefore, the community health policies and actions guide planning and development decisions to provide opportunities for community members to live healthy lifestyles, including by improving peoples' ability to walk or bike between destinations, providing multi-modal transportation connections, creating opportunities for social interaction, and promoting access to outdoor recreation, healthy food, and medical facilities. The community health policy guidance additionally aims to reduce exposure of all community members to pollutants that can adversely affect their health.
- **Economic Development.** The economic development policies and actions aim to develop the county's workforce and attract and support sustainable businesses and industries that provide living-wage jobs, invest in hiring from the local workforce, and engage with communities. Investment in diversified industries, as supported in the economic development policy guidance, promotes innovation, builds the tax base, and allows residents to work in the county where they live.

- **Sustainability.** Sustainability means meeting the needs of today's population while leaving viable resources to meet the needs of future generations. One important part of a sustainable future is resiliency, which is the ability to withstand, recover, and learn from a disruptive experience, such as a wildfire, flood, or pandemic. The sustainability policies and actions aim to conserve resources, improve resiliency (especially to the impacts of climate change), protect the environment, reduce pollution, and enhance overall quality of life.

In addition to the proposed General Plan objectives, the proposed CAP sets targets to reduce the county's GHG emissions consistent with State targets. It is an objective of the proposed project to meet the GHG reduction targets established by the proposed CAP.

3.6 PROJECT COMPONENTS

This section provides a summary of the major components of the proposed project.

3.6.1 Contra Costa County 2045 General Plan

The following provides a summary of the major components of the proposed General Plan.

3.6.1.1 CONTENTS AND ORGANIZATION

The proposed General Plan includes an introductory chapter, a chapter describing the planning context, and seven separate elements that establish goals, policies, and actions for each given set of topics. The elements cover all topics required by California State Government Code Section 65302 as well as topics of particular interest to Contra Costa County. The proposed General Plan also includes a glossary and list of abbreviations, as well as two appendices that compile the policies and actions that relate to each of the four themes described in Section 3.5, *Project Objectives* and provide additional technical detail on health and safety topics.

A brief explanation of each proposed General Plan element is provided below.

- **Stronger Communities Element.** This element aims for all community members to feel safe in their homes and neighborhoods; have access to healthy food, the outdoors, living wage jobs, and healthcare; have opportunities for self-expression through art and cultural celebration; benefit from business innovation and investment; and strengthen bonds with other community members. The focus of this element is on promoting equity and community resiliency, fostering a spirit of collaboration, and creating opportunities for positive collective impact. This element presents policy guidance that applies to unincorporated communities throughout the county, followed by Community Profiles that address issues unique to each community.
- **Land Use Element.** This element meets the requirements of the State-required Land Use Element. It designates all lands within the unincorporated county for uses such as housing, commerce, industry, parks, or agriculture, and establishes regulations and standards for development in each land use designation. It also provides policy guidance to support orderly, well-planned growth by balancing development and conservation, as well as policy guidance tailored to specific land uses.

- **Transportation Element.** This element sets forth goals and policies describing the overall mobility program for the county and identifies the general location of existing and proposed major transportation routes, terminals, and facilities, as required by the Government Code. The Transportation Element provides policy guidance that addresses safe and sustainable transportation, coordinated planning, a multimodal roadway network, active transportation, goods movement, and air mobility.
- **Conservation, Open Space, and Working Lands Element.** This element promotes conservation and preservation of open spaces, working lands, and other natural and cultural resources. It provides policy guidance that addresses an open space framework, agricultural resources and working lands, ecological resources and natural systems, water resources, historic and cultural resources, scenic resources, mineral resources, and energy resources.
- **Public Facilities and Services Element.** This element aims to ensure that public services, infrastructure, and facilities are accessible to and benefit all county residents. It provides policy guidance that addresses general public facilities and services; water and wastewater; drainage and flood risk; sheriff, fire, and emergency medical services; solid waste management; parks and recreation; schools; and libraries.
- **Health and Safety Element.** The focus of this element is on improving public health and safety and reducing the risk of hazards. It is organized around 10 key topics: air quality; GHGs; climate change, resilience, and adaptation; flood hazards and sea-level rise; wildfire hazards; extreme heat; management of hazardous materials and hazardous waste; seismic and geologic hazards; emergency preparedness, response, and evacuation routes; and noise and vibration.
- **Growth Management Element.** The purpose of this element is to establish the goals, policies, and actions intended to manage and mitigate the impacts of future growth and development in the unincorporated county. This element complies with the requirements of the Measure J-2004 Growth Management Program.

3.6.1.2 GOALS, POLICIES, AND ACTIONS

Each element of the proposed General Plan contains background information and goals, policies, and actions that must be implemented to achieve the community's vision for the future. The goal, policy, and action terms are further defined as follows:

- **Goal:** An end statement describing the general result sought by the community. Each goal has associated policies and most also have associated actions.
- **Policy:** A specific statement that guides decision-making as the County works to achieve a goal. Policies represent statements of County regulation and establish the standards used when considering proposed development and other decisions. A policy is ongoing and requires no corresponding action.
- **Action:** A measure, procedure, or activity that helps the County achieve a specific goal. An action is something concrete that can and will be completed.

3.6.1.3 LAND USE DESIGNATIONS AND MAP

The proposed General Plan land use map is shown in Figure 3-3, *Proposed General Plan Land Use Map*. The land use designations and the standards for the allowed density or intensity of each use are listed below. The acreage of unincorporated county area designated for each land use type is provided in Table 3-1. Residential densities are expressed in terms of dwelling units per net acre, which is the area remaining after land is dedicated for rights-of-way, easements, and other public or common uses. As a rule of thumb, the County assumes net acreage to be 75 percent of the gross for single-family residential projects and 80 percent of the gross for multiple-family residential and mixed-use projects. A project's actual density is calculated during the development review process and must usually fall within the density range for the applicable land use designation. Development intensities for nonresidential uses are expressed in terms of floor area ratio (FAR), which is the ratio of gross building floor square footage to gross land area, expressed as a decimal number. When a building's square footage is equal to the area of the parcel it occupies, the FAR is 1.0. FARs are lower in suburban areas, where buildings are shorter and often surrounded with parking and landscaping, than in urban areas, where buildings are taller and occupy more of their respective parcels. Nonresidential development cannot exceed the FAR for the applicable land use designation.

Table 3-1 Acreages of Land Use Designations

Land Use Designation	Acreage
Residential Very Low Density	2,518
Residential Low Density	6,302
Residential Low-Medium Density	5,810
Residential Medium Density	3,504
Residential Medium-High Density	771
Residential High Density	125
Residential Very High Density	55
Commercial and Office	269
Light Industry	1,285
Heavy Industry	3,408
Mixed-Use Low Density	233
Mixed-Use Medium Density	69
Mixed-Use High Density	108
Mixed-Use Community-Specific Density	363
Public and Semi-Public	16,884
Agricultural Core	11,902
Agricultural Lands	95,852
Parks and Recreation	72,796
Commercial Recreation	1,838
Resource Conservation	59,900
Water	26,564
Total	**310,554**

Note: Acreages are rounded to the nearest ten.
Source: Contra Costa County 2023

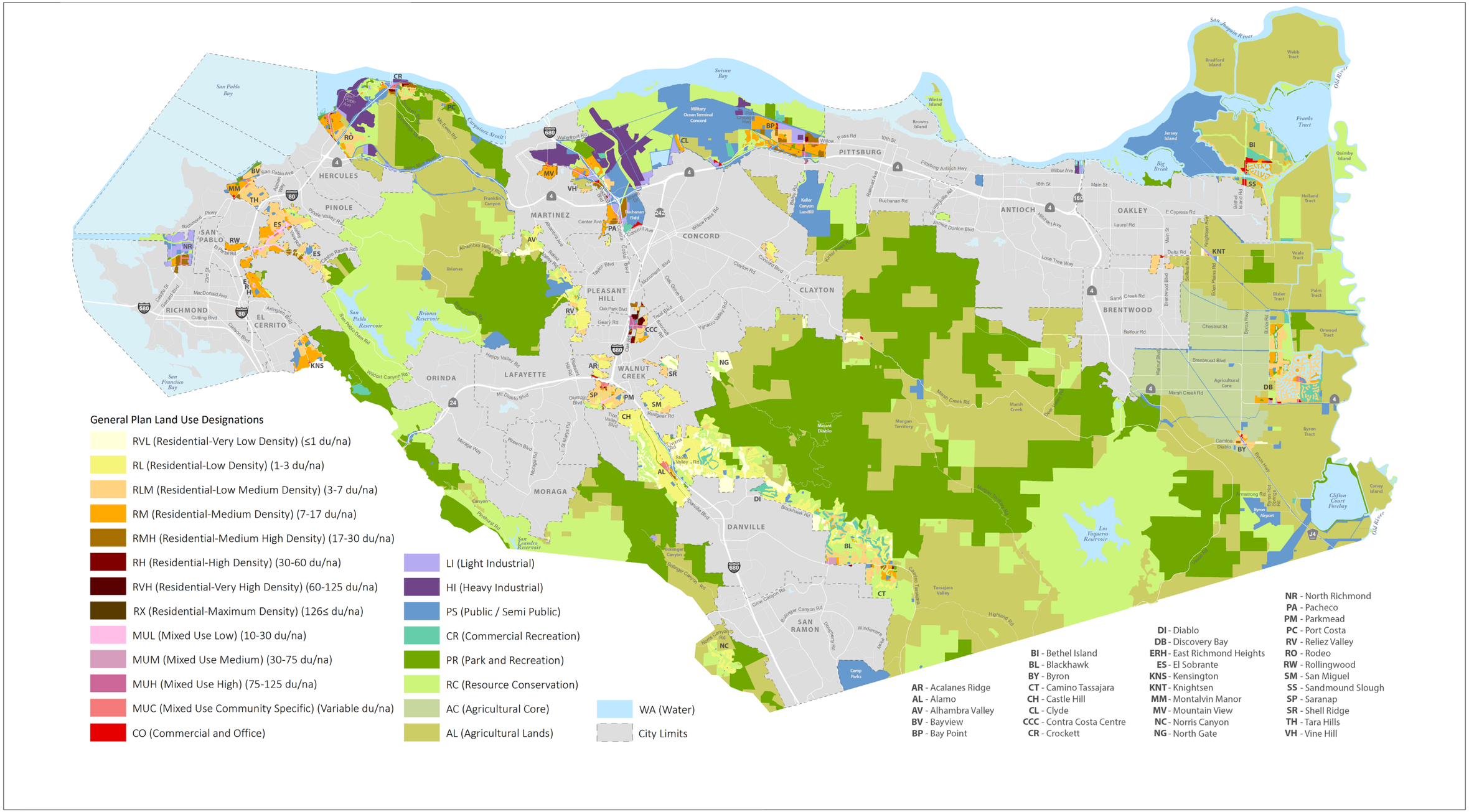

Figure 3-3
Proposed General Plan Land Use Map

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The proposed General Plan land use designations and associated standards are as follows:

- **Residential Very Low Density (RVL).** This designation provides a transition between urban development and agricultural/rural areas. It is also applied to constrained sites where reduced densities are justified. Typical uses would include detached single-family units on lots 1 acre or larger and small-scale agricultural activities. The maximum density is 1 unit per acre.
- **Residential Low Density (RL).** This designation allows for low-density, predominantly single-family residential development. Typical uses include detached single-family units on lots approximately 15,000 square feet to 1 acre in size and limited nonresidential uses that serve and support nearby homes. Small-scale agricultural activities may be compatible on larger lots. This designation allows densities ranging from 1 to 3 units per acre.
- **Residential Low-Medium Density (RLM).** This designation allows for moderate-density, predominantly single-family residential development. Typical uses include detached single-family units on lots of approximately 6,000 to 15,000 square feet and limited nonresidential uses that serve and support nearby homes. Duplexes and triplexes may also be compatible. This designation allows densities ranging from 3 to 7 units per acre.
- **Residential Medium Density (RM).** This designation allows for higher-density single-family and low-density multifamily residential development. Typical uses include single-family units on lots approximately 2,500 to 6,000 square feet, duplexes, triplexes, townhouses, condominiums, apartments, and mobile home parks. It also includes limited nonresidential uses that serve and support nearby homes. This designation allows densities ranging from 7 to 17 units per acre.
- **Residential Medium-High Density (RMH).** This designation allows for the highest-density single-family and medium-density multifamily residential development. Typical uses include single-family units on lots smaller than 2,500 square feet, tiny homes, fourplexes, townhouses, condominiums, apartments, and assisted living facilities. It also includes limited nonresidential uses that serve and support nearby homes. This designation allows densities ranging from 17 to 30 units per acre.
- **Residential High Density (RH).** This designation allows for higher-density, multifamily development. Typical uses include condominiums, apartments, and assisted living facilities. It also includes limited nonresidential uses that serve and support nearby homes. This designation allows densities ranging from 30 to 60 units per acre.
- **Residential Very High Density (RVH).** This designation is applied near transit stations, employment centers, and other locations where providing exceptionally high density is a priority. Typical uses include condominiums, apartments, and micro-units. It also includes limited nonresidential uses that serve and support nearby homes. This designation allows densities ranging from 60 to 125 units per acre.
- **Residential Maximum Density (RX).** This designation is reserved for unique projects providing the highest densities in the unincorporated county. Typical uses include condominiums, apartments, and micro-units. Density would be determined on a project-by-project basis. It also includes limited nonresidential uses that serve and support nearby homes. This designation allows a minimum density of 126 units per acre.
- **Commercial and Office (CO).** This designation allows for a full range of commercial and office uses. Typical uses include retail (neighborhood, community, and regional scale), personal and business services, lodging and hospitality services, entertainment venues, event spaces, shared co-workspaces, commercial

kitchens, workforce training centers, and all kinds of medical, business, and professional offices. The maximum FAR is 1.0 for commercial uses and 2.5 for office uses.

- **Light Industry (LI).** This designation allows for a range of low- to moderate-intensity industrial uses that when properly designed and operated may be established in proximity to residences and other sensitive receptors without sacrificing human health and safety or resulting in significant environmental impacts. Typical uses include light manufacturing, fabrication/assembly, processing, machinery repair, warehousing and storage, distribution, research and development, laboratories, incubators, workforce training centers, and ancillary or supportive retail and office uses. The maximum FAR is 1.5.
- **Heavy Industry (HI).** This designation allows for the most intense industrial land uses. Heavy industrial uses typically require significant acreage and direct access to deep water channels, rail lines, or freeways. Operations are often characterized by transport, storage, and use of large quantities of hazardous or noxious materials; significant emissions of pollutants, odors, noise, vibration, and light; and inherent risks to human health and safety and the environment. Typical uses include heavy manufacturing and processing (e.g., petroleum refining, chemical manufacturing, steel production), tank farms, marine terminals, rail yards, and fossil fuel-fired power plants. Light-industrial uses are also allowed in this designation. The maximum FAR is 0.67 for heavy industrial uses and 1.5 for light industrial uses.
- **Mixed-Use Low Density (MUL).** This designation allows for various housing types, including tiny homes, townhouses, condominiums, apartments, studios, live-work units, and micro-units, along with a wide range of neighborhood-serving retail, personal service, office, entertainment, and public uses. This designation is applied where a modest level of mixed-use development is appropriate, such as pedestrian-scale corridors, neighborhood nodes, and individual or small groups of parcels generally encompassing less than 1 acre. This designation allows densities ranging from 10 to 30 units per acre. The maximum FAR is 1.0.
- **Mixed-Use Medium Density (MUM).** This designation allows for various housing types, including townhouses, condominiums, apartments, studios, live-work units, and micro-units, along with a wide range of retail, personal service, office, hospitality, entertainment, and public uses sized to serve nearby neighborhoods or the surrounding community. This designation is applied where moderate- to large-scale mixed-use development is appropriate, such as existing commercial or mixed-use cores of established communities, transitioning commercial areas (e.g., obsolete shopping centers), and individual or groups of parcels encompassing several acres. This designation allows densities ranging from 30 to 75 units per acre. The maximum FAR is 2.0.
- **Mixed-Use High Density (MUH).** This designation allows for high-density residential complexes of all types, office towers, large hotels, convention spaces, and accompanying retail, personal service, entertainment, and public uses. This designation is applied where intense, urban-scale mixed-use development is appropriate, such as transit villages and employment centers. This designation allows densities ranging from 75 to 125 units per acre. The maximum FAR is 4.0.
- **Mixed-Use Community-Specific Density (MUC).** This designation allows for various housing types, including tiny homes, townhouses, condominiums, apartments, studios, live-work units, and micro-units, along with a wide range of neighborhood- and community-serving retail, personal service, office, hospitality, entertainment, and public uses. Densities and FARs are specific to the community where this designation is applied.

- **Public and Semi-Public (PS).** This designation allows for uses and facilities owned or operated by public entities or private entities serving the public. These include law enforcement and fire stations, schools, libraries, hospitals, water and sewage treatment plants, landfills, cemeteries, airports, and military installations. Also included are high-volume public and private transportation corridors (e.g., freeways, BART, railroads) and utility corridors.
- **Agricultural Core (AC).** This designation is applied to approximately 11,900 acres between Brentwood, Discovery Bay, and Byron composed primarily of soils rated Class I or II per the National Resources Conservation System (NRCS) Land Capability Classifications. Much of the area under this designation is prime agricultural land that is actively farmed with intensive row crops, orchards, and vineyards. Agricultural production is the primary use in areas with this designation and takes precedent over other uses. Limited agricultural tourism activities that support the agricultural economy are consistent with this designation. "Ranchette" or estate-style residential development, and any other use that interferes with agricultural activities, is inconsistent with this designation. The maximum density is 0.025 units per acre.
- **Agricultural Lands (AL).** This designation is applied to agricultural areas composed primarily of soils rated Class III or lower per the NRCS Land Capability Classifications. Most areas under this designation are non-irrigated, rural lands that may support grazing and dryland farming, though it also includes non-prime, productive agricultural lands. Other types of agricultural, open space, and non-urban uses are consistent with this designation when conducted in accordance with the County's policies pertaining to agricultural areas. This includes limited opportunities for recreation, lodging (farm stays, bed and breakfasts, etc.), food services (farm-to-table dining, farm stands, etc.), special events, and similar activities that support the county's agricultural economy. Some land with this designation is in the Delta Primary Zone (DPZ) and may be used for recreation and other nonagricultural activities that are consistent with the Delta Protection Commission's *Land Use and Resource Management Plan for the Delta* and the Delta Stewardship Council's *Delta Plan*. The maximum density is 0.1 units per acre; in the DPZ, the maximum density is 0.05 units per acre.
- **Parks and Recreation (PR).** This designation applies to publicly and privately owned parks and similar outdoor spaces. It includes neighborhood and community parks as well as federal, State, and regional parks and historic sites that are managed primarily for conservation purposes and provide passive recreational activities. Ancillary amenities such as visitor centers, event spaces, amusements/rides, and eateries that support or enhance the primary recreational use are consistent with this designation.
- **Commercial Recreation (CR).** This designation allows for privately owned recreational uses where the primary activity is conducted outdoors, such as golf courses, recreational vehicle campgrounds, hunting clubs, and marinas. Ancillary commercial and service uses, as well as an on-site residential unit for a caretaker, harbor master, etc., are consistent with this designation.
- **Resource Conservation (RC).** This designation is applied to the watersheds of reservoirs owned by public utilities, mitigation banks, ecologically significant or environmentally sensitive areas that are not in publicly owned parkland, and hazardous or otherwise constrained areas that are unsuitable for development. Resource management, low-intensity agriculture, low-intensity recreation, and similar activities are consistent with this designation when conducted in a way that is not damaging to the resources being protected. Construction of one single-family residence on an existing legal lot under private ownership is consistent with this designation. All types of urban development and subdivisions that increase density are prohibited.

- **Water (WA).** This designation is applied to approximately 41.5 square miles of water including portions of San Francisco Bay, San Pablo Bay, and the Sacramento-San Joaquin River Delta that are in the county, large inland reservoirs, and other water bodies large enough to warrant designation. Typical uses include ferry terminals, shipping facilities associated with adjacent industry (marine terminals, wharves, etc.), docks, water-oriented recreation uses, and aquaculture.

3.6.1.4 ROAD NETWORK

The proposed General Plan identifies the existing and proposed road network, as depicted in Figure 3-4, *Existing and Proposed Road Network*. The proposed General Plan defines the County's roadway network based on traditional categories recognized by regional, State, and federal transportation agencies, as described herein:

- **Freeways** are high-speed facilities that move inter-city or regional traffic. Freeways that provide regional access to, from, and in Contra Costa County include Interstate (I-) 80, I-680, I-580, State Route (SR) 4, SR 24, SR 242, and SR 160.
- **Arterials** are relatively high-volume facilities that connect the regional roadway network to the local roadway network. Limited access is provided to abutting parcels in many cases. Arterial streets generally serve between 10,000 and 40,000 vehicles per day; some minor arterials serve fewer than 10,000 vehicles per day. Most intersections along arterials are signalized, often with a coordinated and interconnected signal system. Some of the primary arterials in Contra Costa County include Richmond Parkway, San Pablo Avenue, San Pablo Dam Road, Kirker Pass Road, Danville Boulevard/San Ramon Valley Boulevard, Camino Tassajara, Vasco Road, and Byron Highway.
- **Collectors** connect residential and local-serving commercial areas with the arterial system. Collector streets serve as principal traffic arteries in residential and commercial areas. These streets typically carry up to 10,000 vehicles per day, although some collectors may carry more vehicle traffic for short segments as they convey traffic between arterial streets and local residential streets. Collectors are often important segments of bikeway networks.
- **Local roads** provide circulation in neighborhoods and between adjacent land uses. They are typically low-speed, low-volume streets with design features that discourage through traffic to be more compatible with residential needs.

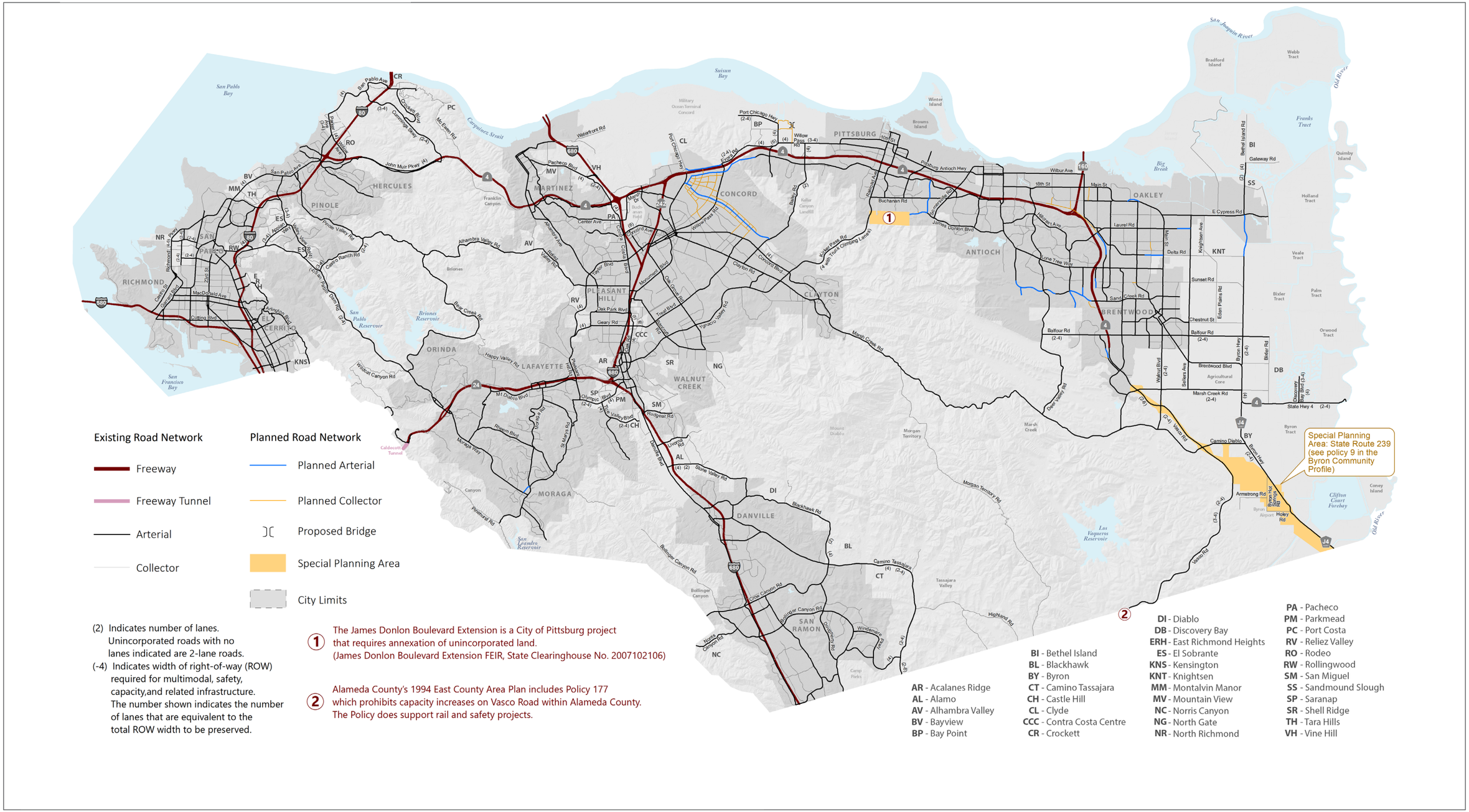

Figure 3-4
Existing and Proposed Road Network

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3.6.1.5 MAJOR CHANGES FROM THE EXISTING GENERAL PLAN

The proposed General Plan represents a change in the policy framework for future development in Contra Costa County compared to the existing General Plan. The proposed General Plan substantially reduces the volume of the previous General Plan by eliminating redundant and conflicting goals, policies, and actions, instead focusing on the concepts and policy direction that reflect the voice of the many Contra Costa County community members that participated in the General Plan Update process, such as promoting access for all unincorporated communities to healthy food, affordable housing, public transit, clean energy, living wage jobs, and quality medical care. Meanwhile, the proposed General Plan introduces new and expanded policies and actions that are needed to fill gaps found in the existing policy framework and identified by the public through outreach. New policy direction reflects updates in State law, such as the requirement to address environmental justice and new and expanded requirements related to safety and climate change adaptation. By focusing on a compact set of goals, policies, and actions, the proposed General Plan is intended to be more user-friendly to decision-makers, County staff, and the public.

The land use designations in the proposed General Plan also represent a change from the existing General Plan:

Residential Designations. The existing General Plan includes 12 residential designations that are divided into single-family and multifamily categories. Five single-family residential designations allow densities ranging up to 7.2 units per acre; this category also includes the Off-Island Bonus Area designation, which is applied to the off-island portion of the Bethel Island planning area and allows a base density of 1 unit per 5 acres, with provisions for increased density when certain criteria are met. The existing General Plan includes seven multifamily residential designations that allow densities between 7.3 and 99.9 units per acre, as well as designations specific to congregate care facilities (i.e., senior housing with some shared facilities) and mobile homes. As described in Section 3.6.1.3, *Land Use Designations and Map*, the proposed General Plan includes eight residential designations with allowed densities ranging up to 125 units per acre, with provisions to allow for even higher densities to be determined on a project-by-project basis through the Residential Maximum Density designation. The designations do not specify whether development must be single-family or multifamily, instead describing typical uses anticipated based on the allowed density.

Commercial and Industrial Designations. The existing General Plan includes 10 commercial and industrial designations. These include three categories of commercial uses, two categories of office uses, and two categories of industrial uses, all of which are differentiated based on the scale and/or intensity of the use. The remaining three designations are specific to privately operated recreational uses, marina and shoreline-oriented retail uses in the Bethel Island area, and airport-supporting commercial uses. As described in Section 3.6.1.3, the proposed General Plan replaces those 10 designations with one commercial and office designation that covers the full range of commercial and office uses and two industrial designations for light and heavy industrial uses.

Mixed Use Designations. The existing General Plan includes 15 Mixed Use designations that are each specific to a community or project, with community- or project-specific development standards. As described in Section 3.6.1.3, the proposed General Plan includes three Mixed Use designations that allow a range of development density and intensity up to a maximum of 125 units per acre and 4.0 FAR. The proposed General Plan also includes a community-specific Mixed Use designation that refines the allowed density and intensity of development for specific communities.

Other Designations. The existing General Plan includes nine other designations: Public and Semi-Public, Landfill, Parks and Recreation, Open Space, Agricultural Lands, Agricultural Core, Delta Recreation and Resources, Water, and Watershed. As described in Section 3.6.1.3, the proposed General Plan folds landfill uses into the Public and Semi-Public designation, folds the Delta-focused uses into the Agricultural Lands designation, and combines the Open Space and Watershed designations into one Resource Conservation designation. The Parks and Recreation, Agricultural Core, and Water designations are essentially unchanged.

Beyond the updates to the land use designations, the main types of land use map changes proposed in the General Plan include:

- **Updates to Reflect Existing Uses.** Many of the land use map changes fall into this category, in which the proposed General Plan land use map applies a designation to a parcel based on the type or intensity of land use that exists on the parcel today.
- **Increased Density and Intensity in Community Cores.** Many community members supported the concept of allowing more mixed-use development and higher density housing in their community cores. Based on that input, the Mixed Use and higher density residential designations were applied to many core areas in unincorporated communities. This change also supports the County in meeting its Regional Housing Need Allocation under a separate process to prepare the Housing Element.

This section is provided for informational purposes only. This EIR does not evaluate the changes in the proposed General Plan relative to the existing General Plan, but rather evaluates the impacts of the proposed General Plan relative to existing conditions, as required by CEQA Guidelines Section 15126.2. This EIR does not assume that any previously approved projects that are not yet constructed will be "re-opened" for substantial changes in buildout expectations.

3.6.1.6 REVISIONS TO THE GENERAL PLAN POST PUBLIC DRAFT REVIEW

In response to the analysis provided in this Draft EIR, the following revisions will be made to proposed General Plan Policies HS-P7.3 and LU-P4.3 that were published in the public draft review version on October 17, 2023:

- **Policy HS-P7.3:** Require new development within a Very High Fire Hazard Severity Zone in the LRA or SRA (as shown on Figure HS-10) **or** in the WUI (as shown on Figure HS-11), ~~**or**~~ **and** on a residential parcel with evacuation constraints (as shown on Figure HS-21), to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways **or interfere with evacuation plans** during the construction period. Work with the appropriate fire protection district to review and approve the traffic control plan prior to issuance of building permits.

- **Policy LU-P4.3**: Encourage smooth transitions between new and existing or planned development.

These revisions will be incorporated into the final General Plan.

3.6.2 Climate Action Plan

The proposed CAP is the County's strategic plan to reduce GHG emissions and to adapt to changing climate conditions in the unincorporated county. It demonstrates the County's leadership and commitment to reduce GHG emissions and enhance community resiliency to long-term changes associated with climate-related hazards such as heat, flooding, droughts, and wildfires.

The proposed CAP is an update of the 2015 CAP. It provides updated information, an expanded set of GHG reduction strategies, climate adaptation strategies, and a planning horizon out to 2045. It also establishes an implementation program and a framework to monitor, track, and report progress over time.

The proposed CAP builds on several earlier sustainability and energy efficiency efforts and local accomplishments and the concurrent update of the General Plan. This approach supports a holistic view of climate action planning and sustainability: that is, it works to reduce Contra Costa County's contribution to climate change while simultaneously preparing for climate-related changes that cannot be avoided.

The proposed CAP allows decision-makers, residents, businesses, and community stakeholders to understand the sources and magnitude of local emissions from the energy, solid waste, water, and transportation sectors of the unincorporated county; establish goals to reduce emissions; and prioritize steps to achieve reduction targets. The proposed CAP includes goals, strategies, and actions that the County and community can take to achieve significant GHG emission reductions in the unincorporated county and ensure that the County is on track toward the State's goal to achieve statewide net carbon neutrality by 2045.

In addition to GHG mitigation, the proposed CAP includes information about how climate change may affect natural hazards and identifies the populations, infrastructure, services, facilities, and resources in the unincorporated county that are most vulnerable to the effects of climate change. The proposed CAP has a suite of strategies to help improve community resilience to these hazards.

3.7 DEVELOPMENT PROJECTIONS

This EIR evaluates the projected development that could occur under the proposed General Plan through its horizon year of 2045, consistent with CEQA requirements that an EIR evaluate the "reasonably foreseeable" direct and indirect impacts of a proposed project.

The "full buildout" of the proposed General Plan is also presented in Section 3.7.3, *Full Buildout Methodology*, for information disclosure purposes, as well as to explain the methodology for identifying the projected 2045 development that is evaluated in this EIR. The full buildout presented in that section would be the development of every parcel with the maximum amount of development that could occur under the General Plan. The full buildout projection is based on the allowable density or intensity of development and does not account for other policy guidance that may affect whether and how development could occur. Future projects are subject to County review and approval.

3. Project Description

This EIR assumes that the full buildout of residential uses would occur by 2045 based on a conservative estimate of the residential demand by 2045, so it evaluates the full residential buildout. However, the full buildout of non-residential uses under the proposed General Plan far exceeds the anticipated demand for that type of development. Combined with approved and pending development in Contra Costa County, the full non-residential buildout of the proposed General Plan would result in over 17 times more new commercial and office development and over 4 times more new industrial development in Contra Costa County in 2045 than expected based on land use demand projections. Therefore, it is extremely unlikely that the full non-residential buildout would occur by the year 2045.

This full non-residential buildout of the General Plan could not be achieved for a variety of reasons. Namely, proposed General Plan Policy LU-P1.1 caps the amount of development that could occur to the 2045 projections evaluated in this EIR, and, for development that would exceed that cap, requires additional environmental review that addresses growth impacts that would occur due to development exceeding the General Plan EIR's projections. In addition, proposed General Plan Action LU-A1.1 establishes a monitoring program to track the rate of growth and ensure that it does not exceed the amounts analyzed in this EIR without requiring further environmental review.

Moreover, by or before 2045, it is probable that Contra Costa County will have adopted another update to the General Plan, in keeping with past decisions in the California courts, which dictate that local jurisdictions should update General Plans regularly.[4] Therefore, development after 2045 is expected to take place under a revised General Plan, rather than under the proposed General Plan. Consistent with CEQA statutes, this Draft EIR considers the "reasonably foreseeable" effects of adopting the proposed General Plan, which would result from development allowed between the adoption of the document and its horizon year of 2045. For the purposes of this EIR, this is termed the "horizon-year projection." The horizon-year projection is based on an estimate of the amount of development that would occur by 2045.

Based on the methodology described in this section and as shown in Table 3-2, *2045 Horizon-Year Growth Projections,* the horizon-year development projection for the proposed General Plan, including approved and pending development projects, includes the following:

- 23,200 new housing units
- 65,600 new residents
- 1.2 million square feet of new commercial and office space
- 5.0 million square feet of new industrial space

[4] *Citizens of Goleta Valley v. Board of Supervisors (1990)* 52 Cal.3d 553, 572, 276 Cal.Rptr. 410, 801 P.2d 1161.

Table 3-2 2045 Horizon-Year Growth Projections

	Existing (2020)	Growth in 2045 from Proposed General Plan	Growth from Approved and Pending Projects	Total 2045 Horizon-Year Growth Projection[3]
Housing Units	60,300[1]	17,200	6,000	23,200
Residents	174,100[1]	48,800[2]	16,800[2]	65,600[2]
Commercial Space (square feet)	Not available	870,000	370,000	1.2 million
Industrial Space (square feet)	Not available	2 million	3 million	5 million

1. State of California, Department of Finance, 2019. E-5 Population and Housing Estimates for Cities, Counties and the State.
2. Based on an assumption of 2.83 persons per household, as reported in: State of California, Department of Finance, 2020. *E-5 Population and Housing Estimates for Cities, Counties and the State.*
3. Existing plus growth does not add up due to rounding.
Source: PlaceWorks, 2021.

3.7.1 Key Points About Development Projections

This section provides a detailed explanation of the process used to estimate the horizon-year projection. By way of introduction, it is important to understand several overall points about the estimation process and its meaning:

- As described in Section 3.7.6.2, *Distribute Planning Period Development*, the horizon-year projection assumes that certain areas with development potential are likely to develop by 2045, while others are not. The distribution of this horizon-year development is based in part on General Plan policies that encourage growth in communities where residents support investment and redevelopment to foster economic activity and accessibility, meaning a higher percentage of the non-residential development potential is assumed to occur in those communities than in communities without that policy guidance and community support.
- As described below, the horizon-year projection was estimated based on the best available information. Since this projection covers a relatively long timeframe of more than 20 years, it is likely that there will be deviations from the development projections. However, deviations from the horizon-year projection are not in themselves a basis for finding inadequacy of the proposed General Plan or this EIR, since these projections represent Contra Costa County's best estimate of "reasonably foreseeable" development under the General Plan.
- The horizon-year projection is used as a basis for the environmental assessment, but it does not restrict or specify the actual physical location of future development that will be permitted under the proposed General Plan. Even if an area is not identified as having quantifiable new development by 2045 in this EIR, it can still accommodate new development in keeping with the General Plan's policies and land use designations. Conversely, geographic areas or potential development projects for which development is assumed in this EIR are not in any way "pre-cleared" for development or privileged for special consideration by County staff or the Board of Supervisors; development in those areas still requires normal review under CEQA and under regular County policies that are spelled out in the proposed General Plan, the Contra Costa County Zoning Code, and other County regulations.

3.7.2 Existing Development Potential

There is a significant amount of vacant land in Contra Costa County that could be developed under the existing General Plan. Some of these vacant areas have been approved for development, but the projects have not yet been constructed. Others have pending development applications that are currently under review. These approved and pending projects provide a significant amount of development potential, and they are included in the 2045 development projection that is evaluated in this EIR. The approved and pending development that was considered in this EIR is shown in Table 3-3, *Approved and Pending Development*.

Table 3-3 Approved and Pending Development

	Single-Family Units	Multi-Family Units	Commercial Square Feet	Industrial Square Feet
Pantages	280			
Del Hombre[3]		280		
Palmer School Site		130		
Bay View	140			
Orbisonia Heights[a]		330		
Avalon Block C[3]		200		
Saranap Village		260		
Spieker Senior Housing	50	300		
Willow View Apartments		190		
Tassajara Parks[2]	130			
St. Anne Village[1]		180		
Discovery Bay Apartments[1]		170		
Delta Coves	500	70		
Alves Lane		100		
Cecchini[1]	1,890	330		533,000
Pacheco Apartments[1]		300		
Bay Point Apartments[1]		120		
Byron Airport				441,000
PH/CC Centre BART Block D[1]			290,000	
Willow Pass Business Park			80,000	171,000
Panatonni (N. Richmond)				500,000
CenterPoint Warehouse				556,000
Scannell Warehouse				327,000
Warehouse (Buchanen Field)[1]				310,000
Panatonni 2 (N. Richmond)[1]				120,000

[1] Pending; not approved.
[2] This project was approved by the County, but a court decision in June 2023 rescinded portions of the County's approval.
[3] These projects have been constructed.
Notes: Units are rounded to the nearest 10; square footages are rounded to the nearest 1,000. This list only includes projects over 100 units or 100,000 square feet.
Source: Contra Costa County and PlaceWorks, 2022.

Other vacant or underutilized areas in the county have no pending or approved development applications, but are designated for residential, commercial, or industrial use, so there is still the potential for future development. These vacant and underutilized areas could be developed even if the proposed General Plan is not adopted.

3.7.3 Full Buildout Methodology

Determining the full buildout is the first step towards projecting horizon-year development. This section describes the methods used to calculate the full buildout potential of the proposed General Plan. As noted above, full buildout is the development of every parcel with the maximum amount of development allowed under the General Plan.

The full buildout was estimated based on the three-step process described below, including:

1. Identify vacant and underutilized parcels where new development could occur.
2. Estimate buildout of the vacant and underutilized parcels.
3. Assume no change on parcels that are fully developed.

The results of the full buildout analysis are as follows:

- 23,200 new housing units
- 65,600 new residents
- 20.7 million square feet of new commercial and office space
- 20.3 million square feet of new industrial space

3.7.4 Identify Vacant and Underutilized Parcels

While many of the parcels in Contra Costa County have existing development that is not likely to change, others are either vacant or underutilized. These vacant and underutilized parcels are the only locations where buildout is considered to be potentially different from existing conditions.

Data from the Contra Costa County Assessor's Office was used to identify vacant and underutilized parcels within the unincorporated county. The County Assessor data identifies vacant land using a specific "use code." To identify underutilized properties, the improvement-to-land (I/L) ratio for each parcel was calculated based on County Assessor data. The I/L ratio is the relationship of a property's improvement value to its land value. For example, a lot worth $100,000 that is improved with a building worth $40,000 would have an I/L ratio of 0.4. In this analysis, properties with an I/L ratio equal to or less than 0.5 were considered underutilized. There are other infill development opportunities on parcels that are considered underutilized because they haven't been developed to their full potential under current zoning, such as locations where only a portion of a parcel is developed.

Following the preliminary identification of vacant and underutilized parcels that was based on County Assessor data, County staff used its local knowledge and additional site analysis to refine the data and identify the existing development on underutilized parcels.

3.7.5 Estimate Buildout

For each vacant and underutilized parcel, the residential buildout was estimated by multiplying the parcel acreage by the allowed density (see Section 3.6.1.3). The buildout factors in an assumption about the actual density at which development is likely to occur, since developers often build a variety of product types, some of which could be at a lower density than the maximum allowed. This EIR assumes that 75 percent of the maximum allowed density will be built in the Residential Very Low, Low, and Low-Medium Density designations. In the remaining residential designations, this EIR assumes that 80 percent of the maximum allowed density will be built.

The non-residential buildout was also estimated for vacant and underutilized parcels by first multiplying the parcel acreage by 43,560 (i.e., the number of square feet in each acre), and then multiplying the result by the maximum FAR allowed by the designation (see Section 3.6.1.3).

Buildout projections for approved and pending projects are based on the approved or proposed project information.

3.7.5.1 ASSUME NO CHANGE ON FULLY DEVELOPED PARCELS

For parcels that were not identified as vacant or underutilized, it was assumed that there would be no additional development and the buildout would therefore be the same as existing development.

3.7.6 Horizon-Year Projections Methodology

This section describes the methods used to calculate the 2045 horizon-year development projection.

3.7.6.1 DETERMINE PROBABLE PLANNING PERIOD DEVELOPMENT

Multiple sources were consulted to determine the probable amount of development in the planning period, including a market study[5] conducted at the outset of the General Plan Update which considers housing, population, and job growth forecasts from the Association of Bay Area Governments (ABAG), the 6th Cycle Regional Housing Needs Assessment (RHNA) for 2023-2031, California Department of Transportation (Caltrans) growth projections, the Contra Costa County permit database, and projects in the County's development pipeline. The probable planning period development assumed in this EIR for each land use type is provided below:

- **Residential:** Over 20,000 new housing units by 2045, based primarily on the 2023-2031 RHNA. Given that the RHNA-based estimate is similar to the full buildout potential of 23,200 units, this EIR assumes that full buildout is the probable planning period development and assesses impacts that could result from full residential buildout.
- **Commercial:** 1.2 million square feet of new commercial and office development by 2045, based primarily on regional growth projections and County permit history data.

[5] Contra Costa County, 2018. *Existing Conditions Technical Report: Market Overview*, pages 61 to 65.

- **Industrial:** 5 million square feet of new industrial development by 2045, based primarily on County permit history data and projects in the development pipeline.

3.7.6.2 DISTRIBUTE PLANNING PERIOD DEVELOPMENT

Once the amount of non-residential development for the planning period was estimated, this amount was then distributed throughout the EIR Study Area. For residential development, this step was not needed since the EIR assumes that full residential buildout will occur by 2045.

The non-residential planning period development was primarily distributed in two types of locations:

- **Vacant and underutilized parcels within unincorporated communities:** During public outreach for the proposed project, participants from some unincorporated communities voiced interest in redevelopment or support for more intense uses to foster economic activity and accessibility. The resulting General Plan 2045 policies and the revised General Plan land use designations encourage growth in those communities. To distribute the non-residential planning period development, this EIR assumes that a percentage of the full non-residential buildout potential in each community will happen by 2045, considering the policy guidance from the proposed General Plan combined with development constraints, transportation access, and market demand.
- **Approved and pending development projects.** As noted in Section 3.7.2, *Existing Development Potential*, there is significant development potential available in approved development projects that have not yet been constructed. Such projects can continue to be developed regardless of whether the County adopts the proposed General Plan. The development allowed in those approved projects, as well as development proposed in pending development projects, is included in the horizon-year projection, and was considered as part of the process to distribute the planning period development. The approved and pending development that was considered in this EIR is shown in Table 3-3.

3.8 EVALUATION OF THE GENERAL PLAN AND ITS HORIZON-YEAR PROJECTION

The analyses in this EIR are based on a consistent interpretation of the proposed General Plan land use map and policies, and the type and amount of growth that the General Plan would allow. The various analyses in this EIR require two different types of data inputs: some analyses require spatial inputs only and some require both quantitative and spatial inputs. In each case, the required analysis is determined by the standard of significance used for the impact discussion.

- Analyses that require a quantitative estimate of growth include vehicle miles traveled (VMT), air pollution emissions, greenhouse gas emissions, noise generation, population growth, and impacts on public services and utilities and recreation. Impacts in these areas are generated by an increase in the number of people living and working in Contra Costa County, which generates consequent increases in VMT, noise, emissions, and use of services. Therefore, a reliable analysis depends on a reasonable, quantitative estimate of new population and employment. For these analyses, the horizon-year projection (i.e., the projected amount of development that could occur under the proposed General Plan through its horizon year of 2045) was considered "reasonably foreseeable" and was used in the analysis.

- Analyses that are based on spatial location only include aesthetics, agriculture and forestry resources, exposure to localized air pollution and noise, biological resources, cultural resources, geology, hazards and safety, hydrology and water quality, and land use. These analyses must consider whether the proposed General Plan would allow *any* development in a geographic area, such as a fire hazard severity zone or an area with prime agricultural soils, which could trigger potential impacts. For these analyses, the question is not *how much* development the General Plan would allow, but *where* that development could potentially be located. Therefore, all potential development allowed by the land use map of the proposed General Plan (i.e., full buildout of the proposed General Plan) was evaluated to assess impacts related to these topics.

3.9 INTENDED USE OF THE EIR AND PROPOSED PROJECT

This EIR is a program-level EIR intended to review potential environmental impacts associated with adoption and implementation of the proposed General Plan and CAP, and determine corresponding mitigation measures, as necessary. This EIR does not identify or evaluate the impacts of specific, individual developments that may be allowed under the proposed General Plan. Each specific future project will require separate project-level environmental review, as required by CEQA, to secure the necessary discretionary development permits. Subsequent environmental review may be tiered off this EIR pursuant to CEQA Guidelines[6] Section15162. Subsequent projects will be reviewed by the County for consistency with the General Plan, CAP, and this EIR. Projects successive to this EIR include, but are not limited to, the following:

- Approval and funding of major public projects and capital improvements.
- Issuance of permits and other approvals necessary for implementation of the proposed General Plan and CAP.
- Future specific plan and planned unit development approvals.
- Property rezoning consistent with the proposed General Plan.
- Development plan approvals, such as tentative maps, variances, conditional use permits, and other land use permits.
- Permit issuances and other approvals necessary for public and private development projects.
- Development agreement processes and approvals.

Concurrent with the process to prepare the proposed General Plan and CAP, the County also initiated a comprehensive update to the County's Zoning Code. The Zoning Code Update will provide consistency with the updated General Plan and meet modern standards. It will implement the General Plan policies and land use map, providing more specificity for land use rules and regulations to guide development. It is anticipated that CEQA review of the future Zoning Code Update will tier from this EIR.

[6] The CEQA Guidelines are at Title 14, Division 6, Chapter 3 of the California Code of Regulations.

3.10 REFERENCES

Department of Finance (DOF). 2020a. E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011-2020.

3. Project Description

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4. Environmental Setting

4.1 INTRODUCTION

This chapter provides a "description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published.... Pursuant to provisions of the California Environmental Quality Act (CEQA) and the CEQA Guidelines, the environmental setting provides the baseline physical conditions from which the lead agency will determine the significance of environmental impacts resulting from the proposed project. from both a local and a regional perspective" (CEQA Guidelines Section 15125[a]).

For many of the environmental impacts analyzed in this Draft Environmental Impact Report (EIR), the scale at which impacts are evaluated is the boundary of the county, exclusive of its incorporated cities but including unincorporated communities and other unincorporated areas. However, for some environmental topical sections—air quality, biological resources, greenhouse gas (GHG) emissions, and transportation—the setting is the regional context or larger area. Section 4.2, *Regional Environmental Setting*, expands on the regional environmental context, which plays a role in determining potential cumulative impacts throughout the Draft EIR. Section 4.4, *Assumptions Regarding Cumulative Environmental Impacts*, describes the methods used to analyze cumulative impacts, as well as the cumulative setting for each topical area.

4.2 REGIONAL ENVIRONMENTAL SETTING

4.2.1 Regional Location

Contra Costa County is on the northeastern side of the San Francisco Bay; adjacent counties include Alameda County to the south, San Joaquin County to the east, Solano and Sacramento Counties to the north across San Pablo Bay and Suisun Bay, and San Francisco County to the west. North to south regional access is provided via Interstate (I-) 80, I-680, and State Route (SR-) 242; east to west regional access is provided by I-580, SR-4, and SR-24. Figure 3-1, *Regional Location*, shows Contra Costa County's regional location.

As of 2020, about 1 million residents live in the 19 incorporated cities and approximately 174,000 residents live in the unincorporated portions of the county (DOF 2020). Additionally, almost 564,000 people work in the county, with over 186,000 jobs in the unincorporated areas of the county (EDD 2022). Contra Costa County can be divided into three subregions separated by major topographic features—West County, encompassing the urbanized shoreline of the San Francisco and San Pablo Bays, includes five cities and the unincorporated communities of Kensington, El Sobrante, Rodeo, Crockett, and Port Costa; Central County, encompassing the area between the Berkeley Hills and Diablo Range, includes 10 cities and the unincorporated communities of Alamo, Alhambra Valley, Blackhawk, Canyon, Clyde, Diablo, Pacheco, and Saranap and includes over half the population; and East County, encompassing the Diablo Range and lands to the east, includes four cities and the unincorporated communities of Bay Point, Bethel Island, Knightsen, Byron, and Discovery Bay.

4.2.2 Regional Planning Considerations

Regional Transportation Plan/Sustainable Communities Strategy

The Association of Bay Area Governments (ABAG) is a regional planning agency and a forum for addressing regional issues concerning transportation, the economy, community development, and the environment. It is also the regional clearinghouse for projects requiring environmental documentation under federal and State law. In this role, ABAG reviews proposed development and infrastructure projects to analyze their impacts on regional planning programs. ABAG and the Metropolitan Transportation Commission (MTC) are jointly responsible for regional planning of the 9-county, 101-city, San Francisco Bay Area. These agencies are responsible for developing the long-range regional transportation plan, known as the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). ABAG/MTC adopted its RTP/SCS, titled *Plan Bay Area 2050: A Vision for the Future*, in October 2021.

Plan Bay Area 2050 integrates the components of the RTP/SCS and the Regional Housing Needs Allocation into a single document. The plan connects the elements of housing, the economy, transportation, and the environment through 35 strategies that will make the Bay Area more equitable for all residents and more resilient in the face of unexpected challenges. In the short term, the plan's Implementation Plan identifies more than 80 specific actions for MTC, ABAG, and partner organizations to take over the next five years. Plan Bay Area 2050 focuses on five major principles to drive the overarching planning process, including affordability, connectivity, diversity, health, and vibrancy. Using these principles, this plan developed three sets of future conditions by which to analyze the success of its strategies. These scenarios vary in terms of economic vibrancy, population growth rates, severity of natural hazards, and adoption rates for telecommuting, among other forces. The plan also emphasizes the role of advancing equity through investment in residents of systemically underserved communities in the region.

Plan Bay Area 2050 does not require that local general plans, specific plans, or zoning be consistent with its policies; instead, it provides incentives to governments and developers to promote consistency. The consistency of the proposed General Plan and Climate Action Plan (CAP) (i.e., the proposed project) with the applicable Plan Bay Area 2050 policies is analyzed in detail in Section 5.11, *Land Use and Planning*.

Bay Area Air Quality Management District Clean Air Plan

The *2017 Clean Air Plan: Spare the Air, Cool the Climate* was adopted on April 19, 2017, by the Bay Area Air Quality Management District (BAAQMD), in cooperation with MTC, ABAG, and the San Francisco Bay Conservation and Development Commission to provide a regional strategy to improve air quality within the San Francisco Bay Area Air Basin (SFBAAB) and meet public health goals. The control strategy described in the 2017 Clean Air Plan includes a wide range of control measures designed to reduce emissions and lower ambient concentrations of harmful pollutants, safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, and reduce GHGs to protect the climate.

The 2017 Clean Air Plan addresses four categories of pollutants: ground-level ozone and its key precursors, reactive organic gases (ROG) and nitrogen oxides (NO_X); particulate matter (PM), primarily fine inhalable particulate matter ($PM_{2.5}$), and precursors to secondary $PM_{2.5}$; air toxics; and GHG emissions. The control

measures are categorized based on the economic sector framework, including stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, and water measures.

BAAQMD is the regional agency with jurisdiction over the nine-county region in the SFBAAB. ABAG, MTC, County transportation agencies, Cities and Counties, and various nongovernmental organizations also participate in the efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies, as well as implementation of extensive education and public outreach programs. BAAQMD is responsible for attaining and maintaining air quality in the region within federal and State air quality standards. Specifically, BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the region and develop and implement strategies to attain the applicable federal and State standards. BAAQMD has permit authority over most types of stationary emission sources and can require stationary sources to obtain permits, impose emission limits, set fuel or material specifications, or establish operational limits to reduce air emissions. BAAQMD also regulates new or expanding stationary sources of toxic air contaminants (TACs) and requires air toxic control measures for many sources emitting TACs. The proposed project's consistency with the applicable policies is discussed in Section 5.3, *Air Quality*.

Greenhouse Gas Emissions Reduction Legislation

Current State guidance and goals for reductions in GHG emissions are embodied in several State regulations. Executive Order S-03-05, signed June 1, 2005, set the following GHG reduction goals for California:

- 2000 levels by year 2010
- 1990 levels by year 2020
- 80 percent below year 1990 levels by year 2050

Assembly Bill (AB) 32, the Global Warming Solutions Act (2006), was passed by the State legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 established a legislative target for the year 2020 goal outlined in Executive Order S-03-05. The California Air Resources Board (CARB) prepared its first Scoping Plan in 2008 that outlined the State's plan for achieving the 2020 targets of AB 32.

In 2008, Senate Bill (SB) 375 was adopted to connect passenger-vehicle GHG emissions-reduction targets for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce vehicle miles traveled (VMT) and vehicle trips.

In September 2016, Governor Brown signed SB 32, making the Executive Order B-15-30 goal for year 2030 of a 40 percent reduction below 1990 levels by 2030 into a statewide-mandated legislative target. CARB issued an update to its Scoping Plan in 2017, with programs for meeting the SB 32 reduction target.

Executive Order B-55-18 sets a goal for the state to achieve carbon neutrality no later than 2045 and to achieve and maintain net negative emissions thereafter. SB 100 would help the state reach the goal set by Executive Order B-55-18 by requiring that the state's electricity suppliers have a source mix that consists of at least 60 percent renewable/zero-carbon sources in 2030 and 100 renewable/zero-carbon sources in 2045.

Senate Bill 743

On September 27, 2013, SB 743 was signed into law and started a process that has fundamentally changed transportation impact analysis for CEQA compliance. With the adoption of SB 375, the State signaled its commitment to encourage land use and transportation planning decisions and investments that reduce VMT and contribute to the reduction of GHG emissions, as required by the California Global Warming Solutions Act of 2006 (AB 32).

SB 743 generally eliminates auto delay, level of service, and other similar measures of vehicular capacity or traffic congestion as the basis for determining significant impacts under CEQA. Pursuant to the CEQA Guidelines, the new criteria "shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses" (Public Resources Code Section 21099[b][1]).

Pursuant to SB 743, the Natural Resources Agency adopted revisions to the CEQA Guidelines to implement SB 743 on December 28, 2018. Under the new guidelines, VMT-related metric(s) that evaluate the significance of transportation-related impacts under CEQA for development projects, land use plans, and transportation infrastructure projects, were required beginning July 1, 2020. The legislation does not preclude the application of local general plan policies, zoning codes, conditions of approval, or any other planning requirements for evaluation of level of service, but these metrics can no longer be the basis for determining transportation impacts under CEQA.

Water Quality Control Plans (Basin Plans)

The county is in the water quality control jurisdiction of Region 2, the San Francisco Bay Regional Water Quality Control Board (RWQCB), and Region 5, the Central Valley RWQCB. Each regional board in the state is required to adopt a water quality control plan, or basin plan, that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water quality conditions and problems. The San Francisco Bay RWQCB prepared the Water Quality Control Plan for the San Francisco Bay Basin and the Central Valley RWQCB prepared the Water Quality Control Plan for the Sacramento and San Joaquin River Basins. Both regions are tasked with implementing the adopted Basin Plan through planning, permitting, and enforcement of established water quality objectives. In accordance with State Policy for Water Quality Control, both regions employ a range of beneficial use designations for surface waters (including creeks, streams, lakes and reservoirs), groundwaters, marshes, and mudflats that serve as the basis for establishing water quality objectives, discharge conditions, and prohibitions. The Basin Plans identify existing and potential beneficial uses supported by the key surface water drainages throughout their respective jurisdictional planning areas.

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

The primary goal of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) is to "provide an effective framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered species." The HCP/NCCP provides comprehensive species, wetlands, and ecosystem conservation and contributes to the recovery of endangered species in northern California. The HCP/NCCP avoids project-

by-project permitting that is generally costly and time consuming for applicants and often results in uncoordinated and biologically ineffective mitigation.

The HCP/NCCP obtains authorization for take of covered species under the federal Endangered Species Act (FESA) and California Endangered Species Act (CESA) for the reasonable expansion of urban development and specific rural infrastructure projects outside these urban boundaries that will support urban growth. The HCP/NCCP inventory area is in the eastern portion of Contra Costa County and is identified as the area in which impacts are evaluated and conservation will occur.

Covered species are those species fully addressed in the HCP/NCCP and are included in the FESA and NCCP incidental take permits by evaluating and complying with avoidance and minimization requirements at a regional scale. In addition, the HCP/NCCP includes "no-take" species, which are species for which take is not authorized under the Natural Community Conservation Plan Act. To comply with the terms of the HCP/NCCP, the applicant must avoid all direct and indirect impacts on no-take species.

4.3 LOCAL ENVIRONMENTAL SETTING

4.3.1 Natural Setting

The county is a unique area where the greater San Francisco Bay Area, Sacramento–San Joaquin River Delta (Delta), and Central Valley meet. Elevations range from at or below sea level (e.g., in the marshes and islands of the Delta) to 3,849 feet at the peak of Mount Diablo, the highest point in the county. The physiography of the county is dominated by Mount Diablo and its surrounding slopes and valleys, which generally trend northwest to southeast, as well as lower valleys and plains that transition to the San Francisco Bay/Delta zones (ICF 2019).

Urban development is dense in the western and northern portions of the county, especially adjacent to San Francisco Bay, while the eastern and southern portions of the county include more unincorporated rural developments. Many unincorporated areas of the county are made up of rural agricultural and public lands and used for grazing, open space, and watershed protection (ICF 2019).

The county contains over 145,000 acres of protected land (28 percent of the county), comprising land protected in fee title only (136,000 acres), through conservation easement only (8,000 acres), or both (1,000 acres). Protected areas are defined as open space reserves that are managed primarily for their ecological functions and values. Lands within the county that fit this definition are owned by the East Contra Costa Habitat Conservancy, California Department of Parks and Recreation, East Bay Regional Park District (EBRPD), East Bay Municipal Utility District (EBMUD), and Contra Costa Water District (CCWD) among other agencies (ICF 2019).

4.3.1.1 GEOLOGY

Contra Costa County is in the Coast Ranges geomorphic province of California. The Coast Ranges have experienced a complex geological history characterized by Late Tertiary folding and faulting that has resulted in a series of northwest-trending mountain ranges and intervening valleys. Bedrock in the Coast Ranges consists of igneous, metamorphic, and sedimentary rocks that range in age from Jurassic to Pleistocene. The present physiography and geology of the Coast Ranges are the result of deformation and deposition along the tectonic

boundary between the North American plate and the Pacific plate. Plate boundary fault movements are largely concentrated along the well-known fault zones, which include the San Andreas Fault, Hayward Fault, and Calaveras Fault, as well as other lesser-order faults (Contra Costa 2018).

The geology of Contra Costa County is dominated by several northwest-trending fault systems that divide the county into large blocks of rock. For example, the Briones Hills are bounded by the Hayward Fault on the west and elements of the Franklin-Calaveras fault system on the east. Within a particular block, the rock sequence consists of a basement complex of broken and jumbled pre-tertiary sedimentary, igneous, and metamorphic rocks; a section of younger Tertiary sedimentary rocks and some volcanic rocks (flows and tuffs) that locally inter-tongue with and overlie the sedimentary section; and surficial deposits, including stream alluvium, colluvium (slopewash deposits at the foot of steeper slopes), slides, alluvial fans, and Bay Plain deposits (Contra Costa 2018).

Alluvium; terrace deposits; and bay mud, primarily composed of sand, silt, clay and gravel, are prevalent in the lowlands. The intermountain valleys and foothills contain alluvial soils and terrace deposits. In the east, north, and northwest parts of the county, the soils generally consist of bay muds (Contra Costa 2018).

4.3.1.2 ECOREGIONS

Ecoregions are areas of general similarity in ecosystems, based on major terrain features, such as a desert, plateau, valley, mountain range, or a combination thereof. Three ecoregions overlap the county: the California Coastal Chaparral Forest and Shrub Province, California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province, and California Dry Steppe Province (ICF 2019).

There are almost 294,000 acres of the California Coastal Chaparral Forest and Shrub Province in the county, covering the western and central portions. The primary distinguishing characteristic of this ecoregion is its Mediterranean climate, with hot, dry summers and cool, moist winters. The associated vegetative cover comprises primarily chaparral and woodlands (ICF 2019).

The California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province overlaps the southeastern portion of the county. There are almost 68,000 acres of California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province in the county, covering the southern portion. The ecoregion also has a Mediterranean climate. Most of the precipitation is rain. The associated vegetative cover comprises evergreen shrubland, with lesser areas of woodland, consisting of broadleaf species, some of which are drought-deciduous (ICF 2019).

The California Dry Steppe Province overlaps the northeastern corner of the county. There are almost 105,000 acres of California Dry Steppe Province in the county, covering the eastern portion. The ecoregion also has a Mediterranean climate, and most of the precipitation is rain, which falls during the winter. The landscape, with its low hills, is typical of an alluvial plain. The associated vegetative cover was historically herbaceous but is now largely irrigated to support agricultural crops (ICF 2019).

4.3.1.3 WATERSHEDS

There are 15 major watersheds that cover approximately 464,700 acres and overlap or occur completely within the county. The largest watershed in the county is the Walnut Creek-Frontal Suisun Bay Estuaries. This watershed contains nine cities: Orinda, Moraga, Danville, San Ramon, Lafayette, Walnut Creek, Pleasant Hill, Concord, and a portion of Martinez. Other sizeable watersheds in the county include the Kellogg Creek-Big Break, San Pablo Creek-Frontal Estuaries, Mount Diablo Creek-Frontal Suisun Bay Estuaries, and Marsh Creek. These watersheds catch precipitation and runoff from storm drains, then carry the water to the San Francisco Bay/Delta system. Water from the urbanized western portion of the county drains directly to San Francisco Bay or San Pablo Bay, while the northern and eastern portions of the county drain into Suisun Bay and the Delta river channels, eventually flowing into San Francisco Bay or San Pablo Bay. The south-central portion of the county is within the Alameda Creek drainage basin; this area's water drains south to Alameda Creek, then west to San Francisco Bay (Contra Costa 2005).

Because of the Mediterranean climate and its characteristic lack of rainfall during the summer months, ephemeral and intermittent streams are the dominant hydrologic features in the county watersheds. The range of precipitation reflects variations in elevation and proximity to the coast. Surface flow in ephemeral streams is generally supplied by rainfall; these streams flow only during and immediately following rain events. Surface flow in intermittent or seasonal streams is supplied by a combination of rainfall runoff and groundwater; accordingly, these streams generally flow throughout the rainy season and into the late spring or early summer. Perennial streams in the county are also supported by rainfall runoff and groundwater, but unlike seasonal streams, they run year-round, with major dry-season inputs from both natural and artificial sources (e.g., upwelling springs and surface or subsurface flows from local irrigation, respectively).

The natural hydrology of many of the major creeks and streams in the urban areas has been altered to control flooding or convey irrigation water. Channels were made wider and deeper and lined with concrete or riprap. Creeks and streams were relocated and realigned to accommodate increased flows, then placed in conduits and culverts (Contra Costa 2005). Most creeks and streams have been disconnected from their historic floodplains by levees and channelization. Many of these streams are maintained as flood-control channels, which support little or no riparian vegetation. Outside the urbanized areas, most drainages remain relatively natural and occupy at least a portion of their historic floodplains. Most of these features are ephemeral or intermittent and generally support narrow floodplains with limited riparian habitat (ICF 2019).

4.3.1.4 LAND COVER TYPES

The county contains a diverse range of flora, from montane plant communities on Mount Diablo to the saline plant communities of the San Francisco Bay estuaries. Natural communities are the assemblage of species that co-occur in the same habitat or area and interact through trophic and spatial relationships. Natural communities are defined by the land cover types, which are typically characterized by one or more dominant species. A total of 9 natural communities and 41 land cover types are found in the county. Excluding urban development, the predominant land cover type in the county is California annual grassland, which is abundant in the unincorporated portions of the eastern county. Shrubland, woodland, conifer forests, riparian woodland, wetland and pond, baylands, and cultivated agriculture land cover types also exist in the county (ICF 2019).

4.3.1.5 SPECIAL-STATUS SPECIES

The county contains 72 special-status plant species (ICF 2019). These species are found across the diverse and, in some cases, specialized habitats in the county. Special-status plants are more abundant in the eastern portions of the county, which retains a rural landscape that is compatible with the habitat needs of many of the special-status plant species.

The county has a rich landscape that is home to a number of rare wildlife and fish species, including an endemic butterfly, the Lange's metalmark butterfly (*Apodemia mormo langei*), found only at the Antioch Dunes National Wildlife Refuge. A total of 84 special-status wildlife species are known to occur in the county, including the San Joaquin kit fox (*Vulpes macrotus mutica*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), western burrowing owl (*Athene cunicularia hypugea*), and vernal pool fairy shrimp (*Brachinecta lynchi*) (CDFW 2018a). Often, these special-status wildlife species occur in protected areas, such as Mount Diablo State Park or Los Vaqueros Reservoir, or in various East Bay Regional Parks.

Similar to its benefits for special-status plant species, the rural grassland of the eastern portion of the county provides some of the best remaining undeveloped habitat for special-status wildlife species. For example, vernal pools, which provide essential habitat for special-status wildlife species such as California tiger salamander and fairy shrimp, are restricted to the Livermore Vernal Pool Region, which overlaps the eastern portion of the county. The Livermore Vernal Pool Region contains the Altamont Hills Core Area, with specific sites that are necessary for recovering endangered or threatened species or conserving species of concern. The Altamont Hills Core Area contains five distinct core areas near the Contra Costa County-Alameda County boundary (two in Alameda County and three in Contra Costa County), with the largest core area in the Bryon Hills/Vasco Caves region of Contra Costa County (ICF 2019).

4.3.1.6 SENSITIVE HABITAT

The existing General Plan identifies 41 unique biotic resource areas that have biological and wildlife importance (see Figure 8-1 in Chapter 8, *Conservation Element*, of the existing General Plan). The existing General Plan also identifies these areas as significant ecological resource areas, most of which contain aquatic habitat, such as freshwater marsh, seasonal and perennial wetlands, alkali mud flats, coastal salt marsh, and riparian vegetation. Examples of significant ecological resource areas with aquatic habitat include the Marsh Creek Riparian Corridor, Big Break, Alkali Meadows and Northern Claypan Vernal Pools, Bay Point Salt Marsh, mouth of the Contra Costa Canal, and Brooks Islands. Other locations include a mix of aquatic and upland habitat or are entirely within upland areas. Significant ecological resource areas in upland habitat typically contain unique soil types (e.g., San Pablo Ridge, Shell Ridge, Antioch Sand Dunes, and Blackhawk Ranch Fossil Locality), high-quality native habitats, and often special-status species (e.g., Mount Diablo, Las Trampas and Rocky Ridges, Redwood Regional Park, and Los Vaqueros Watershed). The habitat constituents within each significant ecological resource area are described in detail in the existing General Plan (Contra Costa 2005).

4.3.1.7 SCENIC RESOURCES

The county features one scenic route that has been designated by the State Scenic Highway System. SR-24 travels east to west from the City of Walnut Creek towards the City of Berkeley. This route travels for approximately nine miles in the county (Caltrans 2018). Portions of SR-4 are also eligible for State designation.

While there are many localized scenic features in the county, two of the most notable are its abundance of scenic ridges, hillsides, and rock outcroppings and the San Francisco Bay/Delta estuary system. Throughout much of Contra Costa County, there are significant topographic variations in the landscape. The largest and most prominent of these hills, including Mount Diablo, form the backdrop for much of the developed portions of the area. Views of these major ridgelines help to reinforce the rural feeling of the county's rapidly growing communities (Contra Costa 2005). The most notable scenic ridges in the county are shown in Figure 9-1 in the Open Space Element of the existing General Plan. The other major scenic resource of Contra Costa County is the extensive water system of the Delta and San Francisco, San Pablo, and Suisun Bays. The bays and Delta extend along the entire western and northern perimeter of the county. This waterway system provides a pleasant contrast to the landforms of the area. Where the water reaches the shoreline, a mix of land uses occur: salt marshes, railroad tracks, industrial activities, housing, and parkland. All add to the diversity and interest of the shoreline (Contra Costa 2005).

4.3.2 Land Use and Housing

4.3.2.1 EXISTING USES

The majority of unincorporated land is protected for open space, recreation, and watershed purposes. Other dominant land uses include rural and agricultural uses, as well as institutional and public uses, most of which are on government-owned land, like schools, hospitals, and churches. Residential, commercial, and industrial uses make up a small portion of the unincorporated county (Contra Costa 2019).

4.3.2.2 PLANNED USES

The County is in the process of updating its General Plan and Zoning Code (see Chapter 3, *Project Description* for more information). The County's adopted (existing) General Plan land use map includes over 40 separate designations that fall under nine larger categories. Currently, 6 percent of land is designated for single-family residential uses; less than 1 percent for multiple-family residential; less than 1 percent for commercial uses; less than 1 percent for mixed uses; 2 percent for industrial uses; 5 percent for public/semi-public uses; 39 percent for parks, watersheds, and open space uses; 38 percent for agricultural uses; and 8 percent for water-related uses (Contra Costa 2019).

4.3.2.3 PRIORITY DEVELOPMENT AREAS

The County has identified Priority Development Areas (PDAs) for focused development efforts. PDAs are areas that are designated for infill development opportunities because they are easily accessible to transit, jobs, shopping, and services. There are five designated PDAs within unincorporated Contra Costa County, including San Pablo Avenue Corridor, North Richmond, Downtown El Sobrante, Contra Costa Centre, and Pittsburg/Bay Point Bay Area Rapid Transit (BART) Station (Contra Costa 2019).

4.3.2.4 TRANSIT PRIORITY AREAS

Transit Priority Areas (TPAs) are defined in State law as areas within a half mile of an existing or planned major transit stop, if the planned stop is scheduled to be completed within the planning horizon of a transportation improvement program or applicable RTP. Major planning stops include rail or bus rapid transit stations, ferry terminals that are served by bus or rail transit, and intersections of two or more major bus routes with a frequency of 15 minutes or less during peak commute periods. There are two TPAs in the unincorporated county along the Antioch-San Francisco International Airport BART line.

4.3.2.5 URBAN LIMIT LINE

In an effort to manage and guide growth in Contra Costa County, in 1990 voters adopted Measure C-1990, which created the 65/35 Land Preservation Standard and Urban Limit Line (ULL). Together, these play a major role in shaping land use and community character across the county. The 65/35 Standard limits the amount of land that can be devoted to urban development, while the ULL limits the areas where such development can occur (Contra Costa 2019).

The 65/35 Standard limits urban development to no more than 35 percent of the land area of the county. The remaining 65 percent must be preserved for agriculture, open space, wetlands, parks, and other non-urban uses. Institutional/public uses, such as schools, transit facilities, fire and police stations, water and wastewater treatment plants, correctional facilities, and airports are also counted as non-urban. It is important to note that the 65/35 Standard addresses the amount of land devoted to development, not the intensity of development. Thus, one acre of single-family homes and one acre of high-rise apartments count equally against the 35-percent limit (Contra Costa 2019).

The ULL's function is to protect most areas of the county from urban development. The urbanized areas of the county, including incorporated cities and unincorporated communities, are within the ULL. Urban and non-urban uses are allowed inside the ULL while only non-urban uses are allowed outside. There is a misconception that the ULL is aligned directly with the 65/35 Standard, and thus contains 35 percent of the land area in the county. The ULL actually contains about 45 percent because non-urban uses, such as schools, fire stations, and neighborhood parks, necessarily exist within it. There must also be flexibility within the ULL to accommodate anticipated growth (Contra Costa 2019).

Changes to the ULL are rare. Any expansion of 30 acres or fewer must be approved by the County Board of Supervisors after making at least one of seven rigorous findings. Any change to the ULL that exceeds 30 acres is subject to a four-fifths vote of the Board of Supervisors and requires countywide voter approval. The County has adjusted the ULL on a handful of occasions, for example, to make it coterminous with city boundaries or exclude land unsuitable for development. Since its creation in 1990, the ULL has been moved only once to accommodate a specific development proposal.

4.3.2.6 HOUSING STOCK

Housing in the county primarily consists of single-family homes. In the unincorporated county, single-family dwellings comprise 79.7 percent of the housing stock. Multiple-family units account for 15.9 percent, while the remaining 4.4 percent are mobile homes (Contra Costa 2023). The areas in and around the cities of Richmond,

Martinez, Concord, Pleasant Hill, Walnut Creek, Antioch, and Pittsburg have the greatest supply of multifamily units. Multiple-family development has been the fastest-growing type of new housing construction in the unincorporated county since 2010, with an 8-percent increase in buildings containing five or more units, compared to only 2-percent increases in single-family attached and detached housing (Contra Costa 2019).

4.3.3 Cultural and Tribal Resources

Contra Costa County is in an area where traditional territories of three Native American groups – the Bay Miwok, Northern Valley Yokuts, and Ohlone – converged.

- The Bay Miwok inhabited the inner Coast Range, with territory stretching through eastern Contra Costa County, from Mount Diablo into the Sacramento River Delta. The Bay Miwok were politically organized by tribelet, which consisted of one or more villages and camps within a defined territory.
- The Northern Valley Yokuts are the historical occupants of the central and northern San Joaquin Valley, and their territory extended into eastern Contra Costa County. Their main settlements were built on low mounds on or near the banks of large watercourses for protection against flooding.
- The territory of the Ohlone people extended along the coast from the Golden Gate in the north to just below Carmel to the south, as well as along several inland valleys that led from the coastline. The Ohlone were also politically organized by tribelet, with each having a designated territory.

All of these groups were primarily hunter-gatherers. They hunted animals like mule deer, tule elk, pronged antelope, mountain lions, whales, and waterfowl. Groups would travel seasonally into the foothills or plains to gather specific plant resources, such as acorns, buckeye nuts, hazelnuts, and pine nuts, as well as seeds, roots, and berries. These and other resources likely supported hundreds of individual villages throughout what is now Contra Costa County. Today, there are several Ohlone nations in Contra Costa, Alameda, Solano, Napa, and San Joaquin Counties, each with its own culture and language, including the Lisjan (Ohlone), Karkin (Ohlone), Bay Miwok, Plains Miwok, Delta Yokut, and Napian (Patwin).

Over 400 historic sites, buildings, and other structures have been identified and mapped in the county. They include historic buildings that were part of the early industrialization of the western county, like the C&H Sugar Factory, historic ranches and homes, like the home of John Muir, which is part of the John Muir National Historic Site in Martinez, in addition to natural and cultural preserves like Vasco Caves Regional Preserve at the eastern slope of Mount Diablo and sites associated with historic mining uses like Black Diamond Mines Regional Preserve (see Appendix 5.5-1 for a full list of historic resources in the county). Historical and cultural resources in the county are discussed in further detail in Section 5.5, *Cultural Resources and Tribal Cultural Resources,* of this Draft EIR (Contra Costa 2019).

4.3.4 Public Services and Utilities

4.3.4.1 FIRE PROTECTION SERVICES

The Contra Costa County Fire Protection District (CCCFPD) provides fire protection and emergency medical response services for approximately 628,200 people within Contra Costa County. The East Contra Costa Fire Protection District (ECCFPD) previously covered approximately 249 square miles and served approximately 128,000 residents with three fire stations staffed by three firefighters each (ECCFPD 2022). However, in March 2022, the Contra Costa Local Agency Formation Commission unanimously approved the annexation of ECCFPD to the CCCFPD and the dissolution of ECCFPD (Contra Costa LAFCO 2022). The Kensington Fire Protection District (KFPD) provides fire suppression and emergency services to Kensington, with one operating station. The KFPD also receives aid from the El Cerrito Fire Department (KFPD 2019). The Moraga-Orinda Fire Protection District provides services to the Cities of Moraga and Orinda with five stations operating in the district. The Rodeo-Hercules Fire Protection District services approximately 32 square miles and 34,000 residents in the City of Hercules and the Town of Rodeo (RHFPD 2022). The San Ramon Valley Fire Protection District services the Cities of San Ramon and Danville and the unincorporated communities of Tassajara, Blackhawk, and Alamo with 10 fire stations. The Crockett-Carquinez Fire Protection District is a volunteer fire department that serves the communities of Crockett, Valona, Port Costa, and Tormey.

4.3.4.2 POLICE SERVICES

The Contra Costa County Office of the Sheriff (CCCOS) is the largest law enforcement agency in the county with 720 sworn officers and over 1,000 total personnel providing a full range of services to over 1 million residents in the 716-square mile county. The Sheriff's Office provides uniformed law enforcement services for unincorporated areas of the county, with the exception of the community of Kensington, which provides its own patrol services through the Kensington Community Services District. CCCOS also provides services to contract cities (Danville, Lafayette, and Orinda) and special districts (CCCOS 2022a).

The Emergency Services Division is a branch of the Sheriff's Office that provides disaster planning services, coordinates disaster outreach for public agencies and contract cities in the county, and helps County departments with emergency preparedness, disaster mitigation, and recovery. It also serves as a liaison with the State Office of Emergency Services for all County agencies. In addition to providing preparedness training, this Division oversees and has responsibility for County staff working in the Emergency Operations Center (CCCOS 2022b).

4.3.4.3 SCHOOL SERVICES

Contra Costa County has the nineth-largest public school population in the state, containing 18 school districts and 285 schools. These school districts include Acalanes Union High, Antioch Unified, Brentwood Union Elementary, Byron Union Elementary, Canyon Elementary, John Swett Unified, Knightsen Elementary, Lafayette Elementary, Liberty Union High, Martinez Unified, Moraga Elementary, Mt. Diablo Unified, Oakley Union Elementary, Orinda Union Elementary, Pittsburg Unified, San Ramon Valley Unified, Walnut Creek Elementary, and West Contra Costa Unified.

According to the California Department of Education's Overcrowded School Program, 20 schools in Contra Costa County are considered critically overcrowded. These include 16 in West Contra Costa Unified, two in Antioch Unified, and two in San Ramon Valley Unified (DOE 2022). In addition, according to each district's school enrollment and school capacity data, Brentwood Union Elementary School District, Liberty Union High School District, Pittsburg Unified School District, and West Contra Costa Unified School District had enrollment levels in the 2021 to 2022 school year that exceed their estimated capacities (see Chapter 5.15, *Public Services and Recreation*).

4.3.4.4 PARKS AND RECREATION

The county contains thousands of acres of parks and recreational areas that are owned and operated by various entities. These include the U.S. National Park Service, California State Parks Department, California Department of Water Resources, EBRPD, EBMUD, CCWD, independent Parks and Recreation Service Districts, County Service Districts, Contra Costa County Public Works Department, and incorporated cities and towns.

EBRPD is currently the largest parks provider in the county, with nearly 125,000 acres across 73 parks in both Contra Costa County and Alameda County. EBRPD maintains 30 parks in the county and manages hundreds of additional acres of land in its land bank, which the district holds until the property is made suitable for public access. Other notable parks and recreation facilities include Frank Tract State Recreation Area near Bethel Island in the Delta at 3,523 acres, the Marsh Creek State Historic Park south of Brentwood at 3,673 acres, and the Mount Diablo State Park at 20,124 acres, which are all State parks managed by the State Parks Department (CSP 2022). In addition, EBMUD and CCWD operate several reservoirs, such as San Pablo, Lafayette, and Los Vaqueros, which provide water-based recreational and hiking opportunities.

4.3.4.5 WASTEWATER TREATMENT

As discussed in Section 5.17, *Utilities and Service Systems*, there are many wastewater treatment and collection services throughout the county. Wastewater services are provided through 20 agencies: 7 cities and 13 sanitary districts. Of these, 11 provide wastewater service to unincorporated areas, including Byron Sanitary District, Central Contra Costa Sanitary District, Crockett Community Services District, Delta Diablo, EBMUD, Ironhouse Sanitary District, Mountain View Sanitary District, Rodeo Sanitary District, Stege Sanitary District, Town of Discovery Bay Community Services District, and West County Wastewater District.

4.3.4.6 WATER SUPPLY

There are two major water providers in the county: EBMUD and CCWD. EBMUD delivers water directly to its customers after it is treated. CCWD provides treated water services to several cities and unincorporated communities in the Central County area and several city and other water agencies buy "raw," untreated water from CCWD, treat it, and then sell it to their own local customers. CCWD is not limited to providing domestic urban water supplies. Other services include wholesale treated water, reclaimed water, industrial, agricultural, and landscaping irrigation water supplies.

EBMUD provides treated water to all of western Contra Costa County, the Lamorinda area, portions of Walnut Creek and Pleasant Hill, and all of the San Ramon Valley. EBMUD's Urban Water Management Plan 2020 reported that the district served a population of 473,000 in 2020. CCWD supplies treated water to all urbanized areas in Central Contra Costa County that are not serviced by EBMUD: the northern and eastern portion of Walnut Creek, most of Pleasant Hill, all of Concord and Clayton, the Hidden Lakes area of Martinez, and the unincorporated areas of Vine Hill, Pacheco, Clyde, Port Chicago, and along Marsh Creek Road to Morgan Territory.

Additional water districts serve small portions of the eastern county, including the Byron Bethany Irrigation District and East Contra Costa Irrigation District, which primarily provide agricultural irrigation water to customers within the county. Bay Point is served by Golden State Water Company and Discovery Bay is served by the Town of Discovery Bay Community Services District. The full list of water providers in the county is shown in Table 5.17-4, *Water Providers Serving Contra Costa County,* in Section 5.17.

4.3.4.7 SOLID WASTE

In Contra Costa County, the private sector has traditionally been responsible for solid waste collection and disposal. The role of government in solid waste management is one of planning, administration, and facility approval. Fourteen of the 19 cities, four special districts, and the County franchise solid waste collection. Cities, districts, and the County enter into franchise agreements with private collectors to provide collection services. Cities and counties also have land use approval over solid waste facilities in their jurisdiction. It is noted that all the disposal facilities, as well as the collection services, are privately owned. As a result, the range of actions, including new facility construction and landfill expansions, requires private sector-initiated applications or agreements as well as government policy direction and approvals. There are two landfills in Contra Costa County: Keller Canyon Landfill and ACME Landfill, both in the north-central part of the county.

4.4 ASSUMPTIONS REGARDING CUMULATIVE IMPACTS

Section 15130 of the CEQA Guidelines states that cumulative impacts shall be discussed when a project's incremental effect is cumulatively considerable. It further states that this discussion shall reflect the level and severity of the impact and the likelihood of occurrence, but not in as great of detail as that necessary for the proposed project alone. Section 15355 of the CEQA Guidelines defines cumulative impacts to be "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Cumulative impacts represent the change caused by the incremental impact of the proposed project when added to effects of past projects, other current projects, and probable future projects in the vicinity.

CEQA Guidelines Section 15130(b)(1) states that the information used in an analysis of cumulative impacts should come from one of two sources, either:

1) A list of past, present, and probable future projects producing related cumulative impacts, including, if necessary, those projects outside the control of the agency; or

2) A summary of projections contained in an adopted general plan or related planning document designed to evaluate regional or area-wide conditions.

The cumulative impacts analyzed in this Draft EIR use method No. 2. The proposed project consists of the Contra Costa County 2045 General Plan and CAP. Consistent with CEQA Guidelines Section 15130(b)(1)(B), this Draft EIR analyzes the environmental impacts of development in accordance with horizon-year development projections of the land use plan for the proposed General Plan. As a result, this Draft EIR addresses the cumulative impacts of the projected horizon-year development under the proposed General Plan within the county and region, as appropriate. In most cases, the potential for cumulative impacts is contiguous with the county boundary, inclusive of incorporated cities.

The cumulative discussions in Sections 5.1 through 5.18 of this Draft EIR explain the geographic scope of the area affected by each cumulative effect (e.g., immediate project vicinity, county, watershed, or air basin). The geographic area considered for each cumulative impact depends on the impact that is being analyzed. For example, in assessing macro-scale air quality impacts, all development within the air basin contributes to regional emissions of criteria pollutants, and basin-wide projections of emissions are the best tool for determining the cumulative impact.

Regional growth impacts related to traffic, air quality, and noise have been accounted for through use of the Contra Costa Transportation Authority Countywide Travel Demand Model, which is a model that uses regional growth projections to calculate future VMT. The growth projections in the Travel Demand Model are used for the cumulative impact analyses of this Draft EIR. Please refer to Chapter 5, *Environmental Analysis*, of this Draft EIR for a discussion of the cumulative impacts associated with development and growth in the county and region with regard to each resource topic.

As noted previously, the geographic scope of the cumulative analysis is most often countywide (i.e., including all unincorporated and incorporated areas within the county), although some topics use a different scale of analysis. The parameters for assessing cumulative impacts are:

- **Aesthetics:** The cumulative setting for visual impacts includes countywide growth.
- **Agricultural and Forestry Resources:** The geographic scope of the cumulative analysis for agricultural and forestry resources is countywide, including lands classified as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, as well as forestland natural community types.
- **Air Quality:** Air quality impacts are analyzed on both a regional and localized level. For cumulative impacts, the analysis is based on the regional boundaries of the San Francisco Bay Area Air Basin.
- **Biological Resources:** Cumulative impacts consider potential impacts to sensitive habitat, protected species, and jurisdictional resources on a countywide scale.
- **Cultural Resources:** Cumulative impacts consider the potential for the proposed project to result in impacts on cultural resources countywide.
- **Energy:** The geographic scope of the cumulative analysis for energy resources is the service area for the two energy providers, MCE and Pacific Gas and Electric Company.
- **Geology and Soils:** Geology and soils impacts are site-specific and generally do not combine to result in cumulative impacts.
- **Greenhouse Gas Emissions:** GHG emissions impacts are inherently cumulative. Therefore, the analysis in Section 5.8 is the proposed project's cumulative contribution to GHG emissions impacts.

- **Hazards and Hazardous Materials:** The cumulative analysis for hazardous materials impacts is countywide. Cumulative impacts related to airports consider cumulative development within the airport influence areas of each airport.
- **Hydrology and Water Quality:** Cumulative water quality impacts are based on the boundaries of the San Francisco RWQCB (Region 2) and Central Valley RWQCB (Region 5).
- **Land Use and Planning:** Cumulative impacts are based on applicable jurisdictional boundaries and related plans, including the general plans of incorporated cities within the county and regional land use plans (e.g., the RTP/SCS).
- **Mineral Resources:** The geographic scope of cumulative impacts to mineral resources is all regionally significant mineral resource areas and recovery sites countywide.
- **Noise:** Cumulative construction impacts are considered in the context of countywide development that could result in construction noise levels higher than those of development under the proposed project alone at some receptor locations. Long-term stationary noise sources associated with the development and activities under the proposed project, combined with other cumulative projects, make up cumulative stationary impacts. Cumulative operational noise impacts consider whether future countywide development would significantly affect the roadway noise and, if so, whether the proposed project's contribution to the cumulative impact would be considerable.
- **Population and Housing:** Cumulative impacts are based on regional demographic patterns identified in regional plans (e.g., the RTP/SCS).
- **Public Services:** Cumulative impacts are based on cumulative development within each service provider's boundaries.
- **Recreation:** Cumulative impacts are assessed relative to potential park and open space demand countywide.
- **Transportation:** The VMT analysis considers the projected development under the proposed project to determine its cumulative contribution to VMT in the region. The analysis is based on the Contra Costa Transportation Authority's Countywide Travel Demand Model and regional growth projections identified by ABAG.
- **Tribal Cultural Resources:** Cumulative impacts related to tribal cultural resources are based on the local Native American tribes' culturally significant areas, which include, but are not limited to, cultural landscapes and regions to specific heritage sites and other tribal cultural places.
- **Utilities and Service Systems:** Cumulative impacts related to utilities and service systems are based on cumulative development within each service provider's boundaries.
- **Wildfire:** Cumulative impacts related to wildfire are based on the potential development in and near fire hazard severity zones.

4.5 REFERENCES

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4. Environmental Setting

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5. Environmental Analysis

Chapter 5 examines the environmental setting of the proposed project, analyzes its effects and the significance of its impacts, and recommends mitigation measures to reduce or avoid impacts. This chapter has a separate section for each environmental topic that was determined to need further study in the environmental impact report (EIR). This scope was determined in the Notice of Preparation (NOP), which was published on September 20, 2023 (see Appendix 2-1), and through public and agency comments received during the NOP comment period from September 20, 2023, to October 20, 2023 (see Appendix 2-1). Environmental issues and their corresponding EIR sections are:

- Section 5.1 Aesthetics
- Section 5.2 Agriculture and Forestry Resources
- Section 5.3 Air Quality
- Section 5.4 Biological Resources
- Section 5.5 Cultural and Tribal Cultural Resources
- Section 5.6 Energy
- Section 5.7 Geology and Soils
- Section 5.8 Greenhouse Gas Emissions
- Section 5.9 Hazards and Hazardous Materials
- Section 5.10 Hydrology and Water Quality
- Section 5.11 Land Use and Planning
- Section 5.12 Mineral Resources
- Section 5.13 Noise
- Section 5.14 Population and Housing
- Section 5.15 Public Services and Recreation
- Section 5.16 Transportation
- Section 5.17 Utilities and Service Systems
- Section 5.18 Wildfire

EIR Sections 5.1 through 5.18 provide a detailed discussion of the environmental setting, impacts associated with the proposed project, and mitigation measures designed to reduce significant impacts where required and when feasible. The residual impacts following the implementation of any mitigation measure are also discussed.

Organization of Environmental Analysis

To assist the reader with comparing information between environmental issues, each section is organized under nine major headings:

5. Environmental Analysis

- Environmental Setting
- Thresholds of Significance
- Programs, Plans, and Policies
- Environmental Impacts
- Cumulative Impacts
- Level of Significance Before Mitigation
- Mitigation Measures
- Level of Significance After Mitigation
- References

In addition, Chapter 1, *Executive Summary,* includes a table summarizing all impacts by environmental issue.

Terminology Used in This Draft EIR

The level of significance is identified for each impact in this Draft EIR. Although the criteria for determining significance are different for each topic area, the environmental analysis applies a uniform classification of the impacts based on definitions consistent with the California Environmental Quality Act (CEQA) and the CEQA Guidelines:

- **No impact.** The project would not impact the environment.
- **Less than significant.** The project would not cause any substantial, adverse impact on the environment.
- **Less than significant with mitigation incorporated.** The EIR includes mitigation measures that avoid substantial adverse impacts on the environment.
- **Significant and unavoidable.** The project would cause a substantial adverse impact on the environment, and no feasible mitigation measures are available to reduce the impact to a less-than-significant level.

5.1 AESTHETICS

This section describes the regulatory framework and existing aesthetic character of the Environmental Impact Report (EIR) Study Area and evaluates the potential impacts on visual resources from future development that could occur by adopting and implementing the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project.

5.1.1 Environmental Setting

5.1.1.1 REGULATORY BACKGROUND

State

Caltrans Scenic Highway Program

In 1963, California's Scenic Highway Program was created to preserve and protect the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. The State laws governing this program are in the Streets and Highways Code, Sections 260 to 263, and the California Department of Transportation (Caltrans) oversees the program. Caltrans defines a scenic highway as any freeway, highway, road, or other public right-of-way that traverses an area of exceptional scenic quality. Suitability for designation as a State Scenic Highway is based on three criteria described in Caltrans' *Guidelines for Official Designation of Scenic Highways (2008)* (Caltrans 2022):

- **Vividness.** The extent to which the landscape is memorable. This is associated with the distinctiveness, diversity, and contrast of visual elements.
- **Intactness.** The integrity of visual order and the extent to which the natural landscape is free from visual intrusions (e.g., buildings, structures, equipment, grading).
- **Unity.** The extent to which development is sensitive to and visually harmonious with the natural landscape.

California Building Code

The State of California provides a minimum standard for building design through Title 24, Part 2, of the California Code of Regulations, commonly referred to as the California Building Code (CBC). The CBC is updated every three years. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Contra Costa County regularly adopts each new CBC update under the Contra Costa County Ordinance Code Division 74, *Building Code*. The CBC includes standards for outdoor lighting that are intended to reduce light pollution and glare by regulating light power and brightness, shielding, and sensor controls.

California Building Code: CALGreen

The California Building Standards Commission adopted the California Green Building Standards Code, also known as CALGreen. As part of the CBC, CALGreen is in Part 11 of Title 24. CALGreen establishes building standards aimed at enhancing the design and construction of buildings using building concepts that reduce negative impacts and increase positive environmental impacts by encouraging sustainable construction

practices. Specifically, Section 5.106.8, *Light Pollution Reduction*, establishes backlight, uplight, and glare ratings to minimize the effects of light pollution for nonresidential development. The local building permit process enforces the mandatory provisions of CALGreen. The County regularly adopts each new CALGreen update under Chapter 74-2, *Adoption*, of Division 74 of the County Ordinance Code.

Senate Bill 743

As described in Chapter 5, *Environmental Analysis*, of this Draft EIR, Senate Bill (SB) 743, which became effective on January 1, 2014, amended the California Environmental Quality Act (CEQA) by adding California Public Resources Code Section 21099 regarding analysis of aesthetics impacts for urban infill projects, among other provisions. CEQA Section 21099(d)(1), states, "Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site located within a transit priority area (TPA) shall not be considered significant impacts on the environment."

Accordingly, these topics are no longer to be considered in determining significant environmental effects for projects that meet all three of the following criteria:

- Is located on an infill site which is defined as "a lot located within an urban area that has been previously developed or on a vacant site where at least 75 percent of the perimeter of the site adjoins or is separated only by an improved public right-of-way from, parcels that are developed with qualified urban uses."
- Is a residential, mixed-use residential, or an employment-center project.
- Is in a TPA, which is defined as "an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program adopted pursuant to Section 450.216 or Section 450.322 of Title 23 of the Code of Federal Regulations."

The EIR Study Area includes two TPAs along the Bay Area Rapid Transit (BART) line (MTC 2021). Accordingly, in compliance with SB 743, no significant aesthetic impact findings can be made in this environmental analysis for potential future development in the TPAs surrounding the BART rail line. Aesthetic impacts are not discussed further in this EIR with respect to potential future development in these designated TPAs. As appropriate, aesthetic impacts are only considered for potential future development outside of these areas.

Regional

San Francisco Bay Plan

In 1969, the McAteer-Petris Act designated the Bay Conservation and Development Commission (BCDC) as the agency responsible for the protection of the San Francisco Bay and its natural resources. BCDC fulfills this mission through the implementation of the *San Francisco Bay Plan* (Bay Plan), an enforceable plan that guides the future protection and use of San Francisco Bay and its shoreline (BCDC 2020). The Bay Plan includes a range of policies on public access, water quality, project design, and dredging and fill. The Bay Plan also designates shoreline areas that should be reserved for water-related sports, industry, and public recreation; airports; and wildlife areas. BCDC's jurisdiction includes San Pablo Bay, Carquinez Strait, Central Bay North, and Suisun Bay and Marsh; portions of the shorelines of these bays are within the EIR Study Area. Impacts

related to biological resources, water quality, land use and planning, and recreation are discussed in Section 5.4, *Biological Resources*, Section 5.10, *Hydrology and Water Quality*, Section 5.11, *Land Use and Planning*, and Section 5.15, *Public Services and Recreation,* of this Draft EIR, respectively.

BCDC has jurisdiction within 100 feet of the San Francisco Bay's shoreline, and proposed development in its jurisdiction is subject to BCDC *Public Access Design Guidelines*, which are intended to ensure that maximum feasible public access is provided (BCDC 2005). BCDC defines "public access" to include physical public access to and along the shoreline of the San Francisco Bay and visual public access to the San Francisco Bay from other public spaces. Physical improvements, as defined by BCDC, may include waterfront promenades, trails, plazas, play areas, overlooks, parking spaces, landscaping, site furnishings, and connections from public streets to the water's edge.

Local

Contra Costa County Ordinance Code

Chapter 76-4 – Modifications

Section 76-4.612, *Public Nuisance Lighting*, requires that lighting fixtures be installed, controlled, or directed so that the light will not glare or be blinding to pedestrians or vehicular traffic or on adjoining property.

Chapter 82-1 – 65/35 Land Preservation Plan

Chapter 82-1, *65/35 Land Preservation Plan*, limits potential urban development in the county to 35 percent of the land in the county, preserving the remaining 65 percent for agriculture, open space, wetlands, parks, and other nonurban uses. Section 82-1.010 describes the Urban Limit Line (ULL), which prohibits that County from designating any land located outside the ULL for an urban land use.

Chapter 814-2 – SD-1 Slope Density and Hillside Development Combining District

Chapter 814-2, *SD-1 Slope Density and Hillside Development Combining District*, provides objectives for the regulation of residential slope density and hillsides, which includes requiring the retention of trees and other vegetation that stabilize steep hillsides, retaining moisture, minimizing erosion, enhancing the natural scenic beauty, and, where necessary, requiring additional landscaping to enhance the scenic and safety qualities of the hillsides.

Chapter 816-6 – Tree Protection and Preservation

Chapter 816-6, *Tree Protection and Preservation*, provides for the preservation of certain protected trees in the unincorporated county. In addition, this Chapter provides for the protections of trees on private property by controlling tree removal while allowing for reasonable enjoyment of private property rights and property development for the following reasons:

1. The County finds it necessary to preserve trees on private property in the interest of the public health, safety, and welfare and to preserve scenic beauty.

2. Trees provide soil stability, improve drainage conditions, provide habitat for wildlife, and provide aesthetic beauty and screening for privacy.

3. Trees are a vital part of a visually pleasing, healthy environment for the unincorporated area of the county.

6th Cycle Housing Element

The following policies are from the 6th cycle Housing Element and pertain to aesthetics:

- **Policy HE-P1.2:** To the extent practicable, focus rehabilitation expenditures and code enforcement efforts in communities with a high concentration of older and/or substandard residential structures for continued reinvestment in established neighborhoods. The goal of the code enforcement effort is to improve quality of life in these neighborhoods.
- **Policy HE-P1.1:** Assist low-income homeowners in maintaining and improving residential properties through housing rehabilitation and energy-efficiency assistance programs. Promote increased awareness among property owners and residents of the importance of property maintenance to neighborhood quality.
- **Policy HE-P2.5:** Encourage innovative housing design and building types to lower housing costs and provide high quality options for affordable housing.
- **Policy HE-P2.6:** Plan for a variety of housing types in the county. Encourage innovative, nontraditional designs and layouts in response to evolving housing needs. Provide housing opportunities for all economic segments of the community while ensuring compatibility with surrounding uses.

5.1.1.2 EXISTING CONDITIONS

Land uses in the county include both urban and rural areas with open spaces between developed areas. In the West and Central County, primary uses in suburban cities and towns are residential, commercial, and industrial. In the East County, land is still primarily used for agriculture and general open space. Over the years, development pressure has steadily moved eastward from the flat Baylands, to the valleys near Mount Diablo, and now to the communities of East County. The elongated corridors of cities and towns are connected by a network of major transportation routes linking the county directly to employment centers in San Francisco and Alameda Counties.

State Route (SR) 24 from the Alameda County line to the Interstate (I-) 680 interchange, and I-680 south of that interchange to the Alameda County line are State-designated scenic routes by Caltrans (Contra Costa County 2005). SR 4 is eligible for a scenic highway designation. Figure 5.1-1, *Scenic Resources*, shows the County-designated scenic routes and scenic ridges from the proposed General Plan. Scenic freeways, expressways, and roadways shown in the figure include public roadways that pass through picturesque natural landscapes. These roads tend to offer sweeping views of particularly beautiful areas or prominent features, such as valleys and mountain ranges. They also include the State-designated scenic route and eligible scenic highway described previously. Scenic ridges shown in the figure include ridges that contribute to the scenic quality and character of a community or locale. In many areas, visually prominent ridges offer a striking and welcome contrast to the urban environment.

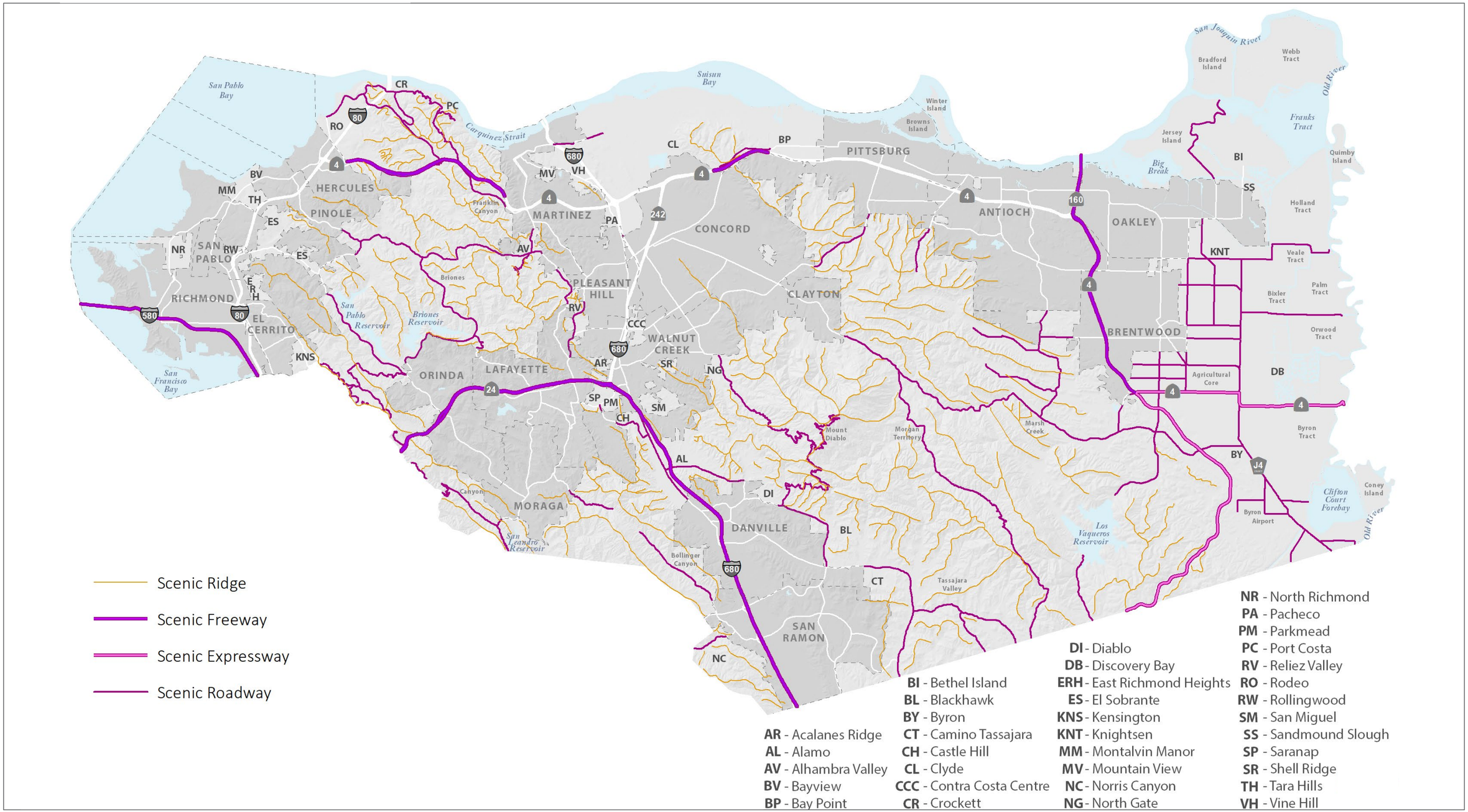

Figure 5.1-1
Scenic Resources

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5.1.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

AE-1 Have a substantial adverse effect on a scenic vista.

AE-2 Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.

AE-3 In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point). In urbanized areas, conflict with applicable zoning and other regulations governing scenic quality.

AE-4 Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

5.1.3 Programs, Plans, and Policies

5.1.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to aesthetic resources. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Policy LU-P2.1:** Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.
- **Policy LU-P2.3:** Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.
- **Policy LU-P2.6**: Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).
- **Policy LU-P4.3**: Encourage smooth transitions between new and existing or planned development.
- **Policy LU-P4.4**: Require site and building reconfigurations, setback increases, landscaping enhancements, screening, or other design solutions wherever necessary to minimize potential conflicts between uses.
- ***Policy LU-P4.5:*** *Require shadow and solar access studies for new multiple-family residential, mixed-use, commercial, and industrial projects greater than three stories in height or with obvious potential to significantly shade parks, commercial nurseries, residential yards, solar arrays, and other uses that are sensitive to loss of sunlight.*

- **Policy LU-P4.7**: Encourage residential and mixed-use buildings over four stories tall to incorporate setbacks or other massing changes on upper floors to create more human-scale and comfortable pedestrian environments.
- **Policy LU-P10.3**: Preserve the rural character of the following areas, which are displayed in Figure LU-5 of the General Plan (EIR Figure 5.1-2, *Rural and Agricultural Areas*):
    a) Alhambra Valley/Briones;
    b) Tassajara Valley;
    c) Agricultural Core between Brentwood and Discovery Bay;
    d) Crockett Hills between Crockett and State Route 4;
    e) Franklin Canyon/State Route 4 corridor between Hercules and Martinez;
    f) Bollinger Canyon Road corridor between Las Trampas Regional Wilderness and Crow Canyon Road;
    g) Norris Canyon Road corridor between San Ramon and the Alameda County line;
    h) Marsh Creek Road corridor between Clayton and Byron Highway;
    i) Kirker Pass Road corridor;
    j) Morgan Territory Road corridor;
    k) Deer Valley Road corridor.

  Pay special attention to potential aesthetic impacts in these areas and ensure such impacts are adequately mitigated.

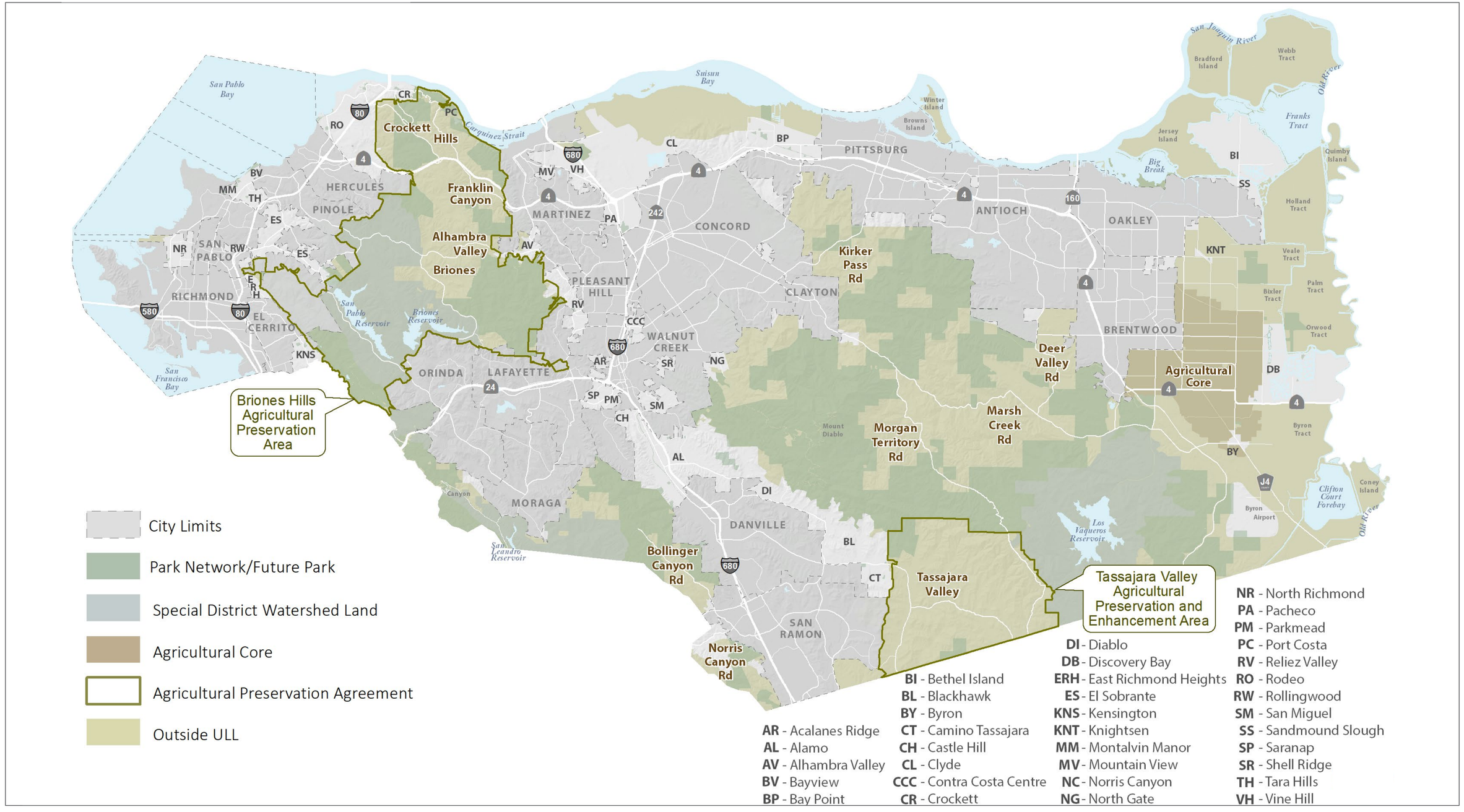

Figure 5.1-2
Rural and Agricultural Areas

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Conservation, Open Space, and Working Lands Element

- **Policy COS-P6.1:** Preserve natural woodlands and significant trees, particularly mature native species
- **Action COS-A6.2:** Develop an Oak Woodland Conservation Program that establishes special mitigation ratios for removal of oak trees, along with specific tree replacement and planting standards to ensure long-term growth and survival. Amend the County Ordinance Code as needed to implement the program.
- **Policy COS-P9.8:** Require design excellence for new development along Bay and Delta waterways to enhance the visual quality of these areas.
- ***Policy COS-P12.1:*** *Deny applications for development that would destroy unique and irreplaceable natural features, such as distinctive rock formations.*
- ***Policy COS-P12.2****: Require redesign of project components that negatively impact viewsheds or the visual quality of the area.*
- ***Policy COS-P12.3****: Prohibit development within 100 vertical feet of the top of designated scenic ridges and within 50 vertical feet of other visually prominent ridgelines. Exceptions may be considered on existing legal lots where no other feasible building sites exist, and for infrastructure that requires high-elevation siting, such as wind turbines, communications towers, and water tanks. When siting buildings or infrastructure on or near ridges is unavoidable, require appropriate measures, such as screening, undergrounding, or camouflaging to mitigate visual impacts.*
- **Policy COS-P12.4**: Preserve the scenic qualities of hillsides by encouraging designs that are sensitive to a site's topography and prohibiting unnecessary grading and vegetation removal.
- **Policy COS-P12.5**: Require restoration of natural contours and vegetation after grading and other land disturbances.
- **Policy COS-P12.6:** Prohibit extreme topographic modification, such as filling in canyons or removing prominent hilltops. Exemptions may be considered for landfills, mining operations, and public or semi-public projects that necessitate such modifications.
- **Policy COS-P12.7:** Support preservation and enhancement of natural and human-made features that contribute to the scenic quality of the landscape and viewshed along designated scenic routes, and discourage projects that interfere with public views of those features.
- ***Policy COS-P12.8****: Require a visual impact analysis for projects with potential to significantly impact public views along designated scenic routes.*
- **Policy COS-P12.9**: Enable flexibility in the design of projects in scenic corridors and support innovative solutions to protect views and visual quality.
- **Action COS-A12.1:** Amend County Ordinance Code Division 814 – Slope and Hillside Development to convert the requirements from being a combining district to design and development standards related to building envelopes, building massing, colors, materials, grading, draining, and erosion control.
- **Action COS-A12.2**: Adopt design guidelines to preserve views, vistas, and defining natural features along designated scenic routes.

5.1.3.2 PROPOSED CAP STRATEGIES AND ACTIONS

There are no strategies or actions in the proposed Climate Action Plan (CAP) that are applicable to aesthetic resources.

5.1.4 Environmental Impacts

Impact 5.1-1: Development in accordance with the proposed project would not substantially alter or damage scenic vistas or substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway. [Thresholds AE-1 and AE-2]

Proposed General Plan

As shown in Figure 5.1-1, scenic resources are identified throughout the county, including the State-designated scenic route SR-24 and eligible scenic route SR-4. The county has vast open spaces, estuary systems, rolling hills that encompass an outstanding variety of scenic natural vistas, water resources, and landscapes. Therefore, future development under the proposed General Plan could impact scenic resources.

As identified in Section 5.1.3.1, the proposed General Plan includes policies aimed at reducing impacts to identified scenic resources from future development, including:

- **Policy LU-P4.3:** Encourage smooth transitions between new and existing or planned development.
- **Policy LU-P4.4:** Require site and building reconfigurations, setback increases, landscaping enhancements, screening, or other design solutions wherever necessary to minimize potential conflicts between uses.
- **Policy LU-P10.3:** Preserve the rural character of the following areas, which are displayed in Figure LU-5 [of the General Plan] (EIR Figure 5.1-2):
    a) Alhambra Valley/Briones;
    b) Tassajara Valley;
    c) Agricultural Core between Brentwood and Discovery Bay;
    d) Crockett Hills between Crockett and State Route 4;
    e) Franklin Canyon/State Route 4 corridor between Hercules and Martinez;
    f) Bollinger Canyon Road corridor between Las Trampas Regional Wilderness and Crow Canyon Road;
    g) Norris Canyon Road corridor between San Ramon and the Alameda County line;
    h) Marsh Creek Road corridor between Clayton and Byron Highway;
    i) Kirker Pass Road corridor;
    j) Morgan Territory Road corridor;
    k) Deer Valley Road corridor.

    Pay special attention to potential aesthetic impacts in these areas and ensure such impacts are adequately mitigated.

- **Policy COS-P12.2:** Require redesign of project components that negatively impact viewsheds or the visual quality of the area.
- **Policy COS-P12.3:** Prohibit development within 100 vertical feet of the top of designated scenic ridges and within 50 vertical feet of other visually prominent ridgelines. Exceptions may be considered on existing legal lots where no other feasible building sites exist, and for infrastructure that requires high-elevation siting, such as wind turbines, communications towers, and water tanks. When siting buildings or infrastructure on or near ridges is unavoidable, require appropriate measures, such as screening, undergrounding, or camouflaging to mitigate visual impacts.
- **Policy COS-P12.4:** Preserve the scenic qualities of hillsides by encouraging designs that are sensitive to a site's topography and prohibiting unnecessary grading and vegetation removal.
- **Policy COS-P12.5:** Require restoration of natural contours and vegetation after grading and other land disturbances.
- **Policy COS-P12.6:** Prohibit extreme topographic modification, such as filling in canyons or removing prominent hilltops. Exemptions may be considered for landfills, mining operations, and public or semi-public projects that necessitate such modifications.
- **Policy COS-P12.7:** Support preservation and enhancement of natural and human-made features that contribute to the scenic quality of the landscape and viewshed along designated scenic routes, and discourage projects that interfere with public views of those features.
- **Policy COS-P12.8:** Require a visual impact analysis for projects with potential to significantly impact public views along designated scenic routes.

In addition, all development in the county must comply with building and design standards that would ensure new development complements existing development. Development allowed by the proposed General Plan would be required to comply with development standards in the County Ordinance Code, such as Chapter 814-2, which governs hillside development. Additionally, the ULL would limit the extent of urban development, preserving agricultural and open space areas from urbanization, while the 65/35 Standard would ensure that urban development is limited to no more than 35 percent of the county's land area, preserving the remaining 65 percent for agriculture, open space, wetlands, parks, and other non-urban uses. The proposed project would continue to support these standards through Policy LU-P2.1, which directs the County to continue implementing the 65/35 Land Preservation Standard in order to preserve agricultural land, rangeland, natural habitats, watersheds, and open space, while focusing development in urban and suburban communities, and Policy LU-P2.3, which directs the County to limit development outside the ULL to non-urban uses.

Public Resources Code Section 12220(g) defines "forest land" as land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. As noted in Section 5.2, *Agriculture and Forestry Resources*, there are a total of approximately 63,806 acres of forested area in the county. Although development allowed by the proposed General Plan would consist mainly of infill and redevelopment, future development couldcreate aesthetic impacts through the conversion of forest to non-forest lands. However, Chapter 816-6, *Tree Protection and Preservation*, of the County Ordinance Code requires that a property owner obtain a tree permit from the County before trenching, grading, or filling within the dripline of any protected tree or before cutting down, destroying,

trimming by topping, or removal of any protected tree. In addition, the proposed Conservation, Open Space, and Working Lands Element includes policies aimed at preserving and protecting trees from future development. Specifically, Policy COS-P6.1 directs the County to preserve natural woodlands and significant trees, particularly mature native species, and Action COS-A6.2 directs the County to establish an Oak Woodland Conservation Program with mitigation ratios and tree replacement and planting standards.

The proposed project would not substantially alter scenic resources, and the urban nature of the development would be similar to existing conditions. Therefore, public vistas and scenic resources from publicly accessible locations in the county would not be adversely impacted. All General Plan policies, ordinances, and development standards would apply to future development, and impacts would be less than significant.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects that would have a direct, adverse effect on scenic resources. However, the proposed CAP includes actions that could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP. Where located in developed areas, these projects are not expected to significantly affect views from scenic vistas or viewsheds because they would be more likely to blend in with surrounding development and would not be likely to create changes to visual quality that would be visible from a scenic vista or that would significantly interrupt views available from scenic vistas. In addition, future projects facilitated by the CAP would need to comply with the applicable design standards, ordinances, and proposed General Plan policies discussed previously, which would mitigate potential aesthetic impacts. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.1-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.1-1 would be less than significant.

Impact 5.1-2: Development under the proposed project would alter visual appearance in the county but would not substantially degrade its existing visual character or quality. [Threshold AE-3]

Proposed General Plan

Although new developments could alter the visual appearance of the county, much of the area inside the ULL is already developed with urban and suburban uses. Future urban growth allowed by the proposed General Plan would be inside the ULL and would be anticipated to develop over time. As discussed in Impact 5.1-2, the proposed project would support the ULL and 65/35 Standard (i.e., through Policy LU-P2.1 and Policy LU-P2.4), which preserve agricultural land, rangeland, natural habitats, watersheds, and open space, while focusing development in urban and suburban communities.

Adherence to County ordinances regarding development, lighting, and landscaping is required of all development. Compliance with development regulations is verified prior to issuance of a building permit and is therefore not reliant on future CEQA action. Because future urban development would be inside the ULL and all projects must comply with design regulations of the County, the proposed project would not substantially degrade the visual character or quality of the county, and impacts are less than significant.

Proposed CAP

The proposed CAP does not include specific projects that could directly result in new or expanded development that could substantially degrade the existing visual character or quality of public views of the area due to their height, bulk, pattern, scale, character, or other features; however, projects facilitated by proposed CAP strategies and actions could do so. All projects facilitated by the proposed CAP strategies and actions must be consistent with the General Plan and comply with applicable provisions of the County Ordinance Code, including its regulation of height limits, setbacks, bulk, and other development standards appropriate to each zone. Therefore, the impact would be less than significant.

Level of Significance Before Mitigation: Impact 5.1-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.1-3 would be less than significant.

Impact 5.1-3: The proposed project would not generate substantial light and glare. [Threshold AE-4]

Proposed General Plan

The two major causes of light pollution are glare and spill light. Spill light is caused by misdirected light that illuminates outside the intended area. Glare is light that shines directly or is reflected from a surface into a viewer's eyes. Spill light and glare impacts are effects of a project's exterior lighting on adjoining uses and areas.

Sources of light in the county include building lighting (interior and exterior), security lighting, sign illumination, sports fields lighting, and parking area lighting. These sources of light and glare are mostly associated with residential, commercial, and industrial uses, as well as larger community parks. Other sources of nighttime light and glare include streetlights, vehicular traffic along surrounding roadways, and ambient lighting from surrounding communities.

Future development allowed by the proposed General Plan could increase nighttime light and glare, including in areas that are currently undeveloped. However, all new development is required to comply with the lighting standards of the County Ordinance Code in Chapter 76-4, *Modifications*, which requires that lighting fixtures be installed, controlled, or directed so that the light will not glare or be blinding to pedestrians or vehicular traffic or on adjoining property. Additionally, landscaping, walls, and fences that would be constructed as part of future projects would further reduce light and glare spillover. Furthermore, future development must comply with the most recent CALGreen standards, including 5.106.8, *Light Pollution Reduction*, which establishes

backlight, uplight, and glare ratings to minimize light pollution for nonresidential development. The local building permit process enforces the provisions of CALGreen. Through compliance with the County Ordinance Code and site-planning/design standards pertaining to light and glare, any potential spillover would be minimized, and the impact is considered less than significant.

Proposed CAP

The proposed CAP could result in the introduction of lighting to the environment as a result of the development of projects called for in proposed CAP actions, such as mixed-use or infill development, building retrofits, or solar energy generation facilities. Depending on the location and design of these projects, they have the potential to create shade, shadows, daytime or nighttime glare, or nighttime lighting of buildings or other structures. However, through compliance with the County Ordinance Code and site-planning/design standards pertaining to light and glare, any potential spillover would be minimized, and the impact is considered less than significant.

Level of Significance Before Mitigation: Impact 5.1-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.1-3 would be less than significant.

5.1.5 Cumulative Impacts

Cumulative aesthetic impacts are based on potential changes to the visual quality in the county as development occurs consistent with the proposed project. While most development is focused within the ULL, there will be some development that is outside the ULL and still consistent with the proposed General Plan. Future development will alter the visual quality of the landscape through the introduction of structures on undeveloped parcels. Large-scale development will be discretionary and subject to design review by the Conservation and Development Department. Smaller-scale projects may be permitted uses and might not be subject to the design review process. However, all development must adhere to the General Plan policies, County Ordinance Code, and development standards that would ensure the aesthetics of new development is consistent with the General Plan. Therefore, the cumulative impacts of development consistent with the proposed General Plan are considered are less than cumulatively considerable.

5.1.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.1.7 Mitigation Measures

No mitigation measures are required.

5.1.8 Level of Significance After Mitigation

Impacts would be less than significant.

5.1.9 References

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Metropolitan Transportation Commission (MTC). 2021. "Transit Priority Areas (2021)" (Webmap). https://opendata.mtc.ca.gov/datasets/370de9dc4d65402d992a769bf6ac8ef5_1/explore?location=37.832047%2C-122.143055%2C10.44

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5.2 AGRICULTURE AND FORESTRY RESOURCES

This section describes the potential impacts to agricultural and forestry resources associated with the adoption and implementation of the proposed project. This section describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential impacts to agricultural and forestry resources, and identifies proposed General Plan policies and actions that could minimize any potentially significant impacts.

Information regarding forested areas in this section is based in part on the *Contra Costa County General Plan Update: Biological Resources Existing Conditions Report*, or "Existing Conditions Report," which is included in the Technical Appendices to this Draft Environmental Impact Report (EIR) as Appendix 5.4-1. The Existing Conditions Report encompasses the entire county for the existing biological resources conditions. This is a conservative approach as the county is treated as a continuous natural habitat that is not bound by artificial boundaries such as city limits.

5.2.1 Environmental Setting

5.2.1.1 REGULATORY BACKGROUND

State

California General Plan Law

The California Government Code (Section 65302[d]) requires general plans to include an open space and conservation element for the conservation, development, and utilization of natural resources—including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources. The conservation element must consider the effect of development on natural resources that are on public lands. The element must also cover:

- The reclamation of land and waters.
- Prevention and control of the pollution of streams and other waters.
- Regulation of the use of land for the accomplishment of the conservation plan.
- Prevention, control, and correction of the erosion of soils, beaches, and shores.
- Protection of watersheds.
- Location, quantity, and quality of the rock, sand, and gravel resources.
- Waterways, flood corridors, riparian habitats, and land that may accommodate floodwater for groundwater recharge and stormwater management.

In October 2017, the State legislature passed Senate Bill (SB) 732, which authorizes a county or city to develop an agricultural land component of the open space element or a separate agricultural element in its general plan. For local governments that choose this option, the bill authorizes the California Department of Conservation (DOC) to award grants, bond proceeds, and other assistance provided the element meets certain requirements.

Farmland Mapping and Monitoring Program

The California Natural Resources Agency is charged with restoring, protecting, and maintaining the state's natural, cultural, and historical resources. Within it, the DOC provides technical services and information to promote informed land use decisions and sound management of the state's natural resources. DOC manages the Farmland Mapping and Monitoring Program (FMMP), which supports agriculture throughout California by developing maps and statistical data for analyzing land use impacts to farmland. FMMP publishes a field report for each county in the state; the most recent field report for Contra Costa County was published in 2018. The field report categorizes land by agricultural production potential, according to the following classifications:

- **Prime Farmland** has the best combination of physical and chemical features able to sustain long-term agricultural production. Prime Farmland has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agriculture production at some time during the four years prior to the mapping date.
- **Farmland of Statewide Importance** is like Prime Farmland, but with minor shortcomings, such as steeper slopes or less ability to store moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- **Unique Farmland** consists of lesser quality soils used to produce the state's leading agricultural crops. This land is usually irrigated but may include no irrigated orchards or vineyards as found in some climatic zones in California. Land must have been farmed at some time during the four years prior to the mapping date.
- **Farmland of Local Importance** consists of dryland grains and irrigated pastures not meeting the definitions of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. In Contra Costa County, this includes lands within the Tassajara area, extending eastward to the county boundary and bordered on the north by the Black Hills; the Deer, Lone Tree, and Briones Valleys; the Antioch area; and the Delta. These lands are typically used for livestock grazing. They are capable of producing dryland grain on a two-year summer fallow or longer rotation with volunteer hay and pasture. The farmlands in this category are included in the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service's (NRCS) Land Capability Classes I, II, III, and IV, and lack some irrigation water (DOC 2018a).
- **Grazing Land** is the land on which the existing vegetation is suited to the grazing of livestock.
- **Confined Animal Agriculture** lands include poultry facilities, feedlots, dairy facilities, and fish farms. In some counties, confined animal agriculture is a component of the farmland of local importance category.
- **Nonagricultural and Natural Vegetation** includes heavily wooded, rocky, or barren areas; riparian and wetland areas; grassland areas that do not qualify for grazing land due to their size or land management restrictions; small water bodies; and recreational water ski lakes. Constructed wetlands are also included in this category.
- **Semi-agricultural and Rural Commercial Land** includes farmstead, agricultural storage and packing sheds, unpaved parking areas, composting facilities, equine facilities, firewood lots, and campgrounds.
- **Vacant or Disturbed Land** includes open field areas that do not qualify for an agricultural category, mineral and oil extraction areas, off-road vehicle areas, electrical substations, channelized canals, and rural freeway interchanges.
- **Rural Residential Land** includes residential areas of one to five structures per 10 acres.

- **Urban and Built-Up Land** is occupied by structures with a building density of at least one unit per 1.5 acres, or approximately six structures to a 10-acre parcel. Common examples include residential structures, industrial structures, commercial structures, institutional facilities, cemeteries, airports, golf courses, sanitary landfills, sewage treatment structures, and water control structures.
- **Water** is used to describe perennial water bodies with an extent of at least 40 acres.

California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, better known as the Williamson Act, conserves agricultural and open space lands through property tax incentives and voluntary restrictive land use contracts administered by local governments under State regulations. Private landowners voluntarily restrict their land to agricultural and compatible open space uses under minimum 10-year rolling term contracts, with counties and cities also acting voluntarily. In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather than potential market value.

Nonrenewal status is applied to Williamson Act contracts that are within the nine-year termination process, during which the annual tax assessment for the property gradually increases.

Forestland and Timberland Protection

State regulations such as the Forest Taxation Reform Act of 1976 and the Z'berg-Nejedly Forest Practice Act of 1973 (California Forest Practice Act) provide for the preservation of forest lands from encroachment by other, incompatible land uses and for oversight of the management of forest practices and forest resources.

Public Resources Code Section 12220(g) defines "forest land" for the purposes of the California Environmental Quality Act (CEQA) as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water-quality, recreation, and other public benefits.

The California Timberland Productivity Act of 1982, like the Land Conservation Act, was passed to encourage the production of timber resources. Government Code Section 51104(g) defines Timber, Timberland, and Timberland Production Zone for the purposes of CEQA and Timberland Preserve Zone, which may be used in city and county general plans.

- **Timber** means trees of any species maintained for eventual harvest for forest production purposes, whether planted or of natural growth, standing or down, on privately or publicly owned land, including Christmas trees, but does not mean nursery stock.
- **Timberland** means privately owned land, or land acquired for State Forest purposes, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, and which is capable of growing an average annual volume of wood fiber of at least 15 cubic feet per acre.
- **Timberland Production Zone** or **TPZ** means an area that has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h). With respect to the general plans of cities and counties, Timberland Preserve Zone means Timberland Production Zone.

County boards of supervisors may designate areas of timberland preserve, referred to as Timberland Production Zones, which restrict the land's use to the production of timber for an initial 10-year term in return for lower property taxes.

Local

Contra Costa County Ordinance Code

Title 8 – Zoning

The Zoning Code has six agricultural zones: General Agricultural District (A-2), Heavy Agricultural District (A-3), Agricultural Preserve District (A-4), and three Exclusive Agricultural Districts (A-20, A-40, and A-80). Uses allowed in the General Agricultural and Heavy Agricultural Districts include all types of agriculture, including general farming, wholesale horticulture and floriculture, wholesale nurseries and greenhouses, dairying, livestock production, poultry raising, animal breeding, forestry, and similar agricultural uses. Additionally, they allow other agricultural uses, including the erection and maintenance of buildings for the storage of agricultural products and equipment; sheds; warehouses; granaries; dehydration plants; hullers; fruit and vegetable packing plants; and agricultural cold storage plants on parcels at least 10 acres in size. The Agricultural Preserve District is intended to provide areas for the commercial production of food and other compatible uses consistent with the intent and purpose of the Williamson Act. The three Exclusive Agricultural Districts are intended to provide and protect areas for agricultural uses by preventing the development of urban and other uses that are incompatible with agriculture.

Chapter 84-32 of the Zoning Code includes the Forestry Recreation District (F-R). This District allows uses permitted in single-family residential districts and agricultural districts. Forestry is also listed as a permitted use under the A-2 and A-3 districts. The County intends to delete the F-R District from the Zoning Code.

Chapter 82-1 – 65/35 Land Preservation Plan

This chapter states that urban development in the county shall be limited to no more than 35 percent of the land in the county. At least 65 percent of all land in the county shall be preserved for agriculture, open space, wetlands, parks, and other nonurban use. The County's Urban Limit Line (ULL) was established in 1990 and is integral to enforcing the 65/35 Standard.

Chapter 810-2 – Agricultural Preserves

The Board of Supervisors designates areas of the county as agricultural preserves, pursuant to the California Land Conservation Act (Government Code Section 51200[ff], as amended), to be devoted to agricultural and compatible uses. This chapter establishes uniform standards, minimum acreage and parcel sizes, land use restrictions, and regulations regarding agricultural preserves.

Chapter 810-4 – Land Conservation Contracts

Land conservation contracts are contracts with the owners of land located within agricultural preserves, pursuant to the California Land Conservation Act. Contracts shall be for a term of ten years renewable annually in the manner provided in Government Code Section 51244. This chapter establishes uniform standards, land use restrictions, and regulations regarding land conservation contracts.

Chapter 816-6 – Tree Protection and Preservation

Chapter 816-6, *Tree Protection and Preservation*, provides for the preservation of certain protected trees in the unincorporated county. This chapter provides for the protection of trees on private property by controlling tree removal while allowing for reasonable enjoyment of private property rights and property development. The County Ordinance Code defines protected trees based on tree size, species, location, and other characteristics, as specified in Section 816-6.6004, *Protected Trees*.

Division 820 – Right to Farm

The Right to Farm Ordinance serves as a notification to owners, purchasers, residents, and users of property adjacent to agricultural operations of potential issues at the agriculture-urban interface. The Right to Farm Ordinance is intended to prevent the loss to the county of its agricultural resources by clarifying the circumstances under which agricultural operations may be considered a nuisance. It is also intended to promote a good-neighbor policy by requiring notification of purchasers and users of property adjacent to or near agricultural operations of the inherent potential problems associated with such purchase or residential use.

5.2.1.2 EXISTING CONDITIONS

This section describes agricultural land with respect to its physical conditions and the unique geography and environmental factors that contribute to high agricultural productivity in Contra Costa County.

Agricultural Uses

Contra Costa County is in the East Bay subregion of the San Francisco Bay Area. The farming environment in Contra Costa County is rich with high-quality soils. The USDA NRCS maps prime productive agricultural soils, which are classified as Class I and II soils and considered the very best soils for farming. As shown in Figure 5.2-1, *Prime Productive Agricultural Soils*, these soils are primarily in East County.

The State authority on farmland classification is the FMMP, as described in Section 5.2.1.1. The FMMP rates the quality of agricultural land according to soil ratings and land use. Figure 5.2-2, *Farmland Classifications within Contra Costa County*, shows the FMMP's farmland classifications in Contra Costa County. According to the most recently available data from the FMMP, approximately 82,647 acres of land in the EIR Study Area are classified as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance (DOC 2018b). Of these 82,647 acres, approximately 6,557 acres are within the County's ULL.

Agricultural Classifications and Williamson Act Contracts

Table 5.2-1, *FMMP Land Use in EIR Study Area,* compiles the 2020 FMMP inventory documenting land uses in the unincorporated county. As shown in Table 5.2-1, the unincorporated county contains 23,613 acres of Prime Farmland, 6,722 acres of Farmland of Statewide Importance, 2,767 acres of Unique Farmland, and 59,442 acres of Farmland of Local Importance. In total, the EIR Study Area is made up of approximately 16.7 percent Important Farmland. With the addition of Grazing Land, unincorporated Contra Costa County is 69 percent agricultural land. The majority of farmland in the county is outside of the County's ULL, as shown in Table 5.2-1. Agricultural land is primarily in the eastern portion of the county.

Table 5.2-1 FMMP Land Use in EIR Study Area

Land Use Category	EIR Study Area[1]	Inside ULL
Prime Farmland	23,613	591
Farmland of Statewide Importance	6,722	826
Unique Farmland	2,767	124
Farmland of Local Importance	59,442	5,002
Important Farmland Subtotal	**92,544**	**6,543**
Grazing Land	158,273	9,986
Agricultural Land Subtotal	**250,817**	**16,529**
Urban and Built-Up Land	147,124	27,804
Other Land	47,743	4,135
Water Area	108,255	1,075
Total Area Inventoried	**553,939**	**49,453**

Source: DOC 2020
[1] EIR Study Area includes all land in the unincorporated county; see Chapter 3, *Project Description*, for more details.

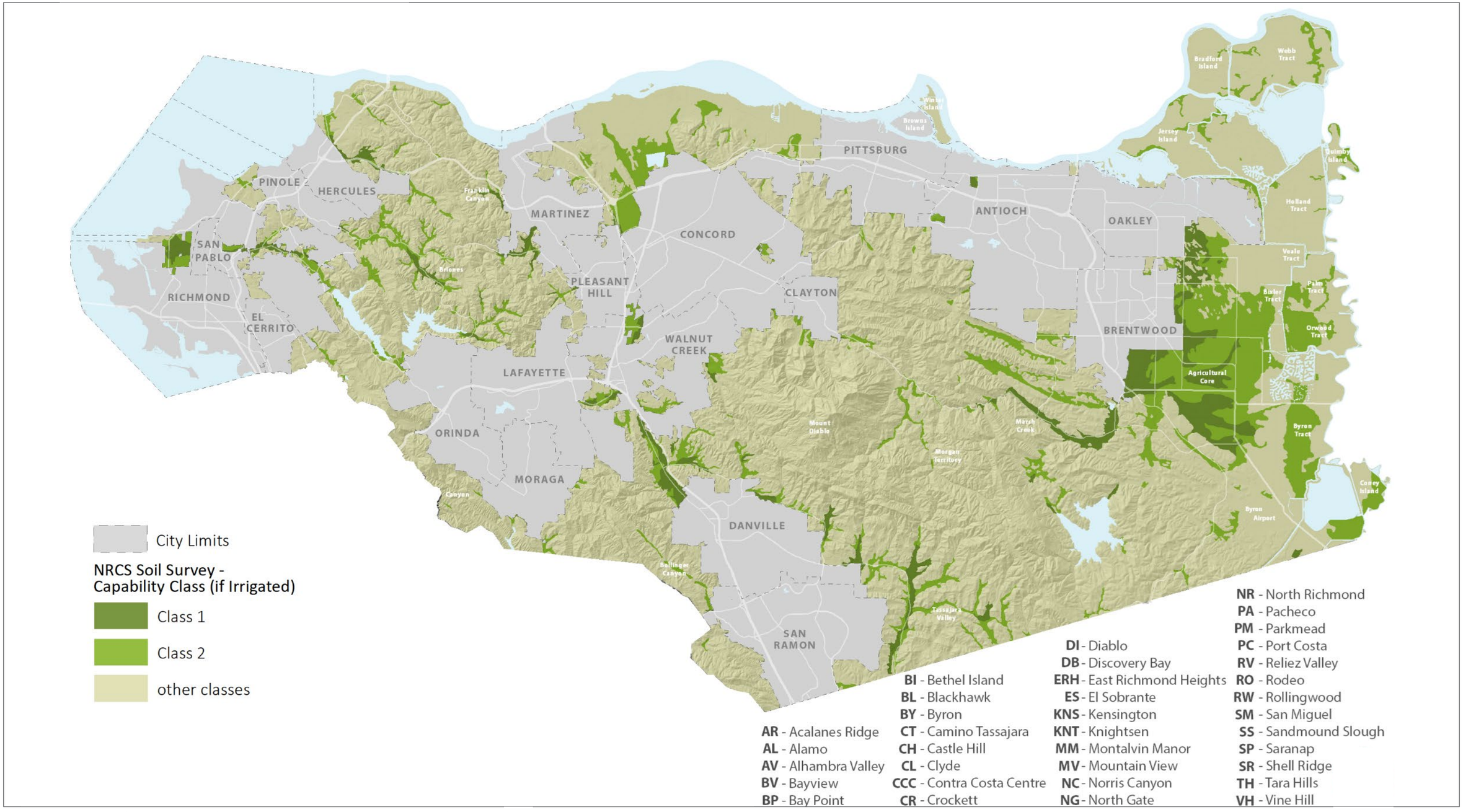
Contra Costa County has been implementing the Williamson Act since 1968 when the Board of Supervisors adopted Ordinance 68-53, which authorized the creation of Agricultural Preserves and the execution of Land Conservation Contracts pursuant to State law. Figure 5.2-3, *Active Williamson Act Contracts within Contra Costa County,* depicts active contracts, most of which are outside the ULL (DCD 2017).

Forest Land and Timberland

Contra Costa County does not designate any land within the EIR Study Area as Timber, Timberland, or Timberland Production Zone, according to Government Code Section 51104(g).

The upland areas of the county support grasslands, shrublands, woodlands, and forests. These natural communities are important because they provide carbon sequestration, nutrient cycling, forage and homes for wildlife, erosion control, and recreation, while also supporting agriculture and other working lands. Oak trees are an iconic part of the landscape in the county and throughout the state, recognized by State law with special protections for oak woodlands. Table 5.2-2, *Forest Land Acreage in Contra Costa County*, shows the averages of these forest land cover types.

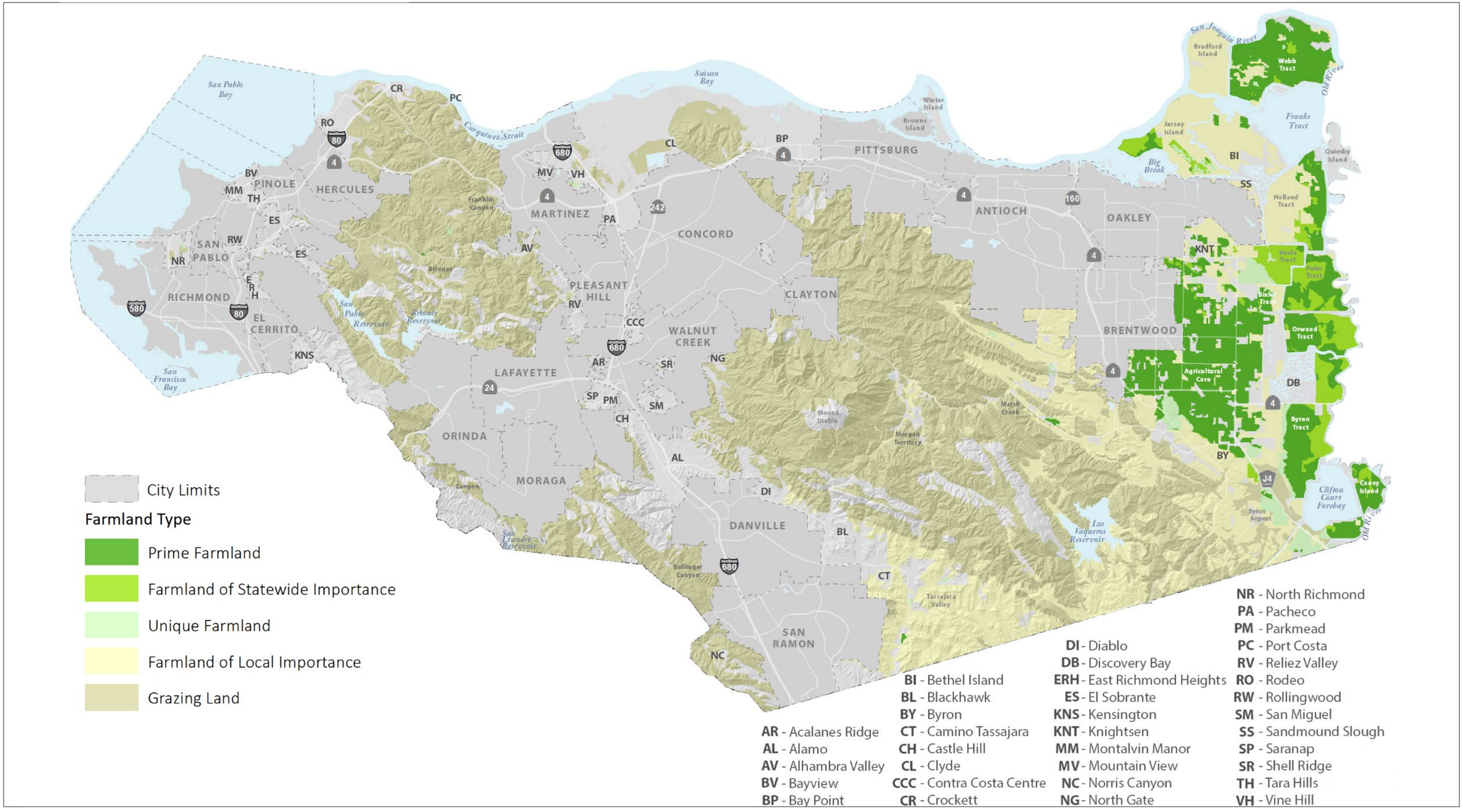
AGRICULTURE AND FORESTRY RESOURCES



Source: US Department of Agriculture (USDA); Natural Resources Conservation Service (NRCS) Soil Survey.

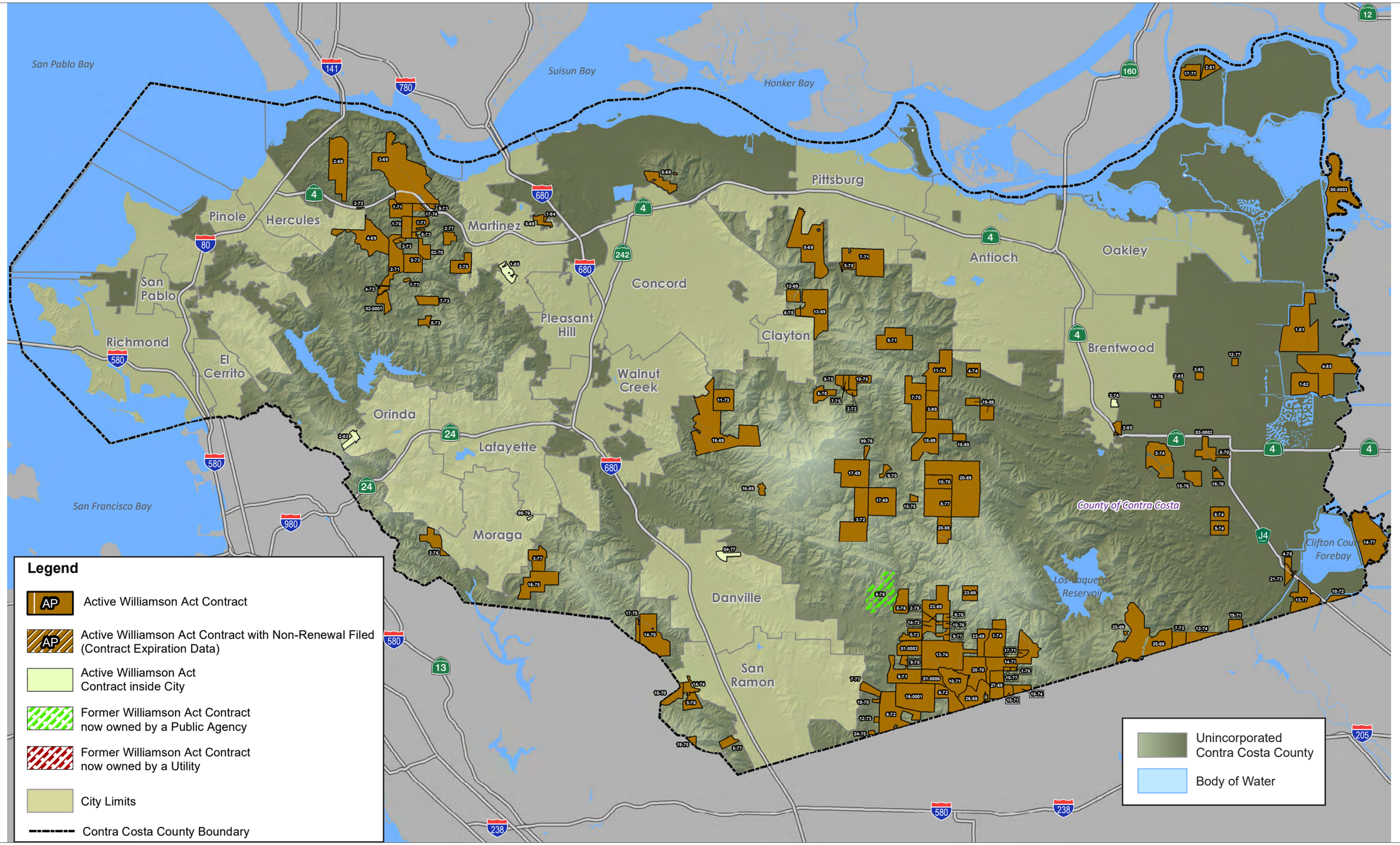
0 3.5
Scale (Miles)

Figure 5.2-1
Prime Productive Agricultural Soils



Source: California Department of Conservation - Farmland Mapping & Monitoring Program (FMMP) Important Farmland Map.

Figure 5.2-2
Farmland Classifications within Contra Costa County



Source: Contra Costa County Department of Conservation and Development, January 30th, 2024

0 3.5
Scale (Miles)

Figure 5.2-3
Active Williamson Act Contracts within Contra Costa County

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Table 5.2-2 Forest Land Acreage in Contra Costa County

Land Cover Type	Acres
Woodland	
Blue oak woodland	9,520
Cismontane juniper woodland*	67
Coast live oak forest and woodland	25,167
Mixed-oak woodland and forest	24,781
Montane hardwood*	1,595
Serpentine hardwood*	78
Valley oak woodland*	256
Conifer Forest	
Coulter pine forest*	68
Knobcone pine forest*	80
Ponderosa pine woodland*	544
Redwood forest*	818
Serpentine conifer*	21
Riparian Woodland	
Mixed riparian forest and scrub	811
Total	**63,806**

*Identified as a rare land cover type.
Source: ICF (Appendix 5.4-1)

5.2.2 Thresholds of Significance

The County has determined that a project would normally have a significant effect on the environment if the project would:

AG-1 Convert Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance (Important Farmland), as shown on the maps prepared pursuant to the FMMP, to nonagricultural use.

AG-2 Conflict with existing zoning for agricultural use, or a Williamson Act contract.

AG-3 Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).

AG-4 Result in the loss of forest land or conversion of forest land to non-forest use.

AG-5 Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Important Farmland to nonagricultural use or conversion of forest land to non-forest use.

5.2.3 Programs, Plans, and Policies

5.2.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to agricultural and forestry resources. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Policy LU-P2.1**: Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.
- ***Policy LU-P2.3:*** *Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.*
- **Action LU-A2.1**: Amend the County Ordinance Code to require the following prior to approval of a tentative map for subdivision in areas designated Agricultural Lands or Agricultural Core:
  a) Evidence of adequate groundwater supply to support intended uses, considering the cumulative, long-term demand.
  b) Demonstration that each parcel is suitable for an on-site wastewater treatment system.
  c) Satisfactory road and street access, particularly for emergency vehicles.
  d) Adequate regional drainage capacity, including downstream natural watercourses.
  e) Detailed site plans for each lot indicating building locations, driveways, well and leach field locations, energy-efficient and conserving features, location of hazards such as landslides and floodplains, necessary flood and stormwater management improvements, and fencing.
  f) Other information that may be required to confirm the safe use of each lot for its intended purpose.
- ***Policy LU-P10.4:*** *Maintain agricultural preserves in the Briones Hills and Tassajara Valley areas through agreements with adjacent cities to retain these areas for agricultural, open space, and other non-urban uses.*
- **Action LU-A10.1**: Amend County Ordinance Code Title 8 – Zoning related to development of homes and associated buildings and structures on agricultural properties to require clustering of such improvements to protect agricultural vitality and sustainability.
- **Action LU-A10.2**: Continue working with agricultural stakeholders to minimize the complexity, time, and expense of County permitting requirements for agricultural properties and maximize focus on meeting the objectives of the regulations.

Conservation, Open Space, and Working Lands Element

- **Goal COS-2**: A thriving and resilient agricultural sector based on resource conservation and sustainability practices.
  - ***Policy COS-P2.1****: Preserve large, contiguous areas of the county for agricultural production. Prohibit projects that would lead to fragmentation of agricultural areas.*
  - ***Policy COS-P2.2****: Preserve and protect productive agricultural land from conversion to urban uses, especially land designated as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland on the Important Farmland Map prepared by the California Department of Conservation; land containing Class 1 or Class 2 soils; and land designated Agricultural Core.*
  - **Policy COS-P2.3:** Require a 40-acre-minimum parcel size for subdivisions of prime productive agricultural land (i.e., Class 1 and Class 2 soils).
  - ***Policy COS-P2.4****: Require new projects adjacent to agriculture to establish buffers on their properties as necessary to minimize conflicts and protect agriculture.*
  - **Policy COS-P2.5**: When resolving conflicts between agricultural uses and urban uses, prioritize maintaining the viability of the agricultural uses.
  - ***Policy COS-P2.6****: Require deed disclosures for new residential development in or adjacent to areas designated or zoned for agricultural use. The disclosures must explain the potential disturbances associated with agricultural operations (e.g., dust, noise, odors, and use of pesticides) and reference the Right-to-Farm Ordinance, which protects agricultural operations from nuisance complaints and unreasonable restrictions.*
  - **Policy COS-P2.7**: Encourage owners of qualifying agricultural land to participate in the Williamson Act (Agricultural Preserve) Program.
  - **Policy COS-P2.8**: Support public infrastructure projects and programs that will increase, enhance, and protect agricultural land and its production capabilities.
  - **Policy COS-P2.9**: Coordinate with Byron-Bethany Irrigation District and East Contra Costa Irrigation District to facilitate water conservation, efficient use of agricultural irrigation water, and implementation of emerging water reuse technologies and practices.
  - **Policy COS-P2.10:** Support soil conservation and restoration programs. Encourage agricultural landowners to work with agencies such as the USDA's NRCS and Contra Costa RCD to reduce erosion and soil loss.
  - **Action COS-A2.1**: Review each update of the California Department of Conservation FMMP data and report to the Board of Supervisors on the quantity of land in the county converted to and from agricultural use.
  - **Action COS-A2.2:** Work with the agricultural community, Contra Costa LAFCO, and cities to establish programs and mechanisms to protect agricultural resources, such as preservation agreements, conservation easements, agricultural soils trust fund, and agricultural mitigation fees.
  - **Action COS-A2.3**: Conduct a study of potential Transfer or Purchase of Development Rights (TDR/PDR) programs to address development pressures and preserve agricultural land. The study should determine:

a) Overall feasibility and usefulness toward implementing the County's agricultural preservation goals.
b) Specific mechanisms that could be used.
c) Geographic areas where these mechanisms could be used.
d) Organizational and administrative requirements.
e) Cost to the County and potential revenue sources.

- **Action COS-A2.4**: Amend County Ordinance Code Title 8 – Zoning to include development standards, and possibly adopt accompanying design guidelines, for urban land uses that interface with agricultural uses, addressing, at minimum:
  a) Setbacks on urban properties to provide a buffer for agricultural uses.
  b) Location and arrangement of buildings, structures, and uses on urban properties.
  c) Lighting, fencing, screening, and appropriate landscaping/vegetation.
- **Action COS-A2.5**: Review the Williamson Act Program to identify potential areas for improvement, such as:
  a) Expanding the range of allowable uses to include wildlife habitat areas.
  b) Increasing enforcement of non-compliant properties.
  c) Ensuring agricultural conservation commitments are adequate to justify inclusion in the Program.
  d) Creating a mechanism to ensure rezoning of properties no longer under a Williamson Act contract.
- ***Action COS-A3.1:*** *Establish a mitigation program to offset conversion of working lands (irrigated and intensively cultivated agricultural lands and rangeland) to nonagricultural uses. The program will define the types of land conversions requiring mitigation, mitigation ratios, acceptable mitigation locations, allowable conservation instruments, and use of in-lieu fees.*

- **Goal COS-6:** Preserved and enhanced native upland habitat, including woodlands, grasslands, and rangelands.
  - ***Policy COS-P6.1****: Preserve natural woodlands and significant trees, particularly mature native species.*
  - **Policy COS-P6.2:** Encourage planting and propagation of native trees throughout the county to enhance the natural landscape, provide shade, sustain wildlife, absorb stormwater, and sequester carbon.
  - **Policy COS-P6.3**: Support protection of native trees, especially oaks, in foothill woodlands and agricultural areas by encouraging voluntary installation of fencing around individuals or clusters of trees to prevent grazing and promoting replanting of native species.
  - **Policy COS-P6.5:** Encourage revegetation of native species in areas that were previously converted for agriculture but are no longer in production.
  - ***Action COS-A6.1****: Update County Ordinance Code Chapter 816-6, Tree Protection and Preservation, to enhance protections and strengthen mitigation requirements/restitution for tree removal.*
  - ***Action COS-A6.2****: Develop an Oak Woodland Conservation Program that establishes special mitigation ratios for removal of oak trees, along with specific tree replacement and planting standards to ensure long-term growth and survival. Amend the County Ordinance Code as needed to implement the program.*

5.2.3.2 PROPOSED CAP STRATEGIES AND ACTIONS

The following strategies and actions in the proposed Climate Action Plan (CAP) are applicable to agricultural and forestry resources:

Strategy NI-4: Sequester carbon on natural and working lands in Contra Costa County.

Strategy NI-4 Actions:

- Establish a mechanism to support expanded tree planting and maintenance activities, particularly in areas with few trees.
- Continue to support and work with key partners to maintain and establish new pilot programs for carbon sequestration on agricultural land.
- Promote restorative agricultural and landscaping techniques that incorporate cover crops, mulching, compost application, field borders, alley cropping, conservation crop rotation, prescribed grazing, and reduced tillage to promote healthy soil and soil conservation.
- Coordinate with farming groups, ranchers, the Contra Costa Resource Conservation District, and the University of California Cooperative Extension to identify and promote varieties of feedstock, livestock, and crops that are resilient to rising temperatures and changing precipitation patterns and that increase carbon sequestration.

5.2.4 Environmental Impacts

Impact 5.2-1: The proposed project could convert approximately 13,816 acres of Important Farmland to nonagricultural use. [Threshold AG-1]

Proposed General Plan

Figure 5.2-2, *Farmland Classifications within Contra Costa County,* shows that Important Farmland is primarily in the eastern portion of the county outside the ULL. Under the proposed General Plan land use map, the County would designate 11,904 acres of land as Agricultural Core (AC), 96,721 acres of land as Agricultural Lands (AL), and 59,180 acres of land as Resource Conservation (RC), as shown in Figure 3-3*, Proposed General Plan Land Use Map,* in Chapter 3, *Project Description*. These designations allow for agricultural (AC and AL) and grazing (RC) uses of these lands and place limitations on urban development. However, approximately 13,816 acres of land in the EIR Study Area that are classified as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance are designated for a use other than AC, AL, or RC in the proposed General Plan, as shown in Figure 5.2-4, *Potential Farmland Conversions*. Of this land, 3,447 acres are within the ULL, while the remaining 10,369 acres are outside of the ULL. The acreages of the land with nonagricultural designations that overlie Important Farmland are shown in Table 5.2-3, *Nonagricultural General Plan Designations that Intersect with Important Farmland*.

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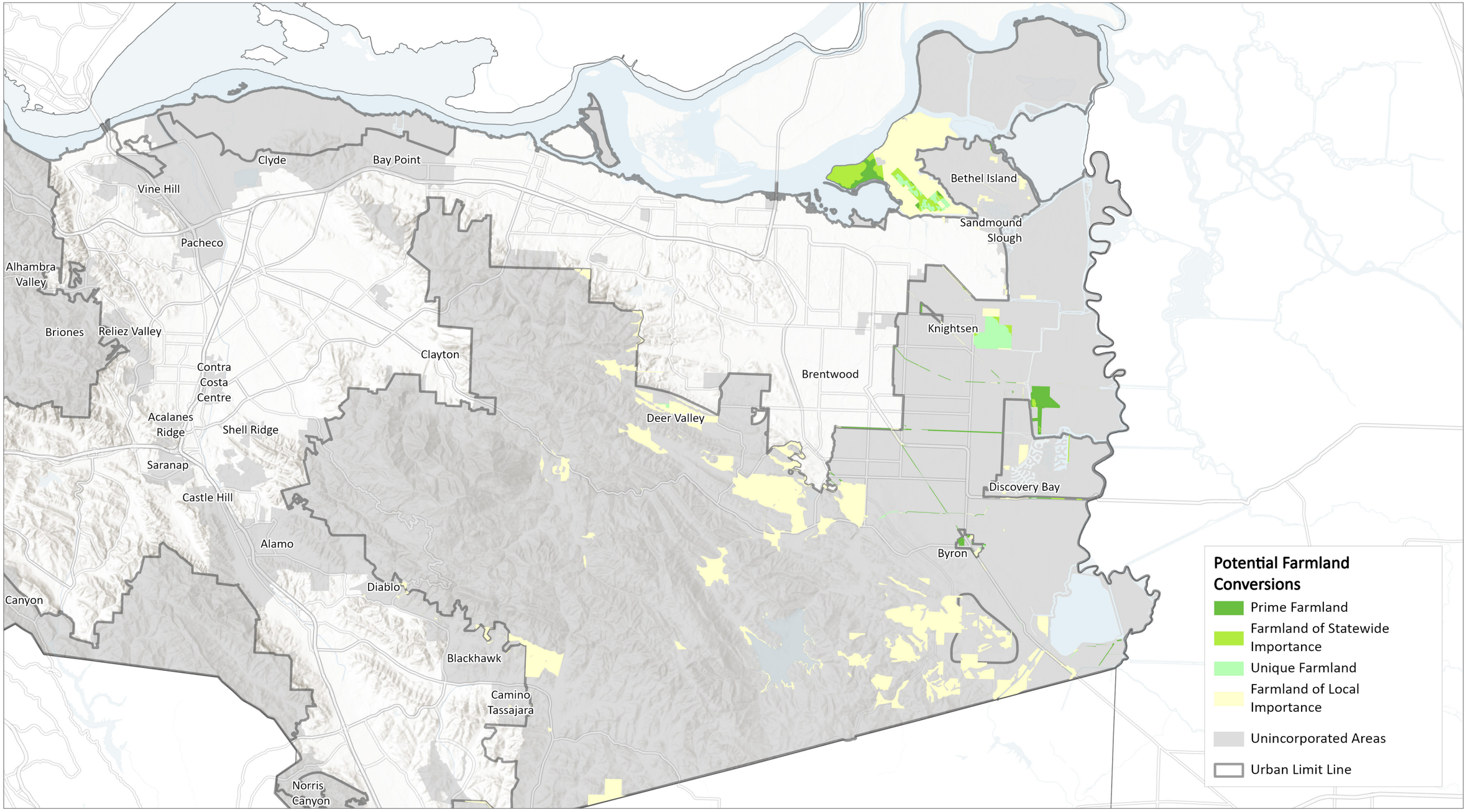

Source: California Department of Conservation - Farmland Mapping and Monitoring Program 2020.

0 3 6
Scale (Miles)

Figure 5.2-4
Potential Farmland Conversions

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Table 5.2-3 Nonagricultural General Plan Designations that Intersect with Important Farmland

General Plan 2045 Land Use Designation	Acreage of Intersect with Important Farmland Inside ULL	Acreage of Intersect with Important Farmland Outside ULL	Total
Commercial Office (CO)	23.1	43.3	66.4
Commercial Recreation (CR)	98.3	38.5	136.8
Light Industry (LI)	11.88	0	11.88
Parks and Recreation	2,604.5	5,872.4	8,476.9
Public/Semi-Public	505.6	4,409.1	4,914.7
Residential- Very Low Density (RVL)	17.1	0	17.1
Residential- Low Density (RL)	30.8	0	30.8
Residential- Low Medium Density (RLM)	122.7	0	122.7
Residential- Medium Density (RM)	0.41	0	0.41
Residential- Medium High Density (RMH)	9.3	0	9.3
Residential- High Density (RH)	6.14	0	6.14
Water (WA)	16.7	5.8	22.5
TOTAL	**3,446.5**	**10,369.1**	**13,815.6**

Source: DOC 2020

According to this analysis, the proposed General Plan could result in the conversion of 13,816 acres to nonagricultural uses in the EIR Study Area. However, this analysis is conservative and does not consider site-specific and other factors that could affect the potential conservation of agricultural land. For example, development of land outside the ULL is restricted to non-urban uses by the County's ULL, which would help to prevent conversion of the majority (75 percent) of the total potential 13,816 acres. Additionally, the FMMP data used in this analysis may not accurately represent current conditions on the land. For example, the proposed General Plan land use designation of Water is only applied to areas that are inundated by water (based on County staff knowledge of sites and satellite imagery); therefore, the 22.5 acres of land identified as an area of potential agricultural conversion are inundated and not suitable for farmland.

The analysis may also overstate the proposed General Plan's influence on potential agricultural land conversion. Some areas identified in Table 5.2-3 are already designated for urban use, so the proposed General Plan would not change the potential for conversion from what is currently allowed. Furthermore, as shown in Table 5.2-3, 96 percent of the acreage of potential conversion identified by this analysis is designated as Parks and Recreation and Public/Semi-Public; these areas are owned by public agencies such as the Department of Water Resources, East Bay Regional Park District, the East Contra Costa Habitat Conservancy, and Ironhouse Sanitary District. This land will very likely be preserved for non-urban uses. Furthermore, as public agencies that are independent from the County and may be subject to limited or no County land use authority, these agencies would be required to perform their own analysis of the environmental impacts of converting this land should they decide to do so.

Moreover, the intent of the proposed General Plan is to preserve this land. For example, Policy COS-P2.2 directs the County to preserve and protect productive agricultural land from urban conversion, particularly land designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland on the Important

Farmland Map, land with Class 1 or Class 2 soils, and land designated Agricultural Core. This policy, along with the following, would help to preserve agricultural lands from future urban development:

- **Policy LU-P2.1:** Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.
- **Policy LU-P2.3:** Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.
- **Policy LU-P2.4:** Prohibit major subdivisions outside the ULL as well as successive minor subdivisions of lots outside the ULL that were created through previous subdivisions.
- **Policy LU-P2.8:** Discourage extension of water and sanitary sewer lines into areas outside the ULL, except to serve public and semi-public uses that are not growth inducing, or when such extension is necessary to address a declared public health emergency. When lines are extended outside the ULL, they should be designed to service the intended use only, and not allow for additional future service connections.

Although the proposed General Plan includes policies that would minimize the conversion of farmland, the proposed land use plan designates approximately 13,816 acres of Important Farmland in the EIR Study Area for nonagricultural uses. As discussed previously, the majority of this land is not intended for urban development and will likely be preserved for agricultural use, but this analysis conservatively determines that farmland could be converted as a result of the proposed General Plan, resulting in a potentially significant impact.

Proposed CAP

Projects facilitated by the proposed CAP Strategy NI-4 could conserve agriculture lands or implement regenerative agricultural practices, which would result in a beneficial effect on Important Farmland. For example, actions under Strategy NI-4 include establishing pilot programs for carbon sequestration on agricultural land and promoting restorative agricultural and landscaping techniques.

On the other hand, projects facilitated by proposed CAP actions that involve ground disturbance could result in the conversion of farmland to nonagricultural use. In particular, public uses such as solar and wind farms could occur in areas outside the ULL. As stated in the proposed General Plan Policy LU-P2.3, wind and solar energy production, other resource-based uses, and essential infrastructure would be allowed outside the ULL, and although these projects would support agricultural infrastructure and limit urban development, they could still result in farmland conversion. Therefore, the proposed CAP would result in a potentially significant farmland conversion impact.

Level of Significance Before Mitigation: Impact 5.2-1 would be potentially significant.

Mitigation Measures

The criterion for mitigation under CEQA is feasible mitigation that lessens a project's impacts. Agricultural conservation easements are a possible mitigation measure under CEQA. Programs that establish agricultural conservation easements and in-lieu fees for mitigation banking are most effective when determined concurrent with project approval. However, the effectiveness and extent to which future projects would opt-in to agricultural conservation easements as mitigation measures cannot be determined in this analysis; therefore, this impact would remain significant and unavoidable.

Level of Significance After Mitigation: Impact 5.2-1 would remain significant and unavoidable.

Impact 5.2-2: The proposed project would not conflict with Williamson Act contracts. [Threshold AG-2]

Proposed General Plan

As described in Chapter 3, *Project Description*, the proposed General Plan includes an updated land use map, which includes Agricultural Core (AC), Agricultural Lands (AL), and Resource Conservation (RC) land use designations.

The AL designation includes non-irrigated, rural lands that support grazing and dryland farming. Other types of agricultural, open space, and non-urban uses are also allowed. The maximum density under the proposed General Plan is 1 unit per 10 acres, which reduces the density allowance in areas designated AL by half compared to the existing General Plan. AC is a designation applied to 11,900 acres between Brentwood and Discovery Bay, where agricultural production is the primary use and limited tourism activities are allowed. Residential development that interferes with agricultural activities is prohibited. The maximum density is 1 unit per 40 acres. The RC designation applies to open space lands for watershed protection and other environmentally sensitive areas – activities can include low intensity agriculture.

As shown in Figure 5.2-3, the EIR Study Area contains approximately 40,545 acres of land under Williamson Act contracts, as of 2023. Under the proposed General Plan, most of this land is designated AC, AL, or RC. There are some parcels with Williamson Act contracts that are designated Water, meaning they are inundated by water, or Parks and Recreation. The areas designated Parks and Recreation are owned by East Bay Regional Park District and planned for park and open space uses. The proposed General Plan would not change the Williamson Act process that is owner-initiated through a 10-year contract annually renewed. While conversion of agricultural land is addressed in Impact 5.2-1 and found to be significant and unavoidable, the Williamson Act program is unchanged with adoption of the proposed project, resulting in a less-than-significant impact.

Proposed CAP

Projects facilitated by the CAP would be required to be consistent with the proposed General Plan; therefore, the proposed CAP would result in a less-than-significant Williamson Act contract impact.

Level of Significance Before Mitigation: Impact 5.2-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.2-2 would be less than significant.

Impact 5.2-3: The proposed project would not conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)). [Threshold AG-3]

Proposed General Plan

There are no areas zoned as forest land in Contra Costa County. The Zoning Code and the existing and proposed General Plan do not designate any land for forest or timberland uses. Forest and timber lands defined by the State include both land that is used for timber harvesting and other forested land that has aesthetic, recreational, and biological amenities. The proposed General Plan would not conflict with existing zoning for, or cause rezoning of forest land, or timberland zoned Timberland Production. Thus, no impact would occur.

See Section 5.1, *Aesthetics*, of this Draft EIR regarding consideration of tree aesthetics as defined in Public Resources Code Section 12220(g).

Proposed CAP

As described above, there is no timberland in the EIR Study Area; therefore, neither the proposed CAP nor projects facilitated by the CAP strategies and actions would result in an adverse impact on timberland, so there is no impact.

Level of Significance Before Mitigation: Impact 5.2-2 would have no impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.2-2 would have no impact.

Impact 5.2-4: The proposed project would result in the loss of forest land or conversion of forest land to non-forest use. [Threshold AG-4]

Proposed General Plan

As shown in Table 5.2-2, there is a total of 63,806 acres of forest land within the county (see Figure 2-6 in Appendix 5.4-1). As such, the proposed General Plan could result in the conversion of forested areas and other upland habitats for future development. As discussed in Section 5.2.1.2, the Existing Conditions Report that documents this forest land cover encompasses the entire county in the interest of presenting a conservative approach that treats the county as a continuous natural habitat not bound by artificial boundaries such as city limits. As a result, this analysis presents a conservative overview of potential impacts since it includes forest

land outside of the EIR Study Area in addition to land that is largely intended for non-urban development such as land outside the ULL, land owned by parks and utility districts, and land that may have already been developed.

The proposed Conservation, Open Space, and Working Lands Element includes policies that aim to preserve forested areas:

- **Policy COS-P6.1:** Preserve natural woodlands and significant trees, particularly mature native species.
- **Policy COS-P6.2:** Encourage planting and propagation of native trees throughout the county to enhance the natural landscape, provide shade, sustain wildlife, absorb stormwater, and sequester carbon.
- **Policy COS-P6.3:** Support protection of native trees, especially oaks, in foothill woodlands and agricultural areas by encouraging voluntary installation of fencing around individuals or clusters of trees to prevent grazing and promoting replanting of native species.
- **Policy COS-P6.5:** Encourage revegetation of native species in areas that were previously converted for agriculture but are no longer in production.

In addition to these policies, Chapter 816-6, *Tree Protection and Preservation*, of the County Ordinance Code enhances protection of specified protected trees and establishes requirements for tree removal. As stated in Section 816-6.8002, *Permit Requirement*, individuals must apply for a tree permit prior to any disturbance of a protected trees. The County sets factors that must be considered for approval of a tree permit, such as if the arborist report indicates the tree is in poor health, in danger of falling, damaging existing private improvements, or determined to be a fire hazard. Therefore, although future development could result in the loss of forest land or conversion of forest land to non-forest use, there are regulations in place that would consider an array of factors before the removal or alternation of these habitats.

Regardless, even applying a combination of these policies by the proposed General Plan and implementation of the tree protection provisions of the County Ordinance Code, woodland habitat will likely be impacted by future development. Therefore, impacts to forest land under the proposed General Plan would be potentially significant.

Proposed CAP

Projects facilitated by the proposed CAP would not likely be proposed on forest land because the characteristics of forest land make it unsuitable for the types of projects that would be facilitated by the CAP. However, as mentioned above, a certain amount of woodland habitat will likely be impacted by future development. The resulting impacts would be potentially significant.

Level of Significance Before Mitigation: Impact 5.2-4 would be potentially significant.

Mitigation Measures

There are no feasible mitigation measures applicable to Impact 5.2-4. Although policies in the proposed General Plan would help to minimize impacts to loss of woodland and other habitat types and result in the planting of new trees, the proposed project could potentially convert forested areas to non-forested uses to accommodate future demand. Therefore, this impact is significant and unavoidable.

Level of Significance After Mitigation: Impact 5.2-4 would remain significant and unavoidable.

Impact 5.2-5: The proposed project could potentially result in other agricultural impacts not related to the above, such as diminishing available water quality and supply for agricultural uses. [Threshold AG-5]

Proposed General Plan

Future development under the proposed General Plan would increase water demands, as further described in Section 5.17, *Utilities and Service Systems*, which would diminish the available water supply for agricultural uses. Such development would occur throughout the county, which spreads the impact over a large geographic area. Further, most development would require connection to municipal water provider(s). Water connections are regulated by Section 414-4.2 of the County Ordinance Code, the purpose of which is to "…provide protection of the county's groundwater sources from degradation that could result from inadequately constructed, defective, or improperly abandoned wells, to provide for regulation of small water systems in accordance with federal standards as mandated by the state, and to require submission of tentative subdivision maps and building permit applications to the health officer for him to review the availability of an approved water supply prior to recordation of final maps and issuance of building permits."

Construction activities can increase urban runoff containing nutrients, sediments, and toxic contaminates, which would pollute nearby water streams and could impact agricultural uses. In addition, future development will bring in more residents and people, which can increase urban runoff. However, existing regulations would help avoid or mitigate potential impacts to agricultural lands. For example, Chapter 74-6.012 of the County Ordinance Code states that a drainage plan for development projects is required to determine methods to reduce runoff. The drainage plan must include provisions to stop erosion of exposed soil into drainages, such as by covering stockpiles, using jute-bales and silt fencing, frequent watering, and replanting to prevent both wind and rain erosion. Through compliance with the County Ordinance Code, sediment and erosion of material would not leave project sites and would not affect available water quality or supply for agricultural uses.

In addition, the proposed General Plan also includes Policy COS-P2.4, which requires new projects adjacent to agriculture to establish buffers on their properties as necessary to minimize conflicts and protect agriculture. The General Plan also includes Action COS-A2.4, which would amend County Ordinance Code Title 8 – Zoning to include development standards and design guidelines for urban land uses that interface with agricultural uses, addressing setbacks on urban properties. Therefore, the other agricultural impacts of the proposed General Plan would be less than significant.

Proposed CAP

Projects facilitated by the proposed CAP could result in a beneficial effect on farmland, while other projects could cause other changes in the environment that could result in conversion of farmland to nonagricultural use. However, compliance with the County Ordinance Code and proposed General Plan policies and actions described above would reduce impacts to a less than significant level.

Level of Significance Before Mitigation: Impact 5.2-5 would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Level of Significance After Mitigation: Impact 5.2-5 would be less than significant.

5.2.5 Cumulative Impacts

Future development under the proposed project could directly and/or indirectly impact agricultural and forestry resources. Although future development under the proposed General Plan and projects facilitated by the proposed CAP would be required to comply with existing laws and regulations protecting agricultural and forestry resources, including the ULL, the project could still result in the conversion of 13,816 acres of Important Farmland for nonagricultural uses and result in the loss of forest land. While most agricultural and forest land resources are located in the unincorporated county, there is also the potential for agricultural and forest land conversion to occur from development within incorporated areas. Despite compliance with County codes, the ULL, and the proposed General Plan policies, the proposed project would result in impacts to agriculture and forestry resources that are cumulatively significant and unavoidable.

5.2.6 Level of Significance Before Mitigation

With implementation of regulatory requirements and standard conditions of approval, some impacts would be less than significant: Impacts 5.2-2, 5.2-3, and 5.2-5.

Without mitigation, these impacts would be **potentially significant**:

- **Impact 5.2-1:** The proposed project could convert approximately 13,816 acres of Important Farmland to nonagricultural use.
- **Impact 5.2-4:** The proposed project would result in the loss of forest land or conversion of forest land to non-forest use.

5.2.7 Mitigation Measures

No feasible mitigation measures are available.

5.2.8 Level of Significance After Mitigation

Impact 5.2-1

Development in accordance with the proposed project has the potential to convert 13,816 acres of Important Farmland to nonagricultural uses. Agricultural conservation easements are a potential mitigation measure, but their effectiveness and extent are uncertain, making their impact significant and unavoidable. Therefore, Impact 5.2-1 would remain ***significant and unavoidable***.

Impact 5.2-4

Development in accordance with the proposed project has the potential to convert forest lands to a non-forest use. Despite compliance with the County Ordinance Code and proposed General Plan policies, there is still a potential for forest land conversion to occur. Therefore, Impact 5.2-4 would remain ***significant and unavoidable.***

5.2.9 References

Contra Costa, County of. 2005a. *General Plan*. https://www.contracosta.ca.gov/4732/General-Plan.

———. 2005b. *Contra Costa General Plan Environmental Impact Report*, Appendix-D. https://www.cocohcp.org/DocumentCenter/View/420/Appendix-D-Summary-of-Impacts-and-Recommended-Mitigation-Measures-from-City-General-Plan-EIRs-PDF

Contra Costa County Department of Conservation and Development (DCD). 2017. Contra Costa 2016 Agricultural Preserves Map. https://www.contracosta.ca.gov/DocumentCenter/View/882/Map-of-Properties-Under-Contract?bidId=.

California Department of Conservation (DOC). 2018a. Farmland of Local Importance. https://www.conservation.ca.gov/dlrp/fmmp/Documents/Farmland_of_Local_Importance_2018.pdf.

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———. 2020. 2020 Farmland Mapping and Monitoring Program File Geodatabase.

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5.3 AIR QUALITY

This section describes the potential impacts to air quality due to adoption and implementation of the proposed project. This section describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential air quality impacts, and identifies proposed General Plan policies and feasible mitigation measures that could minimize any potentially significant impacts.

This evaluation is based on the methodology recommended by the Bay Air Quality Management District (BAAQMD) for plan-level analyses. The analysis focuses on air pollution from regional emissions and localized pollutant concentrations. Criteria air pollutant emissions modeling is included in Appendix 5.3-1, *Air Quality and Greenhouse Gas Emissions Data*, of this Draft Environmental Impact Report (EIR). Transportation-sector impacts are based on trip generation and vehicle miles traveled (VMT) provided by Fehr and Peers. Note that this quantitative analysis was conducted based on the horizon-year projection for the proposed General Plan, which is summarized in Chapter 3, *Project Description*, of this Draft EIR. Cumulative impacts related to air quality are based on the regional boundaries of the San Francisco Bay Area Air Basin (SFBAAB).

5.3.1 Environmental Setting

5.3.1.1 TERMINOLOGY

- **AAQS.** Ambient Air Quality Standards
- **CES.** CalEnviroScreen. CES is a mapping tool that helps identify the California communities most affected by sources of pollution and where people are often especially vulnerable to pollution's effects.
- **Concentrations.** Refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm), parts per billion (ppb), or micrograms per cubic meter ($\mu g/m^3$).
- **Criteria Air Pollutants.** Those air pollutants specifically identified for control under the Federal Clean Air Act (currently seven—carbon monoxide, nitrogen oxides, lead, sulfur oxides, ozone, and coarse and fine particulates).
- **DPM.** Diesel particulate matter.
- **Emissions.** Refers to the actual quantity of pollutant, measured in pounds per day or tons per year.
- **Impacted Community**. Unincorporated communities in Contra Costa County that are disproportionately burdened by pollution as defined by the County in the proposed General Plan using CES data.
- **Overburdened Community**. As defined by BAAQMD, an area in a census tract identified by CES, Version 4, having an overall CES score at or above the 70th percentile, or within 1,000 feet of any such census tract.
- **ppm.** Parts per million.
- **Sensitive receptor.** Land uses that are considered more sensitive to air pollution than others due to the types of population groups or activities involved. These land uses include residential, retirement facilities, hospitals, and schools.
- **TAC.** Toxic air contaminant.
- **$\mu g/m^3$.** Micrograms per cubic meter.
- **VMT.** Vehicle miles traveled.

5.3.1.2 AIR POLLUTANTS OF CONCERN

Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are categorized as primary and/or secondary pollutants. Primary air pollutants are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that AAQS have been established for them. VOC and NO_X are criteria pollutant precursors that form secondary criteria air pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Table 5.3-1, *Criteria Air Pollutant Health Effects Summary*, summarizes the potential health effects associated with the criteria air pollutants.

Table 5.3-1 Criteria Air Pollutant Health Effects Summary

Pollutant	Health Effects	Examples of Sources
Carbon Monoxide (CO)	Chest pain in heart patients Headaches, nausea Reduced mental alertness Death at very high levels	Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Ozone (O_3)	Cough, chest tightness Difficulty taking a deep breath Worsened asthma symptoms Lung inflammation	Atmospheric reaction of organic gases with nitrogen oxides in sunlight
Nitrogen Dioxide (NO_2)	Increased response to allergens Aggravation of respiratory illness	Same as carbon monoxide sources
Particulate Matter (PM_{10} and $PM_{2.5}$)	Hospitalizations for worsened heart diseases Emergency room visits for asthma Premature death	Cars and trucks (particularly diesels) Fireplaces and woodstoves Windblown dust from overlays, agriculture, and construction
Sulfur Dioxide (SO_2)	Aggravation of respiratory disease (e.g., asthma and emphysema) Reduced lung function	Combustion of sulfur-containing fossil fuels, smelting of sulfur-bearing metal ores, and industrial processes
Lead (Pb)	Behavioral and learning disabilities in children Nervous system impairment	Contaminated soil

Source: CARB 2023b; South Coast AQMD 2005.

A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

- **Carbon Monoxide (CO)** is a colorless, odorless gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces its oxygen-carrying capacity. This results in reduced oxygen reaching

the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death (BAAQMD 2017a).

- **Nitrogen Oxides (NO_x)** are a by-product of fuel combustion and contribute to the formation of ground-level O_3, PM_{10}, and $PM_{2.5}$. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. The principal form of NO_x produced by combustion is NO, but NO reacts quickly with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. NO_2 is an acute irritant and more injurious than NO in equal concentrations. At atmospheric concentrations, however, NO_2 is only potentially irritating. NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure (BAAQMD 2017a). NO_2 acts as an acute irritant and in equal concentrations is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million (ppm) (BAAQMD 2017a).
- **Sulfur Dioxide (SO_2)** is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and chemical processes at plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2. When sulfur dioxide forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_x). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. Current scientific evidence links short-term exposures to SO_2, ranging from 5 minutes to 24 hours, with an array of adverse respiratory effects, including bronchoconstriction and increased asthma symptoms. These effects are particularly adverse for asthmatics at elevated ventilation rates (e.g., while exercising or playing) at lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. (BAAQMD 2017a).
- **Suspended Particulate Matter (PM_{10})** consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. In the SFBAAB, most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Inhalable coarse particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less.

  Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM_{10} bypasses the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. These health effects include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Motor vehicles are currently responsible for about half of particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates (BAAQMD 2017a).

- **Suspended Particulate Matter ($PM_{2.5}$)** is another form of fine particulate matter that has an aerodynamic diameter of 2.5 microns or less (i.e., 2.5 millionths of a meter or 0.0001 inch). Fine particulate matter originates from a variety of sources, including fossil fuel combustion, residential wood burning and cooking, and natural sources, such as wildfires and dust. As mentioned above, extended exposure to particulate matter can cause negative effects on the respiratory system, such as triggering asthma attacks, aggravating bronchitis, and diminishing lung function. $PM_{2.5}$ studies have also found harm to the cardiovascular system and impacts on the brain, such as reduced cognitive function.

  Local jurisdictions have the option of developing community risk reduction plans (CRRPs) to cumulatively reduce community wide $PM_{2.5}$ concentrations by following a comprehensive plan. Stationary source screening maps contain all the facilities in the Bay Area where a permit has been issued and that emit one or more TACs. These stationary source screening maps can be used as a basis for community baseline conditions and to evaluate screening-level health risk impacts using the cavity effects equation. An alternative screening methodology is to use the California Air Resources Board's (CARB) gas station screening tool to estimate cancer risk and chronic/acute hazards from gas station emissions (BAAQMD 2017a).

- **Ozone (O_3)** is a key ingredient of "smog" and is a gas that is formed when ROGs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for its formation. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing O_3 can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma; reduce lung function; and inflame the linings of the lungs. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. O3 can also damage plants and trees and materials such as rubber and fabrics (BAAQMD 2017a).
- **Reactive Organic Gases (ROGs)/Volatile Organic Compounds (VOCs)** are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of ROGs. Other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROGs, but rather by reactions of ROGs to form secondary pollutants such as O_3. There are no AAQS established for ROGs. However, because they contribute to the formation of O_3, the BAAQMD has established a significance threshold for this pollutant (BAAQMD 2017a).
- **Lead (Pb)** is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phasing out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Because emissions of lead are found only in projects that are permitted by the BAAQMD, lead is not an air quality of concern for the proposed project (BAAQMD 2017a).

Toxic Air Contaminants

People exposed to TACs at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and other health problems (USEPA 2020). By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs (CARB 1999). Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. There are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most relevant to the proposed project being particulate matter from diesel-fueled engines.

Diesel Particulate Matter

In 1998, CARB identified DPM as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particles are 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs. Long-term (chronic) inhalation of DPM is likely a lung cancer risk. Short-term (i.e., acute) exposure can cause irritation and inflammatory symptoms and may exacerbate existing allergies and asthma symptoms (USEPA 2002).

Placement of New Sensitive Receptors

Because placement of sensitive land uses falls outside CARB's jurisdiction, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) to address the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources.

CARB's recommendations on the siting of new sensitive land uses identified in Table 5.3-2, *CARB Recommendations for Siting New Sensitive Land Uses*, were based on a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources.

Table 5.3-2 CARB Recommendations for Siting New Sensitive Land Uses

Source/Category	Advisory Recommendations
Freeways and High-Traffic Roads	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day.
Distribution Centers	Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units [TRUs] per day, or where TRU unit operations exceed 300 hours per week).
Rail Yards	Take into account the configuration of existing distribution centers and avoid locating residences and other sensitive land uses near entry and exit points.
Ports	Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Refineries	Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or CARB on the status of pending analyses of health risks.
Chrome Platers	Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Dry Cleaners Using Perchloroethylene	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Gasoline Dispensing Facilities	Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district. Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.

Source: CARB 2005.

The key observation in these studies is that proximity to air pollution sources substantially increases both exposure and the potential for adverse health effects. There are three carcinogenic TACs that constitute the majority of the known health risks from motor vehicle traffic: DPM from trucks and benzene and 1,3-butadiene from passenger vehicles.

In 2017, CARB provided a supplemental technical advisory to the handbook for near-roadway air pollution exposure, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways*. Strategies include practices and technologies that reduce traffic emissions, increase dispersion of traffic pollution (or the dilution of pollution in the air), or remove pollution from the air (CARB 2017).

5.3.1.3 REGULATORY BACKGROUND

AAQS have been adopted at the State and federal levels for criteria air pollutants. In addition, both the State and federal government regulate the release of TACs. Land uses in Contra Costa County are subject to the rules and regulations imposed by BAAQMD, the California AAQS adopted by CARB, and National AAQS adopted by the US Environmental Protection Agency (EPA). Federal, State, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized in this section.

Federal and State

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 CAA amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or include other pollutants. The California CAA, signed in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS.

The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants, which are shown in Table 5.3-3, *Ambient Air Quality Standards for Criteria Pollutants*. These pollutants are ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

Table 5.3-3 Ambient Air Quality Standards for Criteria Air Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Ozone (O_3)[3]	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m^3	150 µg/m^3	

5. Environmental Analysis
AIR QUALITY

Table 5.3-3 Ambient Air Quality Standards for Criteria Air Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Respirable Fine Particulate Matter ($PM_{2.5}$)[4]	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m^3	
Lead (Pb)	30-Day Average	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 µg/m^3	
	Rolling 3-Month Average	*	0.15 µg/m^3	
Sulfates (SO_4)[5]	24 hours	25 µg/m^3	No Federal Standard	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hours	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Source: CARB 2016.
Notes: ppm: parts per million; µg/m^3: micrograms per cubic meter
* Standard has not been established for this pollutant/duration by this entity.
1 California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles) are values that are not to be exceeded. All others are not to be equaled or exceeded. California AAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2 National standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
4 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
5 On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

California has also adopted a host of other regulations that reduce criteria pollutant emissions.

- **AB 1493: Pavley Fuel Efficiency Standards**. Pavley I is a clean-car standard that reduced emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016. In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025.
- **Heavy-Duty (Tractor-Trailer) Greenhouse Gas (GHG) Regulation**. The tractors and trailers subject to this regulation must either use US EPA SmartWay certified tractors and trailers or retrofit their existing fleet with SmartWay-verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low-rolling-resistance tires. Sleeper-cab tractors model year 2011 and later must be SmartWay certified. All other tractors must use SmartWay-verified low-rolling-resistance tires. This rule has criteria air pollutant co-benefits.
- **SB 1078 and SB 107: Renewables Portfolio Standards**. A major component of California's Renewable Energy Program is the renewables portfolio standard established under Senate Bills (SB) 1078 (Sher) and 107 (Simitian). Under this standard, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010.
- **California Code of Regulations (CCR) Title 20: Appliance Energy Efficiency Standards**. The 2006 Appliance Efficiency Regulations (20 CCR secs. 1601–1608) were adopted by the California Energy Commission on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. This Code reduces natural gas use from appliances.
- **24 CCR, Part 6: Building and Energy Efficiency Standards**. Energy conservation standards for new residential and nonresidential buildings adopted by the California Energy Resources Conservation and Development Commission (now the California Energy Commission) in June 1977. This Code reduces natural gas use from buildings.
- **24 CCR, Part 11: Green Building Standards Code**. Establishes planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. This Code reduces natural gas use from buildings.

Tanner Air Toxics Act and Air Toxics Hot Spot Information and Assessment Act

Public exposure to TACs is a significant environmental health issue in California. In 1983, the California legislature enacted a program to identify the health effects of TACs and reduce exposure to them. The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health" (17 CCR sec. 93000). A substance that is listed as a hazardous air pollutant pursuant to Section 112(b) of the federal CAA (42 US Code sec. 7412[b]) is a TAC. Under State law, the California EPA, acting through CARB, is

authorized to identify a substance as a TAC if it is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act set up a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit that TAC. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate "toxics best available control technology" to minimize emissions. To date, CARB has established formal control measures for 11 TACs that are identified as having no safe threshold.

Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High-priority facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public through notices and public meetings.

CARB has promulgated the following specific rules to limit TAC emissions:

- **13 CCR Chapter 10 Section 2485: Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling**. Generally restricts on-road diesel-powered commercial motor vehicles with a gross vehicle weight rating of greater than 10,000 pounds from idling more than five minutes.
- **13 CCR Chapter 10 Section 2480: Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools**. Generally restricts a school bus or transit bus from idling for more than five minutes when within 100 feet of a school.
- **13 CCR Section 2477 and Article 8: Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate**. Regulations established to control emissions associated with diesel-powered TRUs.

Regional

Bay Area Air Quality Management District

BAAQMD is the agency responsible for ensuring that the National and California AAQS are attained and maintained in the SFBAAB. Air quality conditions in the SFBAAB have improved significantly since the BAAQMD was created in 1955. BAAQMD prepares air quality management plans (AQMP) to attain AAQS in the SFBAAB. BAAQMD prepares ozone attainment plans for the National O_3 standard and clean air plans for the California O_3 standard. BAAQMDs prepares these AQMPs in coordination with Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) to ensure consistent assumptions about regional growth.

Bay Area Air Quality Management District 2017 Clean Air Plan

BAAQMD adopted the 2017 "Clean Air Plan: Spare the Air, Cool the Climate" (2017 Clean Air Plan) on April 19, 2017, making it the most recently adopted comprehensive plan. The 2017 Clean Air Plan incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2017 Clean Air Plan serves as an update to the adopted Bay Area 2010 Clean Air Plan and continues to provide the framework for SFBAAB to achieve attainment of the California and National AAQS. The 2017 Clean Air Plan updates the Bay Area's ozone plan, which is based on the "all feasible measures" approach to meet the requirements of the California CAA. It sets a goal of reducing health risk impacts to local communities by 20 percent between 2015 and 2020 and lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.

A comprehensive multipollutant control strategy was developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, TACs, and GHG from a full range of emission sources. These control measures cover the following sectors: (1) stationary (industrial) sources, (2) transportation, (3) energy, (4) agriculture, (5) natural and working lands, (6) waste management, (7) water, (8) super-GHG pollutants, and (9) buildings.

- The proposed control strategy is based on the following key priorities:
- Reduce emissions of criteria air pollutants and TACs from all key sources.
- Reduce emissions of "super-GHGs" such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
    - Increase efficiency of the energy and transportation systems.
    - Reduce demand for vehicle travel, and high-carbon goods and services.
- Decarbonize the energy system.
    - Make the electricity supply carbon-free.
    - Electrify the transportation and building sectors (BAAQMD 2017c).

Community Air Risk Evaluation Program

BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor TACs in the Bay Area, primarily DPM. The last update to this program was in 2014. Based on findings of the latest report, DPM was found to account for approximately 85

percent of the cancer risk from airborne toxins. Carcinogenic compounds from gasoline-powered cars and light duty trucks were also identified as significant contributors: 1,3-butadiene contributed 4 percent of the cancer risk-weighted emissions, and benzene contributed 3 percent. Collectively, five compounds—DPM, 1,3-butadiene, benzene, formaldehyde, and acetaldehyde—were found to be responsible for more than 90 percent of the cancer risk attributed to emissions. All of these compounds are associated with emissions from internal combustion engines. The most important sources of cancer risk-weighted emissions were combustion-related sources of DPM, including on-road mobile sources (31 percent), construction equipment (29 percent), and ships and harbor craft (13 percent). Overall, cancer risk from TAC dropped by more than 50 percent between 2005 and 2015, when emissions inputs accounted for State diesel regulations and other reductions.

The major contributor to acute and chronic non-cancer health effects in the BAAQMD is acrolein (C_3H_4O). Major sources of acrolein are on-road mobile sources and aircraft near freeways and commercial and military airports. Currently CARB does not have certified emission factors or an analytical test method for acrolein. Since the appropriate tools needed to implement and enforce acrolein emission limits are not available, BAAQMD does not conduct health risk screening analysis for acrolein emissions.

Assembly Bill 617 Community Action Plans

AB 617 (C. Garcia, Chapter 136, Statues of 2017) was signed into law in July 2017 to develop a new community-focused program to reduce exposure more effectively to air pollution and preserve public health in environmental justice communities. AB 617 directs CARB and all local air districts to take measures to protect communities disproportionally impacted by air pollution through monitoring and implementing air pollution control strategies.

On September 27, 2018, CARB approved BAAQMD's recommended communities for monitoring and emission reduction planning. The State approved communities for year 1 of the program as well as communities that would move forward over the next five years. Bay Area recommendations included all the CARE areas, areas with large sources of air pollution (e.g., refineries, seaports, and airports), areas identified via statewide screening tools as having pollution and/or health burden vulnerability, and areas with low life expectancy (BAAQMD 2019a).

- Year 1 Communities:
  - *West Oakland*. The West Oakland community was selected for BAAQMD's first Community Action Plan. In 2017, cancer risk from sources in West Oakland (local sources) was 204 in a million. The primary sources of air pollution in West Oakland include heavy trucks and cars, port and rail sources, large industries, and to a lesser extent other sources such as residential sources (i.e., wood burning). The majority (over 90 percent) of cancer risk is from DPM (BAAQMD 2019b).
  - *Richmond*. Richmond was selected for a community monitoring plan in year 1 of the AB 617 program. In December 2023, BAAQMD released the draft Path to Clean Air Community Emissions Reduction Plan (PTCA Plan) for Richmond, North Richmond, and San Pablo communities. It also includes the following unincorporated areas in Contra Costa County: Bay View, East Richmond Heights, Rollingwood, Tara Hills, Montalvin Manor, North Richmond, and El Sobrante. The PTCA Plan

includes measures and strategies to be implemented over the next ten years by state, regional, and local agencies to reduce pollution exposure and emissions in the community (BAAQMD 2023a).

- Year 2 to 5 Communities: East Oakland/San Leandro, Eastern San Francisco, the Pittsburg-Bay Point area, San Jose, Tri-Valley, and Vallejo are slated for action in years 2 to 5 of the AB 617 program (BAAQMD 2019a).

BAAQMD Rules and Regulations

Regulation 7, Odorous Substances

Sources of objectionable odors may occur within the unincorporated county. BAAQMD's Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under BAAQMD Regulation 1, Rule 1-301, *Public Nuisance*, which states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property." Under BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30-day period can be declared a public nuisance.

Other BAAQMD Regulations

In addition to the plans and programs described above, BAAQMD administers a number of specific regulations on various sources of pollutant emissions that would apply to the proposed project:

- Regulation 2, Rule 2, Permits, New Source Review
- Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants
- Regulation 2, Rule 6, Permits, Major Facility Review
- Regulation 6, Rule 1, General Requirements
- Regulation 6, Rule 2, Commercial Cooking Equipment
- Regulation 8, Rule 3, Architectural Coatings
- Regulation 8, Rule 4, General Solvent and Surface Coatings Operations
- Regulation 11, Rule 2, Asbestos, Demolition, Renovation and Manufacturing

Plan Bay Area 2050

MTC and ABAG adopted Plan Bay Area 2050 on October 21, 2021 (ABAG/MTC 2021). Plan Bay Area provides transportation and environmental strategies to continue to meet the regional transportation-related GHG reduction goals of SB 375, which is described further in Section 5.8, *Greenhouse Gas Emissions*, of this Draft EIR. Strategies to reduce GHG emissions include focusing housing and commercial construction in walkable, transit-accessible places; investing in transit and active transportation; and shifting the location of jobs to encourage shorter commutes. To achieve MTC's/ABAG's sustainable vision for the Bay Area, the Plan Bay Area land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities. An overarching goal of the regional plan is to concentrate

development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle, VMT, and associated GHG emissions reductions.

Local

Contra Costa Transportation Authority Congestion Management Plan

The Contra Costa Transportation Authority (CCTA) prepares and adopts a Congestion Management Program (CMP) for Contra Costa County every two years. The 2021 CMP is the 15th biennial update of the CMP (CCTA 2021). The CMP provides a roadmap to reduce congestion, improve mobility, and increase overall sustainability of the transportation system in the county. The 2021 update also documents changes in the use of level of service (LOS) as a finding of significant impact in the California Environmental Quality Act (CEQA) under SB 743, which is described further in Section 5.16, *Transportation*, of this Draft EIR. Consistent with State law and the MTC's Regional Transportation Plan, the CMP contains the following components: traffic LOS standards, a performance element to evaluate current and future multi-modal system performances, a seven-year capital improvement program (CIP), a program to analyze the impacts of land use decisions, and a travel demand element to promote more transportation alternatives.

Contra Costa County Ordinance Code

The Contra Costa County Ordinance Code includes various directives to minimize adverse impacts to air quality in Contra Costa County.

Most provisions related to air quality impacts are included in Title 7, *Building Regulations*, and Title 8, *Zoning*, as follows:

- Chapter 74-2, *Adoption*, in Title 7, *Building Regulations*, incorporates the CCR Title 24, Part 11, CALGreen.
- Chapter 84-52, *R-B Retail Business District,* in Title 8, *Zoning*, establishes that no odors created by an industrial or processing operation shall be perceptible at the property site boundaries.
- Ordinance No. 2022-02, *All-Electric Ordinance (New Construction)*, recently amended Title 7, *Building Regulations*, to require the following building types to be all-electric:
  - Residential (including single-family and multi-family buildings)
  - Detached Accessory Dwelling Units
  - Hotel
  - Office
  - Retail
- Ordinance No. 450-8, *Industrial Safety Ordinance*, expands on the California Accidental Release Prevention Program (CalARP) in the county, which addresses accidental releases of air toxins. Four facilities in the unincorporated county are currently subject to the County's Industrial Safety Ordinance (ISO): Phillips 66 Rodeo Refinery, Air Liquide-Rodeo Hydrogen Plant, PBF Energy - Martinez Refining Company (MRC) [formerly Shell Oil Martinez Refinery], and Air Products (within the MRC).

Climate Action Plan

The existing 2015 Climate Action Plan (CAP) identifies how the County will achieve the AB 32 GHG emissions reduction target of 15 percent below baseline levels by the year 2020, in addition to supporting other public health, energy efficiency, water conservation, and air quality goals identified in the County's existing General Plan and other existing policy documents.

5.3.1.4 EXISTING CONDITIONS

San Francisco Bay Area Air Basin Conditions

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is divided into 15 air basins. Contra Costa County is in the SFBAAB. The discussion below identifies the natural factors in the Air Basin that affect air pollution. Air pollutants of concern are criteria air pollutants and TACs. Federal, State, and local air districts have adopted laws and regulations intended to control and improve air quality.

BAAQMD is the regional air quality agency for the SFBAAB, which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the southern portion of Sonoma County; and the southwestern portion of Solano County. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions (BAAQMD 2017a).

Meteorology

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range[1] splits in the Bay Area, creating a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait, which allows air to flow in and out of the Bay Area and the Central Valley. The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold-water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast. In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

[1] The Coast Range traverses California's west coast from Humboldt County to Santa Barbara County.

Wind Patterns

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais in Marin County, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San José when it meets the East Bay hills. Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno gap.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon and the sea breeze deepens and increases in velocity while spreading inland. Under normal atmospheric conditions, the air in the lower atmosphere is warmer than the air above it. In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes (i.e., conditions where there is little mixing, which occurs when there is a lack of or little wind) are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB.

Temperature

Summertime temperatures in the Air Basin are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold water from the ocean bottom along the coast. On summer afternoons, the temperatures at the coast can be 35 degrees Fahrenheit (°F) cooler than temperatures 15 to 20 miles inland; at night, this contrast usually decreases to less than 10°F. In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

Precipitation

The Air Basin is characterized by moderately wet winters and dry summers. Winter rains (November through March) account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the Air Basin to another, even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing (an upward and downward movement of air) are usually high, and thus pollution levels tend to be low (i.e., air pollutants are dispersed more readily into the atmosphere rather than accumulate under stagnant

conditions). However, during the winter, frequent dry periods do occur, where mixing and ventilation are low and pollutant levels build up.

Wind Circulation

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commuter traffic (early morning) and wood-burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants up-valley during the day, and cold air drainage flows move the air mass down-valley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.

Inversions

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). There are two types of inversions that occur regularly in the SFBAAB. Elevation inversions[2] are more common in the summer and fall, and radiation inversions[3] are more common during the winter. The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

Attainment Status of the SFBAAB

The AQMP provides the framework for air quality basins to achieve attainment of the State and federal AAQS through the State Implementation Plan. Areas that meet AAQS are classified as attainment areas, and areas that do not meet these standards are classified as nonattainment areas. Severity classifications for O_3 range from marginal, moderate, and serious to severe and extreme.

- **Unclassified:** A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
- **Attainment:** A pollutant is in attainment if the AAQS for that pollutant was not violated at any site in the area during a three-year period.
- **Nonattainment:** A pollutant is in nonattainment if there was at least one violation of an AAQS for that pollutant in the area.
- **Nonattainment/Transitional:** A subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

[2] When the air blows over elevated areas, it is heated as it is compressed into the side of the hill/mountain. When that warm air comes over the top, it is warmer than the cooler air of the valley.

[3] During the night, the ground cools off, radiating the heat to the sky.

The attainment status for the SFBAAB is shown in Table 5.3-4, *Attainment Status of Criteria Pollutants in the San Francisco Bay Area Air Basin*. The SFBAAB is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS.

Table 5.3-4 Attainment Status of Criteria Air Pollutants in the San Francisco Bay Area Air Basin

Pollutant	State	Federal
Ozone – 1-hour	Nonattainment	Classification revoked (2005)
Ozone – 8-hour	Nonattainment (serious)	Nonattainment (marginal)[1]
PM_{10}	Nonattainment	Unclassified/Attainment[2]
$PM_{2.5}$	Nonattainment	Unclassified/Attainment
CO	Attainment	Attainment
NO_2	Attainment	Unclassified
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	Unclassified/Attainment
All others	Unclassified/Attainment	Unclassified/Attainment

Source: CARB 2023a.
[1] Severity classification current as of February 13, 2017.
[2] In December 2014, US EPA issued final area designations for the 2012 primary annual $PM_{2.5}$ National AAQS. Areas designated "unclassifiable/attainment" must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the county are best documented by measurements taken by BAAQMD. BAAQMD has 24 permanent monitoring stations around the Bay Area. The nearest station is the Concord-2975 Treat Blvd Monitoring Station, which monitors O_3, NO_2, and $PM_{2.5}$. Data from this monitoring station is summarized in Table 5.3-5, *Ambient Air Quality Monitoring Summary*. The data show that the area regularly exceeds the State and federal one-hour, eight-hour O_3 standards and federal $PM_{2.5}$, and occasionally exceeds the State and federal PM_{10} in the last five recorded years.

Table 5.3-5 Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Thresholds Were Exceeded and Maximum Levels				
	2017	2018	2019	2020	2021
Ozone (O_3)					
State 1-Hour ≥ 0.09 ppm (days exceed threshold)	0	0	0	2	1
State & Federal 8-hour ≥ 0.070 ppm (days exceed threshold)	0	0	2	3	1
Max. 1-Hour Conc. (ppm)	0.082	0.077	0.092	0.108	0.096
Max. 8-Hour Conc. (ppm)	0.070	0.061	0.074	0.083	0.077
Nitrogen Dioxide (NO_2)					
State 1-Hour ≥ 0.18 ppm (days exceed threshold)	0	0	0	0	0
Federal 1-Hour ≥ 0.100 ppm (days exceed threshold)	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.0406	0.0383	0.0406	0.0339	0.0290
Coarse Particulates (PM_{10})					
State 24-Hour > 50 µg/m^3 (days exceed threshold)	0	1	0	1	0
Federal 24-Hour > 150 µg/m^3 (days exceed threshold)	0	0	0	1	0
Max. 24-Hour Conc. (µg/m^3)	41.2	99.3	34.8	165.4	25.0
Fine Particulates ($PM_{2.5}$)					
Federal 24-Hour > 35 µg/m^3 (days exceed threshold)	6	14	0	16	2
Max. 24-Hour Conc. (µg/m^3)	89.4	180.0	28.2	119.8	43.7

Source: CARB 2023c.
ppm = parts per million; parts per billion, µg/m^3 = micrograms per cubic meter
Data for O_3, NO_2, PM_{10} and $PM_{2.5}$ obtained from the Concord-2975 Treat Blvd Monitoring Station.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. BAAQMD defines sensitive receptors as "Facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples include schools, hospitals and residential areas" (BAAQMD 2023b).

Residential areas are also considered sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

Environmental Justice Communities

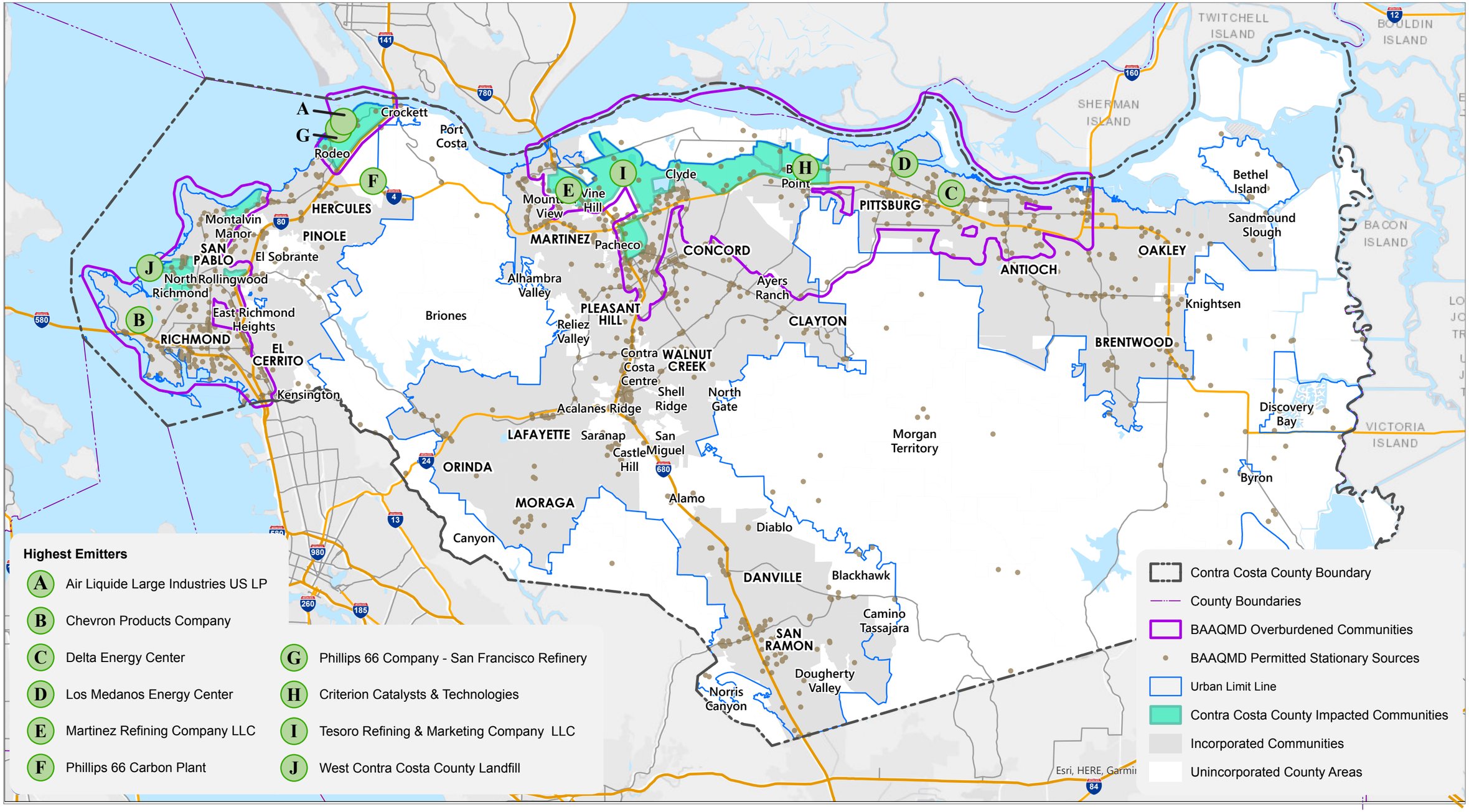
Disadvantaged communities identified by CES (i.e., environmental justice communities) may be disproportionately affected by and vulnerable to poor air quality.[4, 5] The CES cumulative score is a cumulative measure of overall environmental justice burden based on 24 indicators, including pollution, social, and health indicators, four of which specifically relate to air quality or air pollution. Within Contra Costa County, there are the following identified sensitive community types, which are areas that are disproportionately burdened by pollution:

- Contra Costa County Impacted Communities
- BAAQMD's Overburdened Communities
- BAAQMD's AB 617 Community – Richmond

Figure 5.3-1, *Overburdened and Impacted Communities and Community Emitters*, shows these sensitive community types, the location of the top ten highest emitters, and BAAQMD permitted stationary sources. Both BAAQMD's Overburdened Communities and Contra Costa County's Impacted Communities were mapped using CES Version 4. CES measures pollution and population characteristics using 21 indicators, such as air quality, hazardous waste sites, asthma rates, and poverty. It applies a formula to each census tract in the state to generate a score that ranks the level of cumulative impacts in each area relative to the rest of the census tracts in the state. Contra Costa County's Impacted Communities designation is applied to unincorporated areas that score at or above the 72nd percentile, whereas BAAQMD's Overburdened Communities designation is applied to census tracts that score at or above the 70th percentile, plus areas within 1,000 feet of any such census tract. As a result, BAAQMD's Overburdened Community designation is more encompassing of sensitive populations, and is therefore used in the impact analysis.

[4] Under SB 535, disadvantaged communities are defined as the top 25 percent scoring areas from CES along with other areas with high amounts of pollution and low populations.

[5] CES 4.0. Indicator maps can be found at: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40



Source: BAAQMD, 2013; OEHHA CalEnvironScreen 4.0, 2021; Contra Costa County, 2022.

0 3.5
Scale (Miles)

Figure 5.3-1
Overburdened and Impacted Communities and Community Emitters

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AB 617 Community – Richmond Area

Figure 5.3-1 also identifies the AB 617 community. The Richmond Area includes most of Richmond and San Pablo and adjacent communities such as North Richmond, Montalvin Manor, parts of Tara Hills, El Sobrante, and the Richmond Annex. Residents in the Richmond Area are exposed to a substantial and complex mix of air pollutants. Industrial sources of air pollution include a petroleum refinery, a chemical plant, a coal and petroleum coke terminal, organic liquid storage and distribution facilities, wastewater treatment plants, a landfill, organic waste metal facilities, and industrial and manufacturing plants of various sizes. Also, numerous smaller sources of air pollution are within residential areas, including auto body shops, paint shops, restaurants, and gas stations.

Mobile sources contribute air pollution, including DPM, to the area as well, including traffic on high volume freeways and roadways, such as Interstate (I) 80, I-580, the Richmond Parkway, and San Pablo Avenue; truck operations related to large distribution facilities; seaport operations; railways; and railyards. In total, there are more than 200 permitted emissions sources distributed throughout the Richmond Area (BAAQMD 2020). The community air monitoring program for the Richmond Area identified several areas with higher levels of different VOCs, likely due to specific nearby facilities and operations or a prevalence of combustion-related sources of VOCs like high-traffic corridors and restaurants (BAAQMD 2022).

CalEnviroScreen Air Quality Indicators

CES is a mapping tool that helps identify the California communities most affected by many sources of pollution and where people are especially vulnerable to pollution's effects. People in environmental justice areas identified by CES 4.0 may be disproportionately affected by and vulnerable to poor air quality. CES's "pollution burden" map identifies communities that are exposed to pollution from human activities, such as air pollution (ozone, $PM_{2.5}$, DPM), water pollution (drinking water contaminants), and hazardous materials (pesticide use, children's lead exposure, toxic releases), and traffic density. Figure 5.3-2, *CalEnviroScreen 4.0 – Pollution Burden Percentile*, shows the pollution burden in the county relative to the rest of the state. In CES, the pollution burden score considers the disproportionate effect of pollution on environmental justice communities, because the score weighs socioeconomic factors (e.g., educational attainment and poverty) and sensitivity of the population (e.g., asthma rates and cardiovascular disease).

Although the causes of asthma are poorly understood, it is well established that exposure to traffic and outdoor air pollutants can trigger asthma attacks. Children, the elderly, and low-income Californians suffer disproportionately from asthma (CalEPA 2017). Figure 5.3-3, *CalEnviroScreen 4.0 – Asthma Percentile*, maps the percentile of spatially modeled, age-adjusted rate of emergency department visits for asthma per 10,000 (averaged over 2015-2017) relative to the rest of the state (OEHHA 2023).

Figure 5.3-4, *CalEnviroScreen 4.0 – Diesel Particulate Matter Percentile*, and Figure 5.3-5, *CalEnviroScreen 4.0 – $PM_{2.5}$ Percentile*) provides an estimate of the percentile of DPM and $PM_{2.5}$ in the county relative to the rest of the state. The $PM_{2.5}$ percentile displays the annual mean concentration of $PM_{2.5}$ (weighted average of measured monitor concentrations and satellite observations, $\mu g/m^3$) over three years (2015 to 2017). DPM percentile is based on spatial distribution of gridded DPM emissions from on-road and non-road sources in 2016 (tons/year). Exposure to DPM has been shown to have numerous adverse health effects including irritation to

the eyes, throat, and nose; cardiovascular and pulmonary disease; and lung cancer. California regulations enacted since 1990 have led to a steady decline in diesel emissions. Particulate matter pollution, and fine particle ($PM_{2.5}$) pollution in particular, has been shown to cause numerous adverse health effects, including heart and lung disease (OEHHA 2021).

Other indicators identified by CES can be found in the proposed General Plan Stronger Communities Element, including:

- Figure SC-3, Cardiovascular Disease Rankings Relative to the State
- Figure SC-4, Low Birth Weight Rankings Relative to the State
- Figure SC-5, Children's Lead Risk from Housing Ranking Relative to the State
- Figure SC-6, Poverty Rankings Relative to the State
- Figure SC-7, Adults Without a High School Degree Rankings Relative to the State

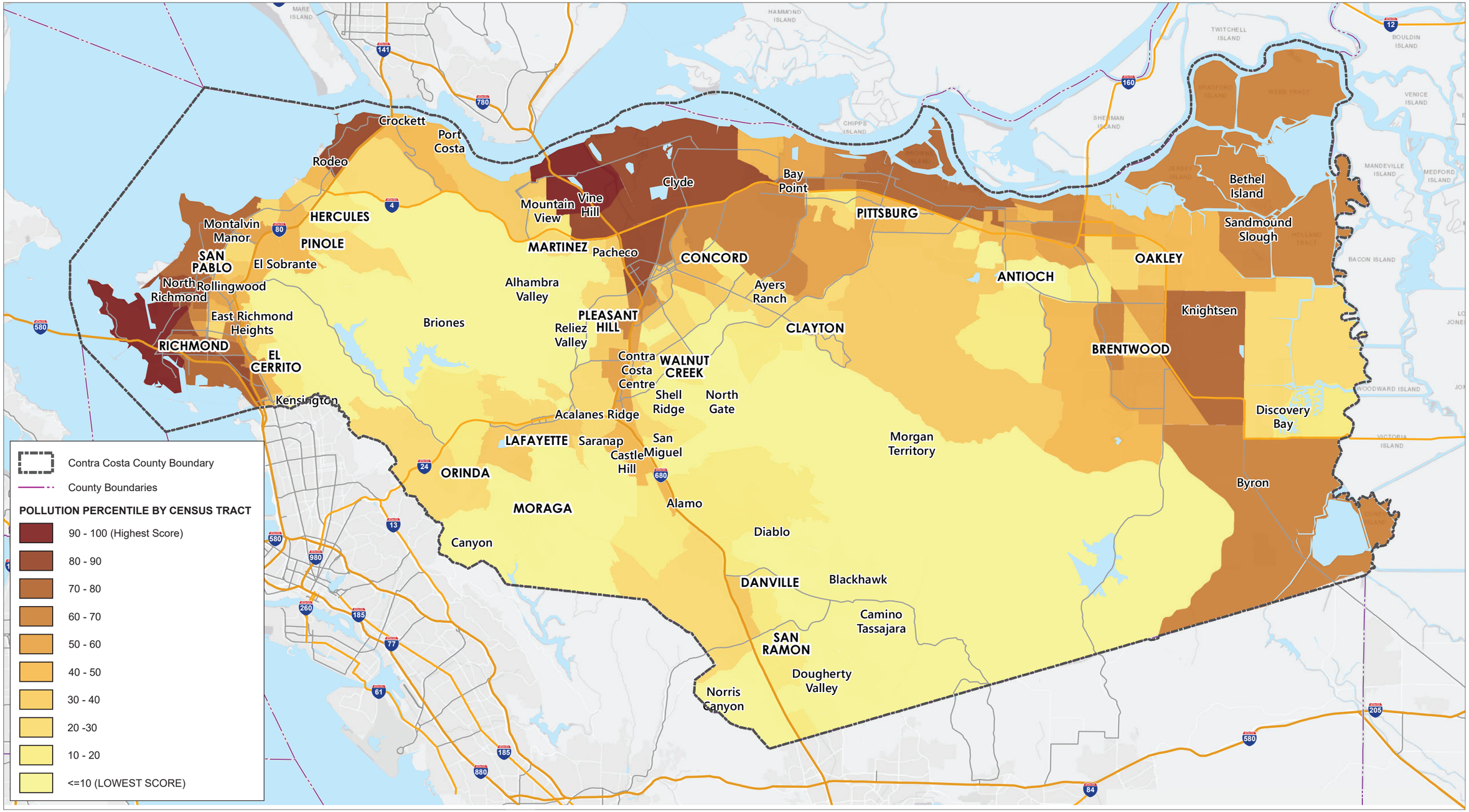
Existing Emissions

Table 5.3-6, *Contra Costa County Criteria Air Pollutant Emissions Inventory*, identifies the existing criteria air pollutant emissions inventory using emission rates for year 2019 (baseline). The inventories are based on existing land uses in the county. The Year 2019 inventory represents the projected emissions currently generated by existing land uses using the baseline year 2019 emission factors for on-road vehicles and emissions from off-road construction equipment.

Table 5.3-6 Contra Costa County Criteria Air Pollutant Emissions Inventory

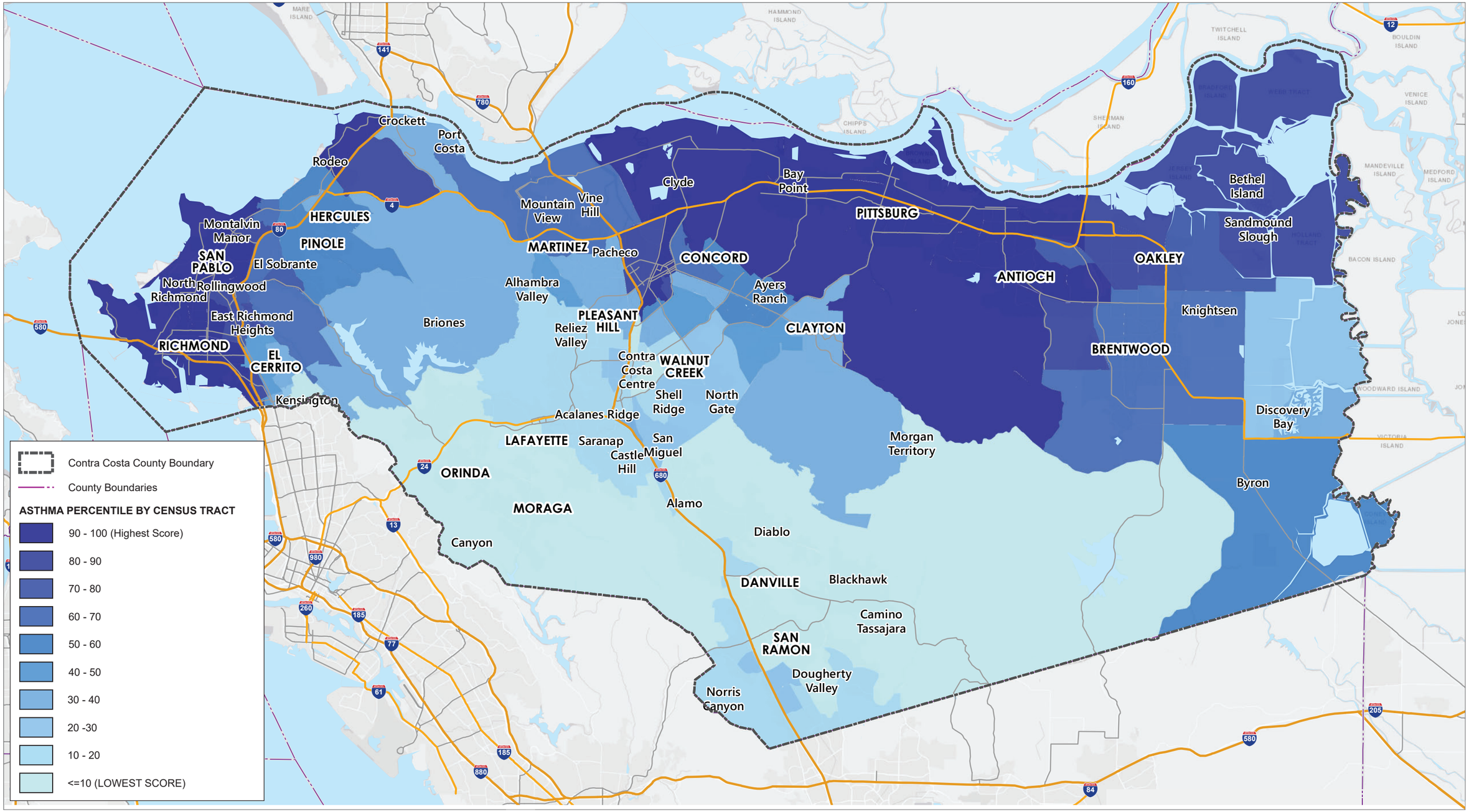
Sector	Existing Criteria Air Pollutant Emissions (tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	41	207	26	10
Energy[2]	11	206	15	15
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	3	3	0	0
Consumer Products[4]	444			
Total	**1,256**	**431**	**156**	**140**
Sector	**Existing Criteria Air Pollutant Emissions (lbs per day)**			
	VOC	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Transportation[1]	234	1,193	151	57
Energy[2]	60	1,129	84	84
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629
Area –Off-Road Equipment[3]	17	16	1	1
Area – Consumer Products[4]	2,432			
Total	**6,895**	**2,422**	**865**	**771**

Notes:
1 EMFAC2021 V.1.0.2. Based on daily VMT provided by Fehr & Peers (see Appendix 5.3-1).
2 Based on natural gas use provided by PG&E and residential fuels identified for the CAP Update.
3 OFFROAD2021 V.1.02.
4 Based on CalEEMod User's Guide methodology to calculate VOC emissions from use of household consumer cleaning products.



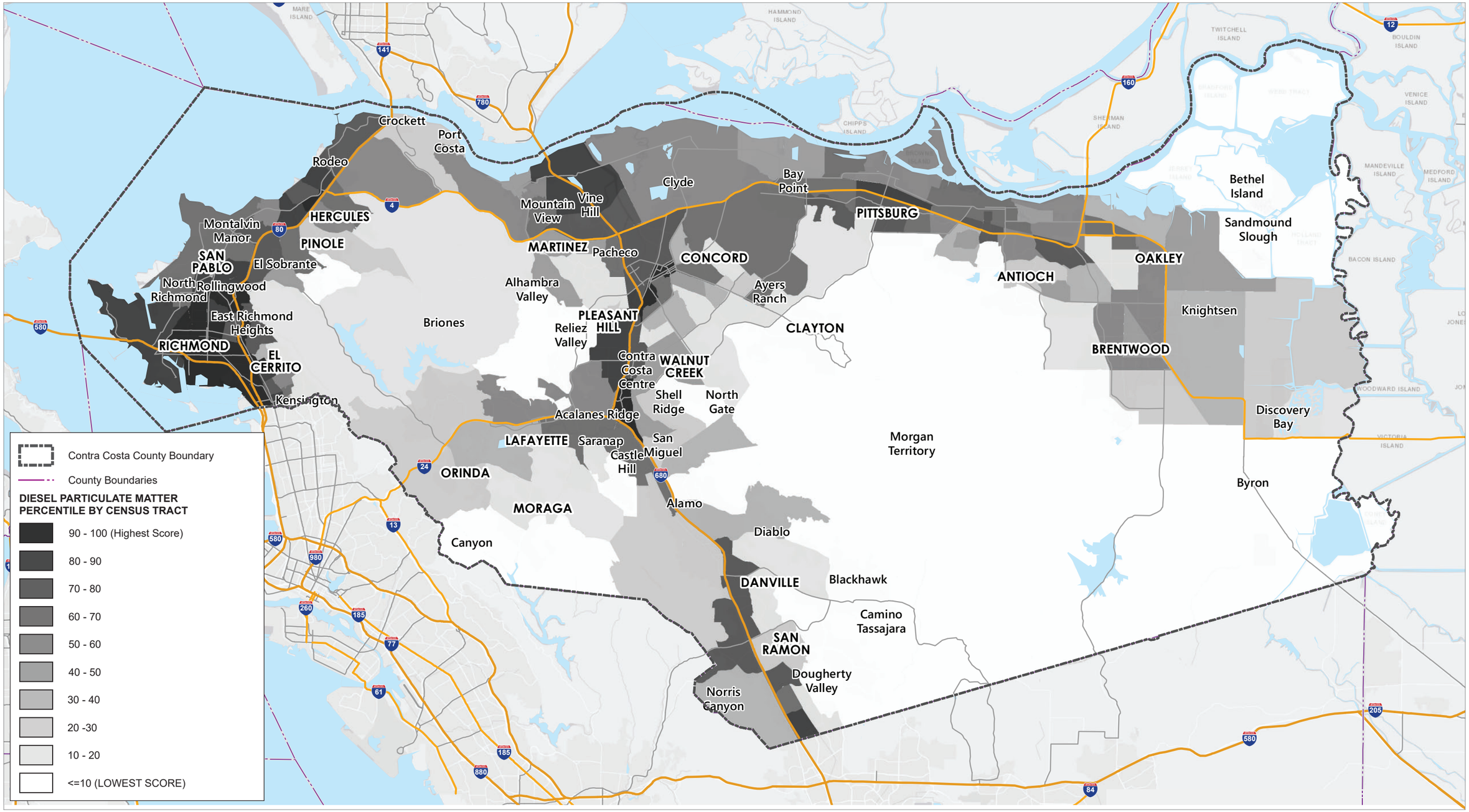
Source: OEHHA CalEnvironScreen 4.0, 2021.

Figure 5.3-2
CalEnvironScreen 4.0 – Pollution Burden Percentile



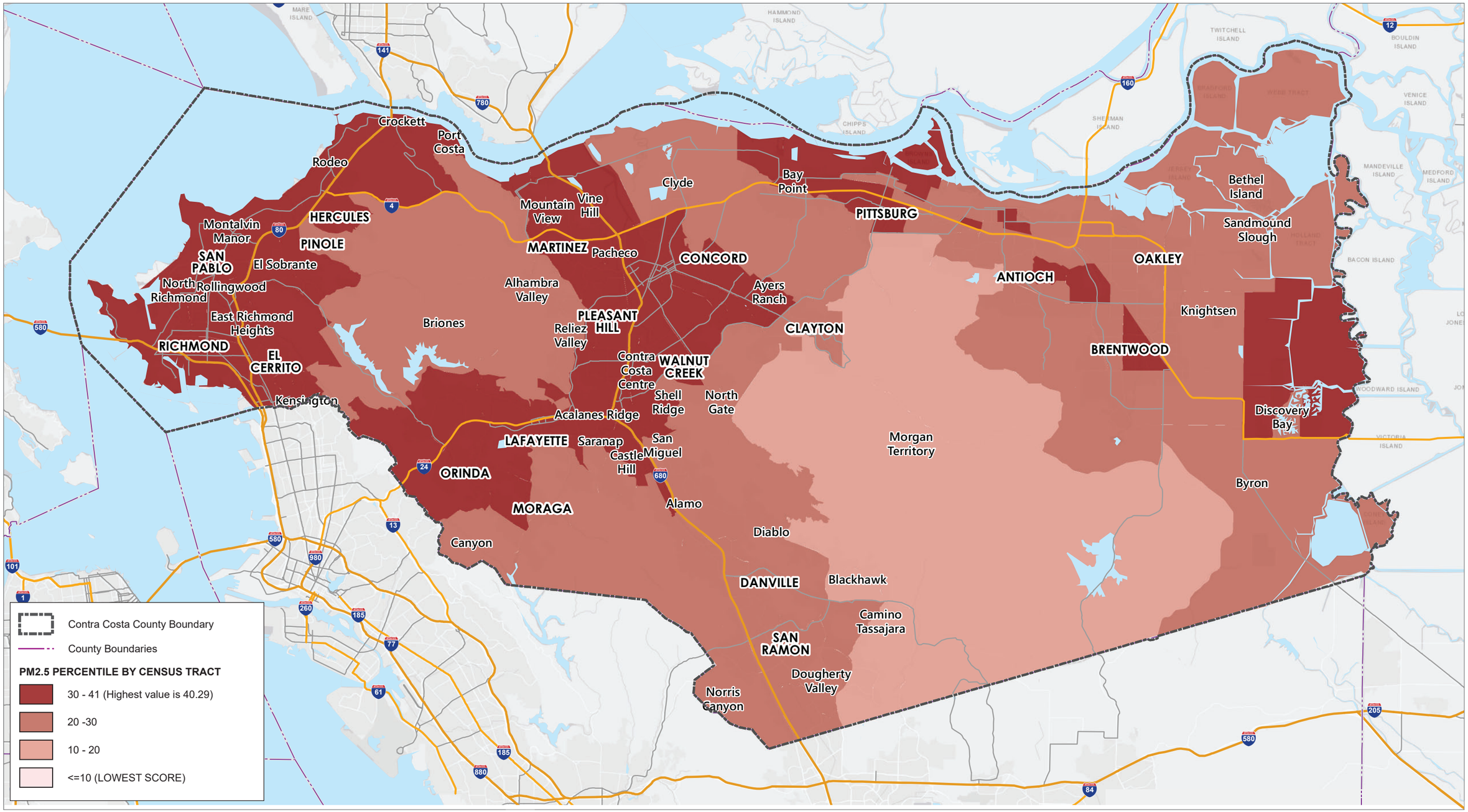
Source: OEHHA CalEnvironScreen 4.0, 2021.

Figure 5.3-3
CalEnvironScreen 4.0 – Asthma Percentile



Source: OEHHA CalEnvironScreen 4.0, 2021.

Figure 5.3-4
CalEnvironScreen 4.0 – Diesel Particulate Matter Percentile



Source: OEHHA CalEnvironScreen 4.0, 2021.

0 3.5
Scale (Miles)

Figure 5.3-5
CalEnvironScreen 4.0 – PM2.5 Percentile

5.3.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

AQ-1 Conflict with or obstruct implementation of the applicable air quality plan.

AQ-2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State AAQS.

AQ-3 Expose sensitive receptors to substantial pollutant concentrations.

AQ-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

5.3.2.1 BAY AREA AIR QUALITY MANAGEMENT DISTRICT THRESHOLDS

The BAAQMD *CEQA Air Quality Guidelines* were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxins, odors, GHG emissions, and environmental justice.

In June 2010, BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. These thresholds are designed to establish the level at which the BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. BAAQMD published a new version of the Guidelines in April 2023. This latest version of the BAAQMD CEQA Guidelines was used to prepare the analysis in this EIR.

Criteria Air Pollutant Emissions and Precursors

Regional Significance Criteria

BAAQMD's regional significance criteria for projects that exceed the screening thresholds are shown in Table 5.3-7, *BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds*. Criteria for both the construction and operational phases of the project are shown.

Table 5.3-7 BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (Tons/year)
Project-Level			
ROG	54	54	10
NO_X	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
PM_{10} and $PM_{2.5}$ Fugitive Dust	Best Management Practices	None	None
Plan-Level			
All Criteria Air Pollutants	No Net Increase		

Source: BAAQMD 2023b.

The proposed project is a regional plan; regional plans would have a less-than-significant impact related to air quality if they demonstrate 'no net increase' in criteria air pollutants and risks and hazards. To demonstrate no net increase, BAAQMD's Guidelines require two comparative analyses for the projected future emissions:

- **Scenario 1: Project to Existing Conditions (base-to-future-year comparison).** Compare the existing (base year) emissions with projected future year emissions plus the regional plan's emissions (base year/regional plan comparison).
- **Scenario 2: Project to Future No Project Conditions (future baseline comparison)** Compare projected future year emissions with projected future year emissions plus the regional plan's emissions (no regional plan/regional plan comparison). This scenario isolates changes in emissions due solely to the project since both the scenarios consider emissions reductions from federal and State regulations.

If both comparative analyses demonstrate no net increase in emissions, the air quality and GHG impacts of the regional plan would be less than significant.

Health Effects of Criteria Air Pollutants

If projects exceed the emissions in Table 5.3-7, their emissions would cumulatively contribute to the nonattainment status and would contribute in elevating health effects associated to these criteria air pollutants. Known health effects related to ozone include worsening of bronchitis, asthma, and emphysema and a decrease in lung function. Health effects associated with particulate matter include premature death of people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, decreased lung function, and increased respiratory symptoms. Reducing emissions would further contribute to reducing possible health effects related to criteria air pollutants.

However, for projects that exceed the emissions in Table 5.3-7, it is speculative to determine how exceeding the regional thresholds would affect the number of days the region is in nonattainment since mass emissions are not correlated with concentrations of emissions or how many additional individuals in the air basin would be affected by the health effects cited above. BAAQMD is the primary agency responsible for ensuring the health and welfare of sensitive individuals to elevated concentrations of air quality in the Air Basin, and at the present

time, it has not provided methodology to assess the specific correlation between mass emissions generated and the effect on health in order to address the issue raised in *Sierra Club v. County of Fresno (Friant Ranch, L.P.) (2018) 6 Cal.5th 502, Case No. S21978* (Friant Ranch).

Ozone concentrations depend on a variety of complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Because of the complexities of predicting ground-level ozone concentrations in relation to the National and California AAQS, it is not possible to link health risks to the magnitude of emissions exceeding the significance thresholds. To achieve the health-based standards established by the EPA, the air districts prepare AQMPs that detail regional programs to attain the AAQS. However, if a project within the Plan Area exceeds the regional significance thresholds, the project could contribute to an increase in health effects in the basin until such time the attainment standards are met in the Air Basin.

CO Hotspots

Congested intersections have the potential to create elevated concentrations of CO, referred to as CO hotspots. The significance criteria for CO hotspots are based on the California AAQS for CO, which are 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology, the SFBAAB is in attainment of the California and National AAQS, and CO concentrations in the SFBAAB have steadily declined. Because CO concentrations have improved, the BAAQMD does not require a CO hotspot analysis if the following criteria are met (BAAQMD 2023b):

- The project is consistent with an applicable congestion management program established by the County Congestion Management Agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans.
- The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersection to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, and below-grade roadway).

Community Risk and Hazards

BAAQMD's significance thresholds for local community risk and hazard impacts apply to both the siting of a new source and to the siting of a new receptor. Local community risk and hazard impacts are associated with TACs and $PM_{2.5}$ because emissions of these pollutants can have significant health impacts at the local level. The proposed project would generate TACs and $PM_{2.5}$ during construction activities that could elevate concentrations of air pollutants at the nearby sensitive receptors. The thresholds for construction-related local community risk and hazard impacts are the same as for project operations. BAAQMD has adopted screening tables for air toxics evaluation during construction (BAAQMD 2010b). Construction-related TAC and $PM_{2.5}$ impacts should be addressed on a case-by-case basis, taking into consideration the specific construction-related characteristics of each project and proximity to off-site and on-site receptors, as applicable (BAAQMD 2010b and BAAQMD 2017a).

Community Risk and Hazards: Project

Project-level emissions of TACs or $PM_{2.5}$ from individual sources that exceed any of the thresholds listed below are considered a potentially significant community health risk in the absence of a qualified community risk reduction plan:

- An excess (i.e., increased) cancer risk level of more than 10 in one million[6]
- Noncancer (i.e., chronic or acute) hazard index greater than 1.0
- An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) annual average $PM_{2.5}$ (BAAQMD 2023b)

Community Risk and Hazards: Cumulative

Cumulative sources represent the combined total risk values of each of the individual sources within the 1,000-foot evaluation zone. A project would have a cumulatively considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source or location of a receptor, plus the contribution from the project, exceeds any of the following in the absence of a qualified community risk reduction plan:

- An excess cancer risk level of more than 100 in one million (from all sources)
- Chronic noncancer hazard index (from all local sources) greater than 10.0
- 0.8 $\mu g/m^3$ annual average $PM_{2.5}$ (from all local sources) (BAAQMD 2023b)

In February 2015, the Office of Environmental Health Hazard Assessment (OEHHA) adopted new health risk assessment guidance that includes several efforts to be more protective of children's health. These updated procedures include the use of age sensitivity factors to account for the higher sensitivity of infants and young children to cancer causing chemicals, and age-specific breathing rate (OEHHA 2015).

Odors

BAAQMD's thresholds for odors are qualitative based on BAAQMD's Regulation 7, *Odorous Substances*. This rule places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under BAAQMD Regulation 1, Rule 1-301, *Public Nuisance*, which states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endangers the comfort, repose, health, or safety of any such persons or the public, or which cause, or has a natural tendency to cause, injury, or damage to business or property. Under BAAQMD's Rule 1-301. BAAQMD has established odor screening distance thresholds for land uses that have the potential to generate substantial odor complaints, including wastewater treatment plants, landfills or transfer stations, composting facilities, confined animal facilities, food manufacturing, and chemical plants (BAAQMD 2023b, Table 5-4, *Odor Screening Distances*).

[6] The CEQA thresholds of significance do not reflect recent amendments adopted in 2021 to BAAQMD Regulation 2-5 that lower the cancer risk threshold to 6 cases in a million in overburdened communities.

For a plan-level analysis, BAAQMD requires:

- Identification of potential existing and planned location of odors sources.
- Policies to reduce potential odor impacts in the plan area.

5.3.2.2 CONTRA COSTA COUNTY THRESHOLDS

Community Risk and Hazard

In addition to the BAAQMD thresholds identified above, the County has proposed the following policy in the General Plan that sets the incremental cancer risk threshold to 6.0 per million in Impacted Communities (compared to 10 in a million) in the unincorporated area:

- **HS-P2.1.** When evaluating health risk impacts of projects in Impacted Communities, use an excess cancer risk of 6.0 per million and a non-cancer (acute and chronic) hazard index greater than 1.0 as thresholds for finding that the project could cause a cumulatively considerable contribution and a significant impact.

5.3.3 Programs, Plans, and Policies

5.3.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to air quality. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Stronger Communities Element

- **Policy SC-P1.1:** In partnership with residents of Impacted Communities, affected workers, business/industry, environmental and environmental justice advocates, community colleges, workforce development and training entities, local government, and other involved agencies, support transition from petroleum refining and other highly polluting industries to a net-zero emission economy based on renewable and sustainable industries that provide living-wage jobs.
- **Policy SC-P1.3:** Support development of walkable districts that provide a range of neighborhood-serving retail and service uses, public amenities, and related infrastructure (such as lighting) to residents of Impacted Communities within walking distance of their homes.
- **Policy SC-P2.3:** Within established communities, complete construction of sidewalks and crosswalks and encourage neighborhood design and development that supports safe walking, biking, and other micro-mobility options, convenient access to services and transit, and opportunities for local shopping.

Land Use Element

- **Policy LU-P3.3:** Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.

- **Action LU-A4.1:** Amend the County Ordinance Code to include requirements for Low-Impact Development, use of low-carbon concrete, water and energy conservation, reclaimed water, renewable energy use, green building, and other measures that reduce the environmental impacts of development, based on the best available science.
- **Policy LU-P8.4:** Support rehabilitation of commercial centers, encouraging improvements that enhance appearance, sustainability, and non-motorized (pedestrian, bicycle, etc.) access and safety.

Transportation Element

- **Policy TR-P1.2:** Prioritize expansion of bicycle and pedestrian infrastructure to address the significant latent demand for these active transportation modes.
- **Policy TR-P1.3:** Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.
- **Policy TR-P1.4:** Reduce single-occupant vehicle usage, at a minimum using strategies defined in the TDM Ordinance.
- **Policy TR-P1.11:** Support transitioning all on-road vehicles, including personal vehicles and business, government, and public transit fleets, to electric power from renewable sources or other zero-emission fuels.
- **Policy TR-P1.12:** Continue to improve ZEV (including electric bicycle) charging/ fueling infrastructure within new development and public rights-of-way, incorporating new technologies whenever possible.
- ***Policy TR-P1.13:*** *Require designs for new parking facilities to incorporate ZEV charging/fueling infrastructure and maximize opportunities for adaptive reuse.*
- **Action TR-A1.11:** Coordinate with CCTA and other local and regional agencies to implement the Contra Costa Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements.
- **Action TR-A1.12:** Update the County Ordinance Code as necessary to support advances in ZEV charging/fueling infrastructure, including for medium- and heavy-duty vehicles.
- **Policy TR-P3.2:** Coordinate planning, construction, and maintenance of streets, transit infrastructure, non-motorized rights-of-way and associated facilities, the countywide bicycle network, and Pedestrian Priority Areas with neighboring jurisdictions and CCTA.
- **Policy TR-P4.1:** Plan, design, and maintain improvement projects involving County roadways in accordance with the County's adopted Complete Streets Policy, other applicable policies (e.g., Vision Zero and other safety initiatives), planning documents such as the County ATP and CCTA Countywide Bicycle and Pedestrian Plan, and best practices (e.g., Caltrans, American Association of State and Highway Transportation Officials, and National Association of City Transportation Officials guidance).

- ***Policy TR-P4.2:*** *Require transportation infrastructure serving new development to be designed using best practices, contemplating existing and planned land uses, roadways, bicycle and pedestrian facilities, transit facilities, and connections to adjoining areas.*
- **Action TR-A5.1:** Partner with CCTA and neighboring jurisdictions to build out the countywide bicycle and pedestrian network, prioritizing completion of the Low-Stress Countywide Bicycle Network and pedestrian safety improvement projects in the County's Pedestrian Priority Areas, as described in the Countywide Bicycle and Pedestrian Plan
- **Action TR-A5.2:** Construct innovative bicycle and pedestrian facilities, including Class IV separated and protected bikeways, bicycle superhighways, and other low-stress facility types, as described in the Countywide Bicycle and Pedestrian Plan and in contemporary, best-practice transportation planning and engineering guidance. Use contextually appropriate green infrastructure and landscaping to separate vehicular lanes from bicycle and pedestrian facilities whenever feasible.

Conservation and Open Space Element

- **Policy COS-P2.11:** Support efforts to protect, maintain, and improve soil health as a carbon sequestration tool.
- **Policy COS-P5.1:** Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
- **Action COS-A5.1:** Inventory wetlands, floodplains, marshlands, and adjacent lands that could potentially support climate adaptation (e.g., through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration).
- **Policy COS-P6.2:** Encourage planting and propagation of native trees throughout the county to enhance the natural landscape, provide shade, sustain wildlife, absorb stormwater, and sequester carbon.
- **Policy COS-P7.8:** Promote installation of drought-tolerant green infrastructure, including street trees, in landscaped public areas.
- ***Policy COS-P14.1:*** *Implement Climate Action Plan strategies to improve energy efficiency and conservation, promote carbon-free energy sources, and reduce energy-related GHG emissions.*

Health and Safety Element

- **Policy HS-P1.1:** Coordinate air quality planning efforts with State and regional agencies, such as CARB, BAAQMD, and ABAG/MTC.
- **Policy HS-P1.2:** Participate in emission and exposure reduction, public education, engagement, outreach, and other programs that promote improved air quality, focusing on Impacted Communities.
- ***Policy HS-P1.3:*** *Require new development to adhere to BAAQMD's Planning Healthy Places guidance when local conditions warrant.*
- ***Policy HS-P1.4:*** *Require new industrial development to locate significant pollution sources as far away from sensitive receptors as possible.*

- ***Policy HS-P1.5:*** *Require new sources of air pollution that will generate significant new air quality impacts or expose sensitive receptors to substantial increases in harmful emissions of TAC to prepare a Health Risk Assessment that identifies appropriate mitigation consistent with BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines, based on the findings of the Health Risk Assessment.*
- ***Policy HS-P1.6:*** *Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to local residents. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible. If the project site is within or adjacent to an Impacted Community, require offsets/mitigation within that community unless determined infeasible by the County.*
- ***Policy HS-P1.7:*** *Require construction activities that involve large grading operations to implement additional construction measures identified in BAAQMD's CEQA Guidelines to reduce air pollutant emissions.*
- ***Policy HS-P1.8:*** *Require new or expanded commercial and industrial projects exceeding 25,000 square feet of gross floor area to be near zero-emissions (NZE) operations, including the facilities themselves and the associated fleets. Require all necessary measures, such as the following, to achieve NZE:*
    - *a) Reduce on-site energy consumption and increase on-site energy generation and energy storage.*
    - *b) Provide adequate on-site ZE vehicle-capable parking for all anticipated truck traffic to prevent idling and off-site queuing.*
    - *c) Provide electrified loading docks with receptacles allowing plug-in of refrigerated trailers.*
    - *d) Use heavy-duty trucks that are model year 2014 or later and expedite a transition to ZE trucks by establishing a clear timeline for electrification of trucks as they become commercially available. Ensure contracts with motor carriers include air quality incentives or requirements, such as providing incentives to fleets that meet United States Environmental Protection Agency (EPA) SmartWay standards or requiring use of ZE or NZE trucks.*
    - *e) Use a "clean fleet" of delivery vehicles as they become commercially available, but no later than 2025.*
    - *f) Use ZE yard equipment, such as forklifts, pallet trucks and jacks, and stackers.*
    - *g) Implement practices to control and remove fugitive dust and other contaminants from paved areas.*

  Uses with fewer than five vehicles domiciled on-site are exempt from this policy.
- ***Policy HS-P1.9:*** *Prohibit nonessential diesel engine idling countywide and nonessential idling of all vehicles within 100 feet of sensitive receptors.*
- **Policy HS-P1.10:** Support efforts to provide HVAC upgrades and portable clean air filters to persons who live in Impacted Communities and other areas burdened by disproportionate exposure to poor air quality.
- **Action HS-A1.1**. Consult with BAAQMD and community stakeholders and prepare an Air Quality Community Risk Reduction Plan that applies to areas with high levels of cancer risk, providing a comprehensive strategy to protect community members from the negative health effects of air pollution.
- **Action HS-A1.2**. Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to create an Air Pollution Exposure Overlay Zone around freeways that requires new construction in these areas to install enhanced ventilation systems and other strategies to protect people from respiratory, heart, and other health effects associated with breathing polluted air.

- **Action HS-A1.3**. Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to include an Industrial-Sensitive Receptor Interface Overlay Zone applied to areas where residential land uses and other sensitive receptors interface or directly abut heavy industrial land uses. In the overlay zone, require industrial uses to reduce pollution and employ strategies to mitigate air quality, noise, vibration, odor, light, visual, and safety impacts on nearby sensitive receptors. In addition, require new sensitive receptors to install enhanced ventilation systems and implement other strategies, paid for by neighboring sources of pollution to the extent possible, to protect residents from health and quality of life impacts.
- **Action HS-A1.4:** Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 7 – Building Regulations to include a clean construction ordinance that requires projects to implement extra measures to reduce emissions at construction sites in or near places that are already overburdened by air pollution, such as Impacted Communities.
- **Action HS-A1.5:** Adopt an ordinance at least as stringent as the State's maximum idling law, and coordinate with CARB and law enforcement to achieve compliance.
- **Action HS-A1.6:** Develop a plan to provide convenient and accessible clean air refuges during times when outdoor air quality is deemed unhealthy.
- ***Policy HS-P2.1:*** *When evaluating health risk impacts of projects in Impacted Communities, use an excess cancer risk of 6.0 per million and a non-cancer (acute and chronic) hazard index greater than 1.0 as thresholds for finding that the project could cause a cumulatively considerable contribution and a significant impact.*
- **Action HS-A2.1:** Partner with community members and regulatory agencies to prepare community-scale plans for reducing and mitigating air pollutant emissions and industrial hazards, such as pipeline risks, accidents, potential water or soil contamination, and impacts to sensitive ecological resources, for each Impacted Community, or group of Impacted Communities, as appropriate. Require future projects to demonstrate consistency with those plans.
- **Action HS-A2.4.** Coordinate with BAAQMD to determine where to focus a targeted permit inspection program in Impacted Communities to help ensure enforcement of air quality permits.

5.3.3.2 PROPOSED CLIMATE ACTION PLAN STRATEGIES AND ACTIONS

The following proposed CAP strategies and actions pertain to air quality:

Clean and Efficient Built Environment (BE)

Strategy BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

Strategy BE-1 Actions:

- Consider adopting new or modified reach codes that exceed the California Building Standards Code to require the use of lower-carbon intensive energy sources, to achieve higher feasible levels of energy conservation and efficiency, and to achieve lower feasible levels of GHG emissions.

- Maintain, update, publicize, and enforce the County Ordinance Code Title 7 – Building Regulations amendment requiring new residential buildings, hotels, offices, and retail to be all-electric. Evaluate the feasibility of including other building types as appropriate.
- Design and construct new County facilities to be zero net energy to the extent feasible.
- Study the feasibility of establishing a low-carbon concrete requirement for all new construction and retrofit activities and consider additional strategies to reduce embedded carbon in construction materials. The intent is to determine what the County can and should do to support or exceed State requirements for net-zero emissions for cement use by 2045.

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated County, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-neutral fuels.

Strategy BE-2 Actions:

- Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy.
- Require replacement and new water heaters and space heating and cooling systems to be electric if the building electric panel has sufficient capacity in accordance with BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6.
- Create a detailed roadmap to convert existing homes and businesses to use low- or zero-carbon appliances. The roadmap should include steps to support converting buildings to rely on low- or zero-carbon energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants.
- Work to continue to obtain funding with partners such as BayREN and MCE to implement a program or programs to provide reduced-cost or free energy-efficiency and zero-carbon retrofits to local small businesses and households earning less than the area median income, in support of the Contra Costa County Asthma Initiative, Contra Costa County Weatherization Program, similar County programs, other nonprofit partners, and other health equity efforts for Impacted Communities. Support the use of low-emitting materials, including paints and carpeting, in retrofits to improve indoor air quality.
- In partnership with MCE and BayREN, continue to support voluntary home and business energy efficiency retrofits, including all-electric measures.
- Continue to conduct energy and water tracking activities, audits, and upgrades of County facilities, including conversion of feasible County facilities to all-electric space and water heating.
- Implement requirements for cool roofs and light-colored, nonreflective permeable paving materials as part of retrofit, repair, and replacement activities, using recycled materials or other materials with low embedded carbon as feasible and as established by the Building Standards Code.

Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

Strategy BE-3 Actions:

- Require new commercial parking lots with 50 or more spaces to mitigate heat gain through installation of shade trees, solar arrays, or other emerging cooling technologies. Prioritize the use of solar arrays where feasible and appropriate.
- Work with MCE to increase enrollment, especially in the Deep Green tier.
- Continue to enroll all eligible, non-solar-equipped County facility electricity accounts in MCE territory in the Deep Green tier.
- Encourage installation of battery storage systems in new and existing buildings, especially buildings with solar energy systems and buildings that provide essential community services.
- Pursue implementation of recommendations of the 2018 Renewable Resource Potential Study.
- Evaluate the least-conflict feasible locations for stand-alone battery storage systems and modify land use regulations to enable such use in these locations.

No Waste Contra Costa (NW)

Strategy NW-4: Reduce emissions from landfill gas.

Strategy NW-4 Actions:

- Encourage efforts at Acme, Keller Canyon, and West Contra Costa landfills to install or enhance existing methane capture technology and associated monitoring systems with a goal of increasing the methane capture rate to the greatest extent feasible.
- Explore opportunities for partnering with agricultural and industrial operations to generate energy from methane gas generated by their ongoing activities.
- Support landfill operators in efforts to transition away from landfill gas flaring.

Clean Transportation Network (TR)

Strategy TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit to travel within, to, and from the county.

Strategy TR-1 Actions:

- Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report and Action Plan; Active Transportation Plan; and equity-focused plans, programs, and policies.
- Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities.
- Work with CCTA to fill gaps in the countywide Low-Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bicycle facilities.

- In collaboration with key partners, support efforts to establish or join a shared mobility program that provides access to conventional bicycle, e-bikes, and other micromobility modes.
- Support efforts to expand the service area and frequency of regional transit agencies, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT.
- Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance.
- Maintain in place and enforce a Transportation Demand Management (TDM) Ordinance that reflects best practices, and, at a minimum, conforms to Contra Costa Transportation Authority's adopted model TDM ordinance or resolution.
- Improve county-wide safety for bicyclists by advocating for the passage of Vulnerable Road User Laws.
- Secure additional funding for the maintenance and expansion of bicycle and pedestrian infrastructure improvements. Support efforts to obtain additional funding to maintain and expand public transit operations and infrastructure improvements.
- Support CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions.
- Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.
- Encourage and support increased regional integration of transit systems to promote more equitable fare structures, fare integration, easier transfers, including coordinated transfers between different transit systems and reduced wait times, improved information sharing, and generally a more seamless and modern system.

Strategy TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

Strategy TR-2 Actions:

- Require new County vehicles to be zero emission to the extent a viable vehicle is available on the market, that charging or zero-emission fueling equipment is conveniently located where the vehicle will be stored, and as required by the Advanced Clean Fleet regulations, with the goal that all County vehicles will be zero-emission by 2035.
- Install electric vehicle charging equipment and other infrastructure needed to support the transition to a zero-emission County fleet at County facilities. Consider the appropriate locations, number, and capacity of infrastructure to facilitate the transition of the County fleet to zero-emission vehicles.
- Provide incentives for zero-emission vehicles in partnership with MCE, BAAQMD, and other agencies.
- Work with property owners and other potential partners to pursue installation of zero-emission vehicle charging stations in and near multi-family dwelling units.
- Update off-street parking ordinance to include a requirement for zero-emission vehicle charging infrastructure. Consider including incentives for developers to exceed minimum requirements (i.e., density bonus).

- Increase installation of electric vehicle charging stations for all vehicle types, including bicycles and scooters, at public facilities, emphasizing increased installation in Impacted Communities.
- In partnership with regional agencies, explore providing subsidies for households making less than the area median income to purchase or lease zero-emission vehicles and associated infrastructure.
- Pursue fees and regulatory efforts to convert transportation network company (TNC), taxi, and similar car-hire services to zero-emission vehicles.
- Explore opportunities for implementing electric vehicle sharing programs.
- Work with BAAQMD and other regional agencies to convert off-road equipment to zero-emission clean fuels.
- Work with contractors, fleet operations, logistics companies, and other operators of heavy-duty vehicles to accelerate the transition to zero-emission heavy-duty vehicles.
- Work with Public Works to pursue the use of renewable natural gas (sourced from recovered organic waste) for transportation fuel, electricity, or heating applications in cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available.
- Encourage efforts to maximize EV charging during solar peak hours.
- Support implementation of the Contra Costa County Electric Vehicle Readiness Blueprint.

Resilient Communities and Natural Infrastructure (NI)

Strategy NI-4: Sequester carbon on natural and working lands in Contra Costa County

Strategy NI-4 Actions:

- Pursue implementation of recommendations from carbon sequestration feasibility study, Healthy Lands, Healthy People.
- Continue to support and work with key partners to maintain existing and establish new pilot programs for carbon sequestration on agricultural land.
- Promote restorative agricultural and landscaping techniques that incorporate cover crops, mulching, compost application, field borders, alley cropping, conservation crop rotation, prescribed grazing, and reduced tillage to promote healthy soil and soil conservation.
- Support soil conservation and restoration programs. Encourage agricultural landowners to work with agencies such as the USDA's NRCS and Contra Costa RCD to reduce erosion and soil loss.
- Coordinate with farming groups, ranchers, the Contra Costa Resource Conservation District, and the University of California Cooperative Extension to identify and promote varieties of feedstock, livestock, and crops that are resilient to rising temperatures and changing precipitation patterns and that increase carbon sequestration.
- Explore ways to increase carbon sequestration on County-owned facilities.
- Partner with regional landowners and agencies to establish carbon sequestration programs and incentives.

- Consider the development of carbon offset protocols and guidance for use by carbon sequestration program applicants and County permitting staff to promote appropriate sequestration on natural and developed lands.
- Ensure that any local or regional carbon sequestration program that the County establishes, promotes, supports, or joins must provide benefits to unincorporated communities that face environmental justice issues.
- Explore the potential for the public to support tree planting and maintenance of existing trees.
- Establish a mechanism to support expanded tree planting and maintenance activities, particularly in areas with few trees.
- Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
- Inventory wetlands, floodplains, marshlands, and adjacent lands that could potentially support climate adaptation (e.g., through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration).
- Explore the creation of a Climate Resilience District.
- Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to local residents. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible. If the project site is within or adjacent to an Impacted Community, require offsets or mitigation within that community unless determined infeasible by the County.

5.3.4 Environmental Impacts

5.3.4.1 METHODOLOGY

Emissions Sectors

The air quality analysis was prepared in accordance with the requirements of CEQA to determine if significant air quality impacts are likely to occur in conjunction with future development that would be accommodated by the proposed project. BAAQMD has published the CEQA Air Quality Guidelines that provides local governments with guidance for analyzing and mitigating air quality impacts and was used in this analysis. The County's criteria air pollutant emissions inventory includes the following sectors:

- **Transportation.** Transportation emissions forecasts were modeled using CARB's EMFAC2021, version 1.0.1, web database. Model runs were based on Origin Destination (OD) Method using VMT data provided by Fehr & Peers and calendar year 2019 (existing) and 2045 emission rates. VMT that have an origin or destination in the county use a transportation origin-destination methodology. Accounting of VMT is based on the recommendations of CARB's Regional Targets Advisory Committee (RTAC) created under SB 375. For accounting purposes, there are three types of trips:

- **Internal-Internal.** Vehicle trips that originated and terminated within the county (Internal-Internal, I-I). Using the accounting rules established by RTAC, 100 percent of the length of these trips and their emissions are attributed to the county.
- **Internal-External/External-Internal.** Vehicle trips that either originated or terminated (but not both) in the county (Internal-External or External-Internal, I-X and X-I). Using the accounting rules established by RTAC, 50 percent of the trip length for these trips is attributed to the county.
- **External-External.** Vehicle trips that neither originated nor terminated in the county. These trips are commonly called pass-through trips (External-External, X-X). Using the accounting rules established by RTAC, these trips are not counted toward the county's VMT or emissions.

- **Energy:** Emissions associated with natural gas use for residential land uses in the county were modeled based on energy use gathered as part of the proposed CAP (see Appendix 5.3-1 and Appendix 5.8-1). Forecasts were adjusted for increases in population in the county and based on the State actions energy forecast conducted for the CAP (see Appendix 5.3-1 and Appendix 5.8-1).
- **Off-Road Equipment:** Emission rates from CARB's OFFROAD2021, version 1.0.2, web database were used to estimate criteria air pollutant emissions from lawn and garden equipment. OFFROAD is a database of equipment use and associated emissions for each county compiled by CARB. Annual emissions for each of the sectors were compiled using OFFROAD for Contra Costa County for year 2019 and forecasted based on the increase in population.
- **Area Sources:** Area sources are based on the emission factors from the CalEEMod Users Guide for emissions generated from use of consumer products and cleaning supplies.

5.3.4.2 IMPACTS OF THE ENVIRONMENT ON A PROJECT

BAAQMD's CEQA Guidelines include methodology for jurisdictions wanting to evaluate the potential impacts from placing sensitive receptors proximate to major air pollutant sources. For assessing community risk and hazards for siting a new receptor, sources within a 1,000-foot radius of a project site are typically considered. Sources are defined as freeways, high volume roadways (at least 10,000 vehicles/day), major rail or truck yards, ports, rail lines, ferry terminal, large commercial distribution centers, and permitted stationary pollutant sources (BAAQMD 2023b).

Development under the proposed project could result in siting sensitive uses (e.g., residential) near sources of emissions (e.g., freeways and industrial uses). Developing new sensitive land uses near sources of emissions could expose persons that inhabit these sensitive land uses to potential air quality-related impacts. However, the purpose of this environmental evaluation is to identify the significant effects of the proposed project on the environment, not the significant effects of the environment on the proposed project. *California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th* 369 (Case No. S213478). Thus, CEQA does not require analysis of the potential environmental effects from siting sensitive receptors near existing sources, and this type of analysis is not provided below in the Impact Analysis section.

While it is generally not within the purview of CEQA to analyze impacts of the environment on a project, the proposed project includes policies that would ensure priority of the health of Contra Costa County residents through enforcement of County Codes and incorporation of design features to minimize air quality impacts

and to achieve appropriate health standards. The following proposed policies and actions would serve to protect air quality in the unincorporated county:

- **Policy HS-P1.3.** Require new development to adhere to BAAQMD's Planning Healthy Places guidance when local conditions warrant.
- **Action HS-A1.1.** Consult with BAAQMD and community stakeholders and prepare an Air Quality Community Risk Reduction Plan that applies to areas with high levels of cancer risk, providing a comprehensive strategy to protect community members from the negative health effects of air pollution.
- **Action HS-A1.2.** Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to create an Air Pollution Exposure Overlay Zone around freeways that requires new construction in these areas to install enhanced ventilation systems and other strategies to protect people from respiratory, heart, and other health effects associated with breathing polluted air.
- **Action HS-A1.3**. Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to include an Industrial-Sensitive Receptor Interface Overlay Zone applied to areas where residential land uses and other sensitive receptors interface or directly abut heavy industrial land uses. In the overlay zone, require industrial uses to reduce pollution and employ strategies to mitigate air quality, noise, vibration, odor, light, visual, and safety impacts on nearby sensitive receptors. In addition, require new sensitive receptors to install enhanced ventilation systems and implement other strategies, paid for by neighboring sources of pollution to the extent possible, to protect residents from health and quality of life impacts.

Impact 5.3-1: Implementation of the proposed project would not conflict with or obstruct implementation of the BAAQMD Clean Air Plan. [Threshold AQ-1]

The following describes potential air quality impacts of consistency with the AQMP from the implementation of the proposed project.

Proposed General Plan

Bay Area 2017 Clean Air Plan – Criteria Air Pollutants and Precursors

The proposed General Plan plays an important role in local agency project review by linking local planning and individual projects to the *2017 Clean Air Plan*. It fulfills the CEQA goal of informing decision-makers of the environmental efforts of the project under consideration at an early enough stage to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to clean air goals in the Bay Area.

BAAQMD requires a consistency evaluation of a plan with its current AQMP. To have a less than significant impact related to criteria air pollutant and precursor impacts, the long-range plan must satisfy following BAAQMD requirements.

1) Consistency evaluation of the long-range plan with its current air quality plan (AQP) control measures as follows:

- Does the project support the primary goals of the AQP?
- Does the project include applicable control measures from the AQP?
- Does the project disrupt or hinder implementation of any AQP control measures?

2) Long-range plans must demonstrate consistency with the projected growth rate of vehicle activity in VMT or vehicle trips under the plan, as follows:

- Is the project VMT or vehicle trip increase less than or equal to the projected population increase?

Bay Area Air Quality Management District 2017 Clean Air Plan Goals

The primary goals of the 2017 Clean Air Plan are to attain the State and federal AAQS, reduce population exposure and protect public health in the Bay Area, reduce GHG emissions, and protect the climate. Furthermore, the 2017 Clean Air Plan lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal.

Attain Air Quality Standards

BAAQMD's 2017 Clean Air Plan strategy is based on regional population and employment projections in the Bay Area compiled by ABAG, which are based in part on County's General Plan land use designations. These demographic projections are incorporated into Plan Bay Area. Demographic trends incorporated into Plan Bay Area determine VMT in the Bay Area, which BAAQMD uses to forecast future air quality trends. The SFBAAB is currently designated a nonattainment area for O_3, $PM_{2.5}$, and PM_{10} (State AAQS only).

As discussed in Section 5.14, *Population and Housing*, implementation of the proposed General Plan would exceed current regional projections for housing by 26 percent and population by 18 percent. However, the Land Use Element includes goals, policies, and actions aimed to focus the development in areas where current buildings are aging, vacant, or not maintained and approved/pending projects. Therefore, implementation of the proposed General Plan itself would not introduce a substantial amount of unplanned population in the EIR Study Area and is instead the overriding policy document that plans for such growth.

Thus, the population projections of the proposed General Plan would be consistent with regional projections. The emissions resulting from potential future development associated with the proposed General Plan are included in BAAQMD projections, and future development accommodated under the proposed General Plan would not hinder BAAQMD's ability to attain the California or National AAQS. Accordingly, impacts would be less than significant.

Reduce Population Exposure and Protect Public Health

Development under the proposed General Plan could result in new sources of TACs and $PM_{2.5}$. Stationary sources, including smaller stationary sources (e.g., emergency generators and boilers) are subject to review by BAAQMD as part of the permitting process. Adherence to BAAQMD permitting regulations would ensure

that new stationary sources of TACs do not expose populations to significant health risk. Mobile sources of air toxins (e.g., truck idling) are not regulated directly by BAAQMD. Development associated with the proposed General Plan may generate truck traffic; however, CARB regulates limits on diesel truck and bus idling to 5 minutes. Furthermore, individual development projects would be required to achieve the incremental risk thresholds established by BAAQMD. Thus, implementation of the proposed General Plan would not result in introducing new sources of TACs that on a cumulative basis, could expose sensitive populations to significant health risk. Therefore, impacts would be less than significant.

Reduce GHG Emissions and Protect the Climate

Consistency of the proposed General Plan with State, regional, and local plans adopted for the purpose of reducing GHG emissions are discussed under Impact 5.8-2 in Section 5.8, *Greenhouse Gas Emissions*, of this Draft EIR. Future development allowed by the proposed General Plan would be required to adhere to statewide measures that have been adopted to achieve the GHG reduction targets of AB 32 and SB 32, and a trajectory consistent with the carbon neutrality targets of AB 1279. The proposed General Plan is consistent with regional strategies for infill development identified in *Plan Bay Area 2050* and the existing Contra Costa County CAP. While Impact GHG 5.8-1 identifies that the proposed General Plan would generate a substantial increase in emissions, Impact GHG 5.8-2 identifies that the proposed General Plan is consistent with State, regional, and local plans to reduce GHG emissions. Therefore, the proposed General Plan is consistent with the goal of the 2017 *Clean Air Plan* to reduce GHG emissions and protect the climate, and the impact would be less than significant.

2017 Clean Air Plan Control Measures

Table 5.3-8, *Control Measures from the BAAQMD 2017 Clean Air Plan*, identifies the control measures included in the 2017 *Clean Air Plan* that are required by BAAQMD to reduce emissions for a wide range of both stationary and mobile sources. As shown in Table 5.3-8, the proposed General Plan would not conflict with the 2017 *Clean Air Plan* and would not hinder BAAQMD from implementing the control measures in the 2017 *Clean Air Plan*. Accordingly, impacts would be less than significant.

Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
Stationary Source Control Measures	• SS 1 – Fluid Catalytic Cracking in Refineries • SS 2 – Equipment Leaks • SS 3 – Cooling Towers • SS 4 – Refinery Flares • SS 5 – Sulfur Recovery Units • SS 6 – Refinery Fuel Gas • SS 7 – Sulfuric Acid Plants • SS 8 – Sulfur Dioxide from Coke Calcining • SS 9 – Enhanced NSR Enforcement for Changes in Crude Slate • SS 10 – Petroleum Refining Emissions Tracking • SS 11 – Petroleum Refining Facility-Wide Emission Limits • SS 12 – Petroleum Refining Climate Impacts Limit • SS 13 – Oil and Gas Production, Processing and Storage • SS 14 – Methane from Capped Wells • SS 15 – Natural Gas Processing and Distribution • SS 16 – Basin-Wide Methane Strategy • SS 17 – GHG BACT Threshold • SS 18 – Basin-Wide Combustion Strategy • SS 19 – Portland Cement • SS 20 – Air Toxics Risk Cap and Reduction from Existing Facilities • SS 21 – New Source Review for Toxics • SS 22 – Stationary Gas Turbines • SS 23 – Biogas Flares • SS 24 – Sulfur Content Limits of Liquid Fuels • SS 25 – Coatings, Solvents, Lubricants, Sealants and Adhesives • SS 26 – Surface Prep and Cleaning Solvent • SS 27 – Digital Printing • SS 28 – LPG, Propane, Butane • SS 29 – Asphaltic Concrete • SS 30 – Residential Fan Type Furnaces • SS 31 – General Particulate Matter Emission Limitation • SS 32 – Emergency Backup Generators • SS 33 – Commercial Cooking Equipment • SS 34 – Wood Smoke • SS 35 – PM from Bulk Material Storage, Handling and Transport, Including Coke and Coal • SS 36 – PM from Trackout • SS 37 – PM from Asphalt Operations • SS 38 – Fugitive Dust • SS 39 – Enhanced Air Quality Monitoring • SS 40 – Odors	Stationary and area sources are regulated directly by BAAQMD; therefore, as the implementing agency, new stationary and area sources within the county would be required to comply with BAAQMD's regulations. BAAQMD routinely adopts/revises rules or regulations to implement the stationary source (SS) control measures to reduce SS emissions. Major stationary source are more commonly associated with industrial manufacturing or warehousing. However, BAAQMD and the County have existing regulations in place to ensure any potential future development under the proposed General Plan would not conflict with the applicable SS control measures. Other non-residential land uses may generate small quantities of stationary source emissions during project operation (e.g., emergency generators, dry cleaners, and gasoline dispensing facilities); however, these small-quantity generators would require review by BAAQMD for permitted sources of air toxics, which would ensure consistency with the 2017 Clean Air Plan.

Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
Transportation Control Measures	• TR 1 – Clean Air Teleworking Initiative • TR 2 – Trip Reduction Programs • TR 3 – Local and Regional Bus Service • TR 4 – Local and Regional Rail Service • TR 5 – Transit Efficiency and Use • TR 6 – Freeway and Arterial Operations • TR 7 – Safe Routes to Schools and Safe Routes to Transit • TR 8 – Ridesharing, Last-Mile Connection • TR 9 – Bicycle and Pedestrian Access and Facilities • TR 10 – Land Use Strategies • TR 11 – Value Pricing • TR 12 – Smart Driving • TR 13 – Parking Policies • TR 14 – Cars and Light Trucks • TR 15 – Public Outreach and Education • TR 16 – Indirect Source Review • TR 17 – Planes • TR 18 – Goods Movement • TR 19 – Medium and Heavy Duty Trucks • TR 20 – Ocean Going Vessels • TR 21 – Commercial Harbor Craft • TR 22 – Construction, Freight and Farming Equipment • TR 23 – Lawn and Garden Equipment	Transportation (TR) control measures are strategies to reduce vehicle trips, vehicle use, VMT, vehicle idling, and traffic congestion for the purpose of reducing motor vehicle emissions. Although most of the TR control measures are implemented at the regional level—that is, by MTC or Caltrans—the 2017 Clean Air Plan relies on local communities to assist with implementation of some measures. The development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Transportation Element contains the following policies and actions to expand the pedestrian and bicycle network: Policies TR-P1.2, TR-P1.12, TR-P3.2, TR-P4.1 through TR-P4.2, and TR-P5.5 through TR-P5.11, and Actions TR-A5.1 through TR-A5.2.
Energy and Climate Control Measures	• EN 1 – Decarbonize Electricity Production • EN 2 – Renewable Energy Decrease Electricity Demand	The energy and climate (EN) control measures are intended to reduce energy use as a means of reducing adverse air quality emissions. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Health and Safety Element, Conservation, Open Space, and Working Lands Element, and Public Facilities and Services Element contain the following policies that align with the County's goals to meet the State's carbon neutrality initiatives: Policies HS-P3.2, COS-P14.1 through COS-P14.3, and PFS-P7.11. Furthermore, new development accommodated under the proposed General Plan would be built to comply with the latest Building Energy Efficiency Standards and CALGreen standards. On January 18, 2022, the County also adopted an All-Electric Ordinance requirement for new construction to amend the 2019 California Energy Code and requires residential (including single-family and multi-family buildings) to be all-electric. Therefore, implementation of the proposed General Plan would not conflict with these EN control measures.

Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
Buildings Control Measures	• BL 1 – Green Buildings • BL 2 – Decarbonize Buildings • BL 3 – Market-Based Solutions • BL 4 – Urban Heat Island Mitigation	The buildings (BL) control measures focus on working with local governments to facilitate adoption of best GHG emissions control practices and policies. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Conservation, Open Space, and Working Lands Element, Health and Safety Element, and Land Use Element contain the following policies and actions to promote energy efficiency and sustainability: Policies COS-P7.8, COS-P14.1, and HS-P3.2, and Action LU-A4.1. In addition, as stated, new development under the proposed General Plan would be built to comply with the latest Building Energy Efficiency Standards and CALGreen standards. On January 18, 2022, the County also adopted an All-Electric Ordinance requirement for new construction to amend the 2019 California Energy Code and requires residential (including single-family and multi-family buildings) to be all-electric. Thus, the proposed General Plan would not conflict with these BL control measures.
Agriculture Control Measures	• AG 1 – Agricultural Guidance and Leadership • AG 2 – Dairy Digesters • AG 3 – Enteric Fermentation • AG 4 – Livestock Waste	Agricultural practices in the Bay Area account for a small portion, roughly 1.5 percent, of the Bay Area GHG emissions inventory. The GHGs from agriculture include methane and nitrous oxide, in addition to carbon dioxide. Section 3.6.1.3, *Land Use Designations and Map*, describes the various agricultural land uses allowed under the proposed General Plan Agriculture Core and Agricultural Lands designations. The Agriculture (AG) control measures target larger scale farming practices, such as the prime agricultural land within the region. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Conservation, Open Space, and Working Lands Element contains the following policies and actions that align with the County's goals to support agricultural land conservation and reduce potential impacts to adjacent sensitive receptors: Policies COS-P2.2 and COS-P2.4 through COS-P2.13, and Action COS-A2.4. The County also promotes the use of integrated pest management (IPM) strategies to support healthy crops while reducing the use of harmful chemicals on the environment, as well as the Right-to-Farm Ordinance, which protects farms from nuisance complaints. Therefore,

Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
		implementation of the proposed General Plan would not conflict with these AG control measures.
Natural and Working Lands Control Measures	• NW 1 -- Carbon Sequestration in Rangelands • NW 2 – Urban Tree Planting • NW 3 – Carbon Sequestration in Wetlands	The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Conservation, Open Space, and Working Lands Element contains the following policies and actions to promote carbon sequestration: Policies COS-P2.11, COS-P6.2, and COS-P7.8, and Action COS-A5.1.
Water Control Measures	• WR 1 – Limit GHGs from publicly owned treatment works (POTWs) • WR 2 – Support Water Conservation	The 2017 Clean Air Plan includes measures to reduce water use. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Conservation, Open Space, and Working Lands Element contains the following policies to increase plumbing water efficiency and reduce landscape water use: Policies COS-P7.1, COS-P7.2, COS-P7.7, and COS-P7.9.
Super-GHG Control Measures	• SL 1 – Short-Lived Climate Pollutants • SL 2 – Guidance for Local Planners • SL 3 – GHG Monitoring and Emissions Measurements Network	Super-GHGs include methane, black carbon, and fluorinated gases. The compounds are sometimes referred to as short-lived climate pollutants because their lifetime in the atmosphere is generally fairly short. Measures to reduce super GHGs are addressed on a sector-by-sector basis in the 2017 Clean Air Plan. Through ongoing implementation of the County's CAP, the County will continue to reduce local GHG emissions and meet State, regional, and local reduction targets, which would ensure implementation of the proposed General Plan would not conflict with these SL control measures. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Health and Safety Element and Conservation, Open Space, and Working Lands Element contain the following policies for encouraging use of renewable energy: Policies HS-P3.2 and COS-P14.1 through COS-P14.3.
Further Study Control Measures	• FSM SS 1 – Internal Combustion Engines • FSM SS 2 – Boilers, Steam Generator and Process Heaters • FSM SS 3 – GHG Reductions from Non Cap-and Trade Sources	The majority of the further study control measures apply to sources regulated directly by BAAQMD. Because BAAQMD is the implementing agency, new and existing sources of stationary and area sources in the project area would be required to comply with these additional further study control measures in the 2017 Clean Air Plan.

Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
	• FSM SS 4 – Methane Exemptions from Wastewater Regulation • FSM SS 5 – Controlling start-up, shutdown, maintenance, and malfunction (SSMM) Emissions • FSM SS 6 – Carbon Pollution Fee • FSM SS 7 – Vanishing Oils and Rust Inhibitors • FSM SS 8 – Dryers, Ovens and Kilns • FSM SS 9 – Omnibus Rulemaking to Achieve Continuous Improvement • FSM BL 1 – Space Heating • FSM AG 1 – Wineries	

Source: BAAQMD 2017c.

Regional Growth Projections for VMT and Population

Future potential development allowed by the proposed General Plan would result in additional sources of criteria air pollutants. Growth accommodated by the proposed General Plan could occur throughout the 2045 planning horizon. BAAQMD's approach to evaluating impacts from criteria air pollutants generated by a plan's long-term growth is done by comparing population estimates to the VMT estimates. This is because BAAQMD's AQMP plans for growth in the SFBAAB are based on regional growth projections identified by ABAG and growth in VMT identified by CCTA. Changes in regional, community-wide emissions in the project area could affect the ability of BAAQMD to achieve the air quality goals in the AQMP. Therefore, air quality impacts for a plan-level analysis are based on consistency with the regional growth projections. Table 5.3-9, *Comparison of the Change in Population and VMT in Contra Costa County*, compares the proposed General Plan growth forecast with the projected increase in total VMT.

Table 5.3-9 Comparison of the Change in Population and VMT in Contra Costa County

			Change from Existing	
Category	Existing	2045 With Project	Change	%
Population	174,145	239,718	65,573	38%
Employment	38,757	48,153	9,396	24%
Service Population	212,902	287,871	74,969	35%
Daily VMT[1]	3,530,197	4,272,206	742,009	21%
VMT/person[2]	20.3	17.8	-2.4	-12%
VMT/SP	16.6	14.8	-1.7	-10%

Notes:

[1] Modeling of VMT is provided by Fehr and Peers is based on CCTA's Contra Costa Transportation Analysis Guidelines. VMT is from passenger vehicles and trucks that have an origin or destination in the county using a transportation origin-destination methodology. Accounting of VMT is based on the recommendations of CARB's RTAC created under SB 375.

[2] VMT per person includes VMT from all trip types, including employment and other service-based trips. This methodology differs from that in Section 5.17, *Transportation,* which is used to evaluate SB 743 transportation impacts.

BAAQMD's AQMP requires that the VMT increase by less than or equal to the projected population increase from the proposed General Plan (i.e., generate the same or less VMT per population). However, because the proposed General Plan accommodates both residential and nonresidential growth, a better indicator of how efficiently the county is growing can be made by comparing the increase in VMT to the increase in service population (e.g., generate the same or less VMT per service population). This approach is similar to the efficiency metrics for GHG emissions, which consider the total service population when calculating project efficiency.

VMT estimates based on data provided by Fehr & Peers were calculated for Contra Costa County. As shown in Table 5.3-9, implementation of the proposed General Plan would result in an increase of daily VMT by 742,009 vehicle miles per day in the unincorporated county (about a 21-percent increase), but lead to a lower VMT per capita than under existing conditions (approximately a 12-percent decrease) and lower VMT per service population than existing conditions (approximately a 10-percent decrease). Thus, the proposed General Plan would be consistent with the goals of the 2017 *Clean Air Plan* and impacts would be less than significant.

Environmental Justice

BAAQMD's CEQA Air Quality Guidelines also require an analysis of consistency of the proposed General Plan with applicable Community Emission Reduction Plans (CERPs) and local Environmental Justice policies. Environmentally overburdened, underserved, and economically distressed communities may be subject to a higher risk of pollutant-related health effects than the general population because they may be exposed to higher pollutant concentrations; they may experience a larger health impact at a given pollutant concentration; or they may be adversely affected by lower pollutant concentrations than the general population. The most critical air pollutant affecting health in the Bay Area is $PM_{2.5}$, which includes DPM. The burden of breathing unhealthy air is often disproportionately borne by low-income communities and communities of color, many of which are situated closer to busy highways, ports, factories, and other pollution sources (BAAQMD 2023b).

Community Emissions Reduction Plans in Unincorporated Contra Costa County

The Richmond-North Richmond-San Pablo AB 617 community (Richmond Area) is partially within the EIR Study Area. The Draft PTCA Plan (Community Emissions Reduction Plan) for the Richmond Area was released for public review in December 2023 (BAAQMD 2023a). The PTCA Plan includes various strategies and actions to address the needs of people who have been disproportionately harmed by environmental injustice. Implementation of Mobile Strategy 6, *Public Transit, Bike, and Pedestrian Infrastructure*, would help to expand access to shared modes of travel and benefit the people who have been historically burdened with lack of viable transportation alternatives. Land Use Strategy 1, *Land Use*, provides recommended strategies to protect sensitive receptors and residential areas from existing and potential future pollution sources and exposure, with an intended outcome of improving community health for all, especially disproportionately impacted communities. Marine & Rail Strategy 1, *Reduce Cancer and Chronic Health Risk from Rail Operations and Facilities*, would directly benefit overburdened communities living adjacent to rail lines and/or operations, such as the Iron Triangle neighborhood in the City of Richmond. Requirements for cleaner rail equipment would improve the health of those most acutely impacted, as well as for the greater community.

Thus, the PTCA Plan considers measures to reduce emissions and improve community health within Overburdened and AB 617 Communities consistent with BAAQMD's environmental justice goals. The proposed General Plan integrates goals, policies, and actions that seek to lessen the environmental burden on disadvantaged populations. Thus, the proposed project would be consistent with the draft PTCA Plan and BAAQMD's environmental justice goals; and impacts would be less than significant.

Contra Costa County Environmental Justice Policies

The proposed General Plan integrates goals, policies, and actions that seek to lessen the environmental burden on disadvantaged populations. The process to develop environmental justice policy guidance involved extensive discussions and many meetings with community members and other stakeholders who live in, work in, or engage with communities that are most impacted by environmental justice issues to ensure the Plan directly responds to the specific needs of Impacted Communities. Engagement included two collaboration meetings with environmental justice stakeholders to identify Impacted Communities and key environmental justice issues, three to four meetings with community members from each Impacted Community in the county, about 15 meetings with community-based organizations who work with Impacted Communities, a three-part meeting series with environmental justice stakeholders to review and refine draft policy guidance, and several meetings with the Board of Supervisors Sustainability Committee and the County's Sustainability Commission and Hazardous Materials Commission to discuss draft policy guidance. The County also conducted a hard copy and online survey to solicit feedback on draft environmental justice policy guidance, working with community partners to distribute hard copies at strategic locations to reach people during the COVID-19 pandemic, including at schools, libraries, farmers markets, food banks, and soup kitchens.

Contra Costa County is home to a high concentration of refineries and other large industrial facilities. To improve the health and safety impacts of these industrial facilities, the County adopted an Industrial Safety Ordinance. This Ordinance requires additional safety measures that go beyond State requirements that protect public health and safety.

In 2022, the County established the Office of Racial Equity and Social Justice to address local racial inequality and social injustice issues. The Office of Racial Equity and Social Justice is envisioned to enact and sustain principles, policies, practices, and investments that are racially just and equitable across all the County's departments and divisions.

State law, enacted through SB 1000, requires that general plans address environmental justice and respond to this inequity by both alleviating pollution and health impacts and compelling cities and counties to include the voices of previously marginalized residents in planning decisions. Therefore, the proposed General Plan contains certain goals, policies, and actions that help aim to promote environmental justice, especially within Impacted Communities.

Proposed policies within the Stronger Communities and Health and Safety Element would reduce and/or avoid environmental effects on vulnerable populations, include:

- Stronger Communities Element Policies SC-P1.1 through SC-P1.6 and Actions SC-A1.1 through SC-A1.8, which ensure an equitable distribution of resources so that Impacted Communities are not disproportionately burdened by environmental pollution and other hazards.
- Health and Safety Element Policies HS-P1.1 through HS-P1.10 and Actions HS-A1.1 through HS-A1.6, that support community and environmental health.
- Health and Safety Element Policies HS-P2.1 through HS-P2.3 and Actions HS-A2.1 through HS-A2.5 that aim to reduce the disproportionate burden of environmental hazards and health risks in the county.

Thus, the proposed General Plan considers measures to reduce emissions and improve community health within Overburdened and AB 617 Communities consistent with BAAQMD's environmental justice goals. Thus, the proposed General Plan would be consistent with BAAQMD's environmental justice goals and impacts would be less than significant.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions. The proposed CAP includes the "Clean Transportation Network" group of strategies, including Strategy TR-1, which provides actions for reducing VMT and associated transportation related emissions. As discussed under Impact 5.16-1, this strategy supports the County's existing plans to ensure accessibility and safety for alternative transportation options. Thus, implementation of the proposed CAP would result in beneficial impacts to air quality. Because the proposed CAP does not involve any land uses changes that would result in indirect growth or change in building density and intensity, implementation of the proposed CAP would not conflict with or obstruct implementation of the 2017 *Clean Air Plan* and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.3-1 would be less than significant.

Impact 5.3-2: Short-term construction activities associated with the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State ambient air quality standards. [Threshold AQ-2]

This section analyzes potential impacts related to air quality that could occur from development under the proposed project in combination with the regional growth in the SFBAAB. The SFBAAB is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS. At a plan level, air quality impacts are measured by the potential for a project to exceed BAAQMD's significance criteria and contribute to the State and federal nonattainment designations in the SFBAAB. Any project that produces a significant regional air quality impact in an area that is in nonattainment

adds to the cumulative impact. As described in Impact 5.3-1, the proposed project would be consistent with the 2017 Clean Air Plan. However, the proposed project could generate a substantial increase in criteria air pollutant emissions from construction activities that could exceed the BAAQMD regional significance thresholds.

Proposed General Plan

Construction

Construction activities would temporarily increase criteria air pollutant emissions within the SFBAAB. The primary source of NOx emissions is the operation of construction equipment. The primary sources of particulate matter (PM_{10} and $PM_{2.5}$) emissions are activities that disturb the soil, such as grading and excavation, road construction, and building demolition and construction. The primary sources of VOC emissions are the application of architectural coating and off-gas emissions associated with asphalt paving. A discussion of health impacts associated with air pollutant emissions generated by construction activities is included under "Air Pollutants of Concern" in Section 5.3.1.2 of this section.

Construction activities associated with the proposed General Plan would occur over the forecast year, causing short-term emissions of criteria air pollutants. Information regarding specific development projects, soil types, and the locations of receptors would be needed in order to quantify the level of impact associated with construction activity. Due to the scale of development activity associated with the proposed General Plan, emissions would likely exceed the BAAQMD regional significance thresholds. In accordance with the BAAQMD methodology, emissions that exceed the regional significance thresholds would cumulatively contribute to the nonattainment designations of the SFBAAB. Emissions of VOC and NO_X are precursors to the formation of O_3. In addition, NO_X is a precursor to the formation of particulate matter (PM_{10} and $PM_{2.5}$). Therefore, the proposed General Plan would cumulatively contribute to the nonattainment designations of the SFBAAB for O_3 and particulate matter (PM_{10} and $PM_{2.5}$).

Future development under the proposed General Plan would be subject to separate environmental review pursuant to CEQA in order to identify and mitigate potential air quality impacts. Subsequent environmental review of development projects would be required to assess potential impacts under BAAQMD's project-level thresholds based on site-specific construction phasing and buildout characteristics. For the proposed General Plan, which is a broad-based policy plan, it is not possible to determine whether the scale and phasing of individual projects would exceed the BAAQMD's short-term regional or localized construction emissions thresholds. As a result, construction activities associated with implementation of the proposed General Plan could potentially violate an air quality standard or contribute substantially to an existing or projected air quality violation.

Existing federal, State, and local regulations and the policies and programs of the proposed General Plan described throughout this section protect local and regional air quality. Continued compliance with these regulations would reduce construction-related impacts and proposed policies would help to reduce construction emissions even further. The following proposed General Plan policies and actions would serve to minimize potential adverse impacts related to particulate matter air pollution:

- **Policy HS-P1.5:** Require new sources of air pollution that will generate significant new air quality impacts or expose sensitive receptors to substantial increases in harmful emissions of TACs to prepare a Health Risk Assessment that identifies appropriate mitigation consistent with BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines, based on the findings of the Health Risk Assessment.
- **Policy HS-P1.7:** Require construction activities that involve large grading operations to implement additional construction measures identified in BAAQMD's CEQA Guidelines to reduce air pollutant emissions.
- **Policy HS-P1.9:** Prohibit nonessential diesel engine idling countywide and nonessential idling of all vehicles within 100 feet of sensitive receptors.
- **Action HS-A1.4:** Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 7 – Building Regulations to include a clean construction ordinance that requires projects to implement extra measures to reduce emissions at construction sites in or near places that are already overburdened by air pollution, such as Impacted Communities.

- **Policy HS-P2.1:** When evaluating health risk impacts of projects in Impacted Communities, use an excess cancer risk of 6.0 per million and a non-cancer (acute and chronic) hazard index greater than 1.0 as thresholds for finding that the project could cause a cumulatively considerable contribution and a significant impact.

While these existing and proposed regulations, policies, and programs have the potential to reduce emissions, potential future development projects accommodated under the proposed General Plan (individually or cumulatively) could still exceed the BAAQMD significance thresholds for construction. Therefore, implementation of the proposed General Plan could result in potentially significant construction-related regional air impacts.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions. Since implementation of the proposed CAP would not involve any land use changes that would result in indirect growth or change in building density or intensity, its implementation would not directly result in the generation of construction-related criteria air pollutant emissions. Furthermore, the proposed CAP would be subject to the same County standards that apply to development under the proposed General Plan, such as the 2017 *Clean Air Plan*. The 2017 *Clean Air Plan* includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and TACs. It also includes control measures to reduce emissions of methane and other GHGs that are potent climate pollutants in the near-term and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

Therefore, the proposed CAP would contribute to reducing construction-phase criteria air pollutant emissions and result in beneficial air quality impacts. Implementation of the proposed CAP would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is in nonattainment under applicable federal or State ambient air quality standard, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-2 would be potentially significant.

Mitigation Measures

AQ-1 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more shall prepare and submit a technical assessment evaluating potential project construction-related air quality impacts to the County Department of Conservation and Development for review and approval. The evaluation shall be prepared in conformance with the Bay Area Air Quality Management District (BAAQMD) methodology for assessing air quality impacts identified in their *CEQA Air Quality Guidelines*. If construction-related criteria air pollutants are determined to have the potential to exceed the BAAQMD–adopted construction screening criteria and thresholds of significance, the Department of Conservation and Development shall require feasible mitigation measures to reduce air quality emissions. Potential measures may include:

- Require implementation of the BAAQMD Best Management Practices for fugitive dust control, such as:
  - All exposed surfaces (e.g., parking areas, staging areas, soil piles, grading areas, and unpaved access roads) shall be watered two times per day.
  - All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
  - All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
  - All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
  - All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
  - All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
  - All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
  - Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.
  - Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's General Air

Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

Measures shall be incorporated into appropriate construction documents (e.g., construction management plans) submitted to the County and shall be verified by the Department of Conservation and Development.

Level of Significance After Mitigation: Impact 5.3-2 would remain significant and unavoidable.

Impact 5.3-3: Development under the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State AAQS. [Thresholds AQ-2]

This section analyzes potential impacts related to air quality that could occur from development associated with the proposed project in combination with the regional growth in the SFBAAB. The SFBAAB is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS. At a plan level, air quality impacts are measured by the potential for a project to exceed BAAQMD's significance criteria and contribute to the State and federal nonattainment designations in the SFBAAB. Any project that produces a significant regional air quality impact in an area that is in nonattainment adds to the cumulative impact. As described in Impact 5.3-1, the proposed project would be consistent with the 2017 Clean Air Plan. However, the proposed project could generate a substantial increase in criteria air pollutant emissions from operational activities that could exceed the BAAQMD regional significance thresholds.

Proposed General Plan

Operation

BAAQMD has identified thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including VOC, NO, PM_{10} and $PM_{2.5}$. Development projects below the significance thresholds are not expected to generate sufficient criteria pollutant emissions to violate any air quality standard or contribute substantially to an existing or projected air quality violation. According to BAAQMD's CEQA Guidelines, long-range plans, such as the proposed General Plan, present unique challenges for assessing impacts. Due to the SFBAAB's nonattainment status for ozone and PM and the cumulative impacts of growth on air quality, these plans almost always have significant, unavoidable adverse air quality impacts.

Implementation and adoption of the proposed General Plan would result in an increase in development intensity in the county. Development under the proposed General Plan would result in direct and indirect criteria air pollutant emissions from transportation, energy (e.g., natural gas use), and area sources (e.g., aerosols and landscaping equipment). Mobile-source criteria air pollutant emissions are based on the traffic analysis conducted by Fehr and Peers (see Appendix 5.16-1, *Transportation Data*, of this Draft EIR). The emissions forecast for the county under the proposed General Plan compared to existing conditions is shown in Table 5.3-10, *Scenario 1: Criteria Air Pollutant Emissions Forecast Compared to Existing Conditions*, and Table 5.3-11, *Scenario 2: Criteria Air Pollutant Emissions Forecast Compared to the Future No Project Conditions*. As shown in these tables, implementation of the proposed General Plan would result in an increase in criteria air pollutant emissions

from existing conditions and the future no project conditions, respectively. As stated previously, Scenario 2 isolates the effects of the proposed General Plan because both the future no project and future with project conditions include emissions reductions from federal and State regulations.

As shown in these tables, development under the proposed General Plan would generate an increase in criteria air pollutant emission from both existing conditions (Scenario 1) as well as the future no project conditions (Scenario 2). Compliance with applicable policies and programs would contribute towards minimizing long-term emissions. However, implementation of the proposed General Plan would still exceed the BAAQMD significance threshold (no net increase) for operation. Therefore, implementation of the proposed General Plan could result in potentially significant long-term regional air quality impacts.

Table 5.3-10 Scenario 1. Criteria Air Pollutant Emissions Forecast Compared to Existing Conditions

Sectors	Criteria Air Pollutant Emissions (Tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Existing Land Uses (Year 2019)				
Transportation[1]	41	207	26	10
Energy[2]	11	206	15	15
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	3	3	0	0
Consumer Products[4]	444	—	—	—
Total Average (Tons/year)	**1,254**	**431**	**156**	**140**
Proposed General Plan Land Uses (Year 2045)				
Transportation[1]	10	43	28	9
Energy[2]	13	239	18	18
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	4	3	0	0
Consumer Products[4]	681	—	—	—
Total Average (Tons/year)	**1,465**	**300**	**161**	**142**
Change from Existing Land Uses	**211**	**-131**	**5**	**2**
Increase?	**Yes**	No	**Yes**	**Yes**
Sectors	**Criteria Air Pollutant Emissions (lbs per day)**			
	VOC	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Existing Land Uses (Year 2019)				
Transportation[1]	234	1,193	151	57
Energy[2]	60	1,129	84	84
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629
Off-Road Equipment[3]	17	16	1	1
Consumer Products[4]	2,432	—	—	—
Total Average (Tons/year)	**6,895**	**2,422**	**865**	**771**

Table 5.3-10 Scenario 1. Criteria Air Pollutant Emissions Forecast Compared to Existing Conditions

Sectors	Criteria Air Pollutant Emissions (Tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Proposed General Plan Land Uses (Year 2045)				
Transportation[1]	57	247	164	53
Energy[2]	70	1,307	98	98
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629
Off-Road Equipment[3]	23	17	1	1
Consumer Products[4]	3,730	—	—	—
Total Average (lbs/day)	**8,032**	**1,656**	**891**	**780**
Change from Existing Land Uses	**1,137**	**-766**	**26**	**9**
Increase?	**Yes**	No	**Yes**	**Yes**

Notes: Emissions may not total to 100 percent due to rounding.
1 EMFAC2021 V.1.0.2. Based on daily VMT provided by Fehr & Peers (see Appendix 5.16-1).
2 Based on natural gas use provided by PG&E and residential & nonresidential fuels identified for the proposed CAP.
3 OFFROAD2021 V.1.02.
4 Based on CalEEMod User's Guide methodology to calculate VOC emissions from use of household consumer cleaning products.

Table 5.3-11 Scenario 2. Criteria Air Pollutant Emissions Forecast Compared to the Future No Project Conditions

Sectors	Criteria Air Pollutant Emissions (Tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Existing Land Uses (Year 2045)				
Transportation[1]	8	35	24	8
Energy[2]	11	206	15	15
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	3	3	0	0
Consumer Products[4]	444			
Total Average (Tons/year)	**1,224**	**259**	**154**	**138**
Proposed General Plan Land Uses (Year 2045)				
Transportation[1]	10	43	28	9
Energy[2]	13	239	18	18
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	4	3	0	0
Consumer Products[4]	681			
Total Average (Tons/year)	**1,465**	**300**	**161**	**142**
Change from Existing Land Uses	**241**	**41**	**7**	**4**
Increase?	**Yes**	**Yes**	**Yes**	**Yes**
Sectors	**Criteria Air Pollutant Emissions (lbs per day)**			
	VOC	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Existing Land Uses (Year 2045)				
Transportation[1]	47	201	136	44
Energy[2]	60	1,129	84	84
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629

Table 5.3-11 Scenario 2. Criteria Air Pollutant Emissions Forecast Compared to the Future No Project Conditions

Sectors	Criteria Air Pollutant Emissions (Tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Off-Road Equipment[3]	17	16	1	1
Consumer Products[4]	2,432			
Total Average (Tons/year)	**6,708**	**1,430**	**850**	**758**
Proposed General Plan Land Uses (Year 2045)				
Transportation[1]	57	247	164	53
Energy[2]	70	1,307	98	98
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629
Off-Road Equipment[3]	23	17	1	1
Consumer Products[4]	3,730			
Total Average (lbs/year)	**8,032**	**1,656**	**891**	**780**
Change from Existing Land Uses	**1,324**	**226**	**41**	**22**
Increase?	**Yes**	**Yes**	**Yes**	**Yes**

Notes: Emissions may not total to 100 percent due to rounding.
1 EMFAC2021 V.1.0.2. Based on daily VMT provided by Fehr & Peers (see Appendix 5.16-1).
2 Based on natural gas use provided by PG&E and residential fuels identified for the proposed CAP.
3 OFFROAD2021 V.1.02.
4 Based on CalEEMod User's Guide methodology to calculate VOC emissions from use of household consumer cleaning products.

Proposed CAP

As discussed under Impact 5.3-2, implementation of the proposed CAP would not involve any land use changes that would result in indirect growth or change in building density or intensity; therefore, its implementation would not directly result in the generation of operation-related criteria air pollutant emissions. Furthermore, as discussed under Impact 5.3-2, the proposed CAP would be subject to the same County standards that apply to development under the proposed General Plan, including the 2017 *Clean Air Plan,* which includes a wide range of control measures designed to decrease emissions of air pollutants, potent climate pollutants, and carbon dioxide by reducing fossil fuel combustion.

Additionally, the proposed CAP would have co-benefits with regard to operation-related criteria air pollutant emissions. Building energy efficiency improvements (e.g., proposed CAP Strategies BE-1 through BE-3) would promote sustainable building practices and would result in a decrease in natural gas use and associated criteria air pollutants (i.e., VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$). Likewise, transportation strategies that reduce VMT (e.g., Strategy TR-1) would result in a reduction in criteria air pollutants from the transportation sector.

Therefore, the proposed CAP would contribute to reducing operation-phase criteria air pollutant emissions and result in beneficial air quality impacts. Implementation of the proposed CAP would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is in nonattainment under applicable federal or State ambient air quality standard, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-3 would be potentially significant.

Mitigation Measures

AQ-2 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future project applicants shall prepare and submit a technical assessment evaluating potential project operation-phase-related air quality impacts to the Department of Conservation and Development for review and approval. The evaluation shall be prepared in conformance with Bay Area Air Quality Management District (BAAQMD) methodology in assessing air quality impacts identified in their *CEQA Air Quality Guidelines*. If operation-related air pollutants are determined to have the potential to exceed the BAAQMD–adopted operational screening criteria and thresholds of significance, the Department of Conservation and Development shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce long-term emissions could include, but are not limited to the following:

- Implementing commute trip reduction programs.
- Unbundling residential parking costs from property costs.
- Expanding bikeway networks.
- Expanding transit network coverage or hours.
- Using cleaner-fueled vehicles.
- Exceeding the current Title 24 Building Envelope Energy Efficiency Standards.
- Establishing on-site renewable energy generation systems.
- Requiring all-electric buildings.
- Replacing gas-powered landscaping equipment with zero-emission alternatives.
- Expanding urban tree planting.

Level of Significance After Mitigation: Impact 5.3-3 would remain significant and unavoidable.

Impact 5.3-4: Construction activities associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations. [Threshold AQ-3]

Implementation of the proposed project would cause or contribute significantly to elevated pollutant concentration levels such that it would expose sensitive receptors to elevated pollutant concentrations. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

Proposed General Plan

Construction Community Risk and Hazards

Future construction under the proposed General Plan would temporarily elevate concentrations of TACs and DPM in the vicinity of sensitive land uses during construction activities. Since the details regarding future construction activities are not known at this time due to this analysis being conducted at a program level—including phasing of future individual projects, construction duration and phasing, and preliminary construction equipment—construction emissions are evaluated qualitatively in accordance with BAAQMD's plan-level guidance. Subsequent environmental review of future development projects would be required to assess potential impacts under BAAQMD's project-level thresholds. However, construction emissions associated with the proposed General Plan could exceed BAAQMD's project level and cumulative significance thresholds for community risk and hazards. Therefore, construction-related health risk impacts associated with the proposed General Plan are considered potentially significant.

Proposed CAP

As discussed under Impact 5.3-2, implementation of the proposed CAP would not involve any land use changes that would result in indirect growth or change in building density or intensity; therefore, its implementation would not directly result in the generation of TAC and DPM emissions. In addition, as stated under Impact 5.3-3, implementation of the CAP could result in beneficial long-term air quality impacts from the increase in energy efficiency, usage of clean energy, and reduction in VMT. Therefore, implementation of the proposed CAP would not expose sensitive receptors to substantial pollutant concentrations of TACs, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-4 would be potentially significant.

Mitigation Measures

AQ-3 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more and within 1,000 feet of residential and other sensitive land uses (e.g., hospitals, nursing homes, schools, and day care centers) in the unincorporated county[7], shall submit a health risk assessment (HRA) to the County Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds the respective threshold established by the BAAQMD—project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000 feet of a BAAQMD

[7] As measured from the property line of the project site to the property line of the source/edge of the nearest travel lane.

Overburdened Community; ten in a million in all other areas; $PM_{2.5}$ emissions that exceed 0.3 μg/m^3; or the appropriate noncancer hazard index exceeds 1.0—the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks below the respective threshold, including appropriate enforcement mechanisms. Measures to reduce risk may include, but are not limited to:

- Use of construction equipment rated as US EPA Tier 4 Interim or higher for equipment of 50 horsepower or more.
- Use of construction equipment fitted with Level 3 Diesel Particulate Filters for all equipment of 50 horsepower or more.

Measures identified in the HRA shall be included in the environmental document and/or incorporated into the site development plan as a component of the proposed project. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the Department of Conservation and Development clearly show incorporation of all applicable mitigation measures.

Level of Significance After Mitigation: Impact 5.3-4 would be less than significant. Mitigation Measure AQ-3 would ensure that discretionary development projects with construction proximate to sensitive receptors would reduce potential off-site health risks to less than BAAQMD significance criteria of six in one million (6E-06) cancer risk in Impacted Communities and ten in one million (10E-06) in all other areas, $PM_{2.5}$ concentrations of 0.3 μg/m^3, or the noncancer hazard index of 1.0. Mitigation Measure AQ-3 would require the use of newer, lower emitting construction equipment, and therefore, the proposed project would not expose sensitive receptors to substantial pollutant concentrations.

Impact 5.3-5: Operational-phase emissions associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations. [Threshold AQ-3]

Implementation of the proposed project would cause or contribute significantly to elevated pollutant concentration levels such that it would expose sensitive receptors to elevated pollutant concentrations. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects. Types of land uses that typically generate substantial quantities of TACs and $PM_{2.5}$ include industrial and manufacturing (stationary sources) and warehousing land uses that have the potential to generate DPM from onsite equipment and mobile sources (trucks). Additionally, operation of new land uses consistent with the proposed project could generate new sources of criteria air pollutants and TACs in the county associated with CO hotspots. The following describes potential localized operational air quality impacts from implementation of the proposed project.

Proposed General Plan

CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO, called hotspots. These pockets have the potential to exceed the State 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. Since CO is produced in the greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds.

The CCTA CMP must be consistent with the ABAG/MTC's Plan Bay Area, which is updated periodically. An overarching goal of the Plan Bay Area 2050 is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth in outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle VMT and associated GHG emissions reductions.

The proposed General Plan would be consistent with the overall goals of the Plan Bay Area 2050. Additionally, the proposed General Plan would not hinder the capital improvements outlined in the CMP. Thus, the proposed General Plan would not conflict with the CCTA CMP. Furthermore, under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection to more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact (BAAQMD 2023b). The proposed General Plan would not increase traffic volumes at affected intersections to more than BAAQMD screening criteria of 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (ArcGIS 2023). Therefore, overall, the proposed General Plan would not have the potential to substantially increase CO hotspots at intersections in the county and vicinity. Overall, these components of the proposed General Plan would contribute to reducing congestion and associated emissions. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

Stationary (Permitted) Sources

Various industrial and commercial processes (e.g., manufacturing and dry cleaning) allowed under the proposed General Plan would be expected to release TACs. TAC emissions generated by stationary and point sources of emissions within the Air Basin are regulated and controlled by BAAQMD. Land uses that would require a permit from BAAQMD for emissions of TACs include chemical processing facilities, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. Emissions of TACs from stationary sources would be controlled by BAAQMD through permitting and would be subject to further study and health risk assessment prior to the issuance of any necessary air quality permits under Regulation 2, *New Source Review*, as well as Regulation 11, Rule 18, *Reduction of Risk from Air Toxic Emissions at Existing Facilities*.

Review under New Source Review ensures that stationary source emissions (permitted sources) would be reduced or mitigated below BAAQMD community risk and hazards thresholds. Though these sources would incrementally contribute to emissions in the unincorporated county individually, they would be mitigated to BAAQMD standards.

The following proposed General Plan policies and actions would serve to minimize potential adverse impacts on air quality by increasing standards and promoting cooperation with outside agencies:

- **Policy HS-P1.4.** Require new industrial development to locate significant pollution sources as far away from sensitive receptors as possible.
- **Action HS-A1.3**. Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to include an Industrial-Sensitive Receptor Interface Overlay Zone applied to areas where residential land uses and other sensitive receptors interface or directly abut heavy industrial land uses. In the overlay zone, require industrial uses to reduce pollution and employ strategies to mitigate air quality, noise, vibration, odor, light, visual, and safety impacts on nearby sensitive receptors. In addition, require new sensitive receptors to install enhanced ventilation systems and implement other strategies, paid for by neighboring sources of pollution to the extent possible, to protect residents from health and quality of life impacts.
- **Action HS-A2.4.** Coordinate with BAAQMD to determine where to focus a targeted permit inspection program in Impacted Communities to help ensure enforcement of air quality permits.

The policies and actions listed above would minimize potential health risk impacts to sensitive receptors. Though the proposed General Plan includes policies to reduce exposure of sensitive receptors to pollution, and BAAQMD would ensure that on a project-by-project basis emission achieve their permit thresholds, emissions cannot be determined or modeled until specific development projects are proposed. Therefore, implementation of the proposed General Plan may result in projects that emit TACs and $PM_{2.5}$ throughout the unincorporated county and result in potentially significant localized air quality impacts.

Nonpermitted Sources

TACs and $PM_{2.5}$ from mobile sources when operating at a property (e.g., truck idling) are regulated by statewide rules and regulations, not by BAAQMD, and have the potential to generate substantial concentrations of air pollutants. The primary mobile source of TACs within the unincorporated county includes truck idling and use of off-road equipment.

New warehousing operations could generate substantial DPM and $PM_{2.5}$ emissions from off-road cargo-handling equipment use and truck idling. In addition, some warehousing and industrial facilities may include use of TRUs for cold storage. New land uses in the unincorporated county that would be permitted under the proposed General Plan that use trucks, including trucks with TRUs, could generate an increase in DPM that would contribute to cancer and noncancer health risk in the Air Basin. Additionally, these types of facilities could also generate particulate matter (PM_{10} and $PM_{2.5}$) that may cause an exceedance or contribute to the continuing exceedance of the federal and State AAQS. These new land uses could be near existing sensitive

receptors. In addition, trucks would travel on regional transportation routes through the Bay Area, contributing to near-roadway DPM concentrations.

The proposed General Plan would potentially result in an increase of 5 million square feet of industrial land uses. The areas intended for industrial uses would be primarily associated with existing planned and/or permitted industrial development. Additionally, existing residences are close to existing and planned Industrial designations, and overlap with many of the Overburdened and Impacted Communities. As identified in the Figure 3-3, *Proposed General Plan Land Use Map*, industrial areas are proximate to residential areas in several areas of the unincorporated county, including:

- North Richmond
- Bay Point
- Byron
- Discovery Bay
- Pacheco
- Clyde
- Vine Hill
- Crockett
- Rodeo

These areas are proximate to sensitive receptors. Until specific future development projects are proposed, the associated emissions and concentrations cannot be determined or modeled.

The County will require project applicants to prepare project-specific analyses of qualifying projects and incorporate project-specific mitigation measures to reduce TACs, per the following policies:

- **Policy HS-P1.5.** Require new sources of air pollution that will generate significant new air quality impacts or expose sensitive receptors to substantial increases in harmful emissions of TACs to prepare a Health Risk Assessment that identifies appropriate mitigation consistent with BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines, based on the findings of the Health Risk Assessment.
- **Policy HS-P2.1.** When evaluating health risk impacts of projects in Impacted Communities, use an excess cancer risk of 6.0 per million and a non-cancer (acute and chronic) hazard index greater than 1.0 as thresholds for finding that the project could cause a cumulatively considerable contribution and a significant impact.

If the results show that the incremental cancer risk exceeds ten in one million (or the risk thresholds in effect at the time a project is considered) or six in one million in Impacted Communities, the appropriate noncancer hazard index exceeds 1.0, or 0.3 μ/m^3 of $PM_{2.5}$, or the thresholds as determined by the BAAQMD at the time a project is considered, the applicant is required to mitigate the potential cancer and noncancer risks to an acceptable level.

Th following policy in the proposed General Plan would reduce the exposure of sensitive receptors in Impacted Communities and Overburdened Communities to TACs and $PM_{2.5}$:

- **Policy HS-P1.8.** Require new or expanded commercial and industrial projects exceeding 25,000 square feet of gross floor area to be near zero-emissions (NZE) operations, including the facilities themselves and the associated fleets. Require all necessary measures, such as the following, to achieve NZE:
    (a) Reduce on-site energy consumption and increase on-site energy generation and energy storage.
    (b) Provide adequate on-site ZE vehicle-capable parking for all anticipated truck traffic to prevent idling and off-site queuing.
    (c) Provide electrified loading docks with receptacles allowing plug-in of refrigerated trailers.
    (d) Use heavy-duty trucks that are model year 2014 or later and expedite a transition to ZE trucks by establishing a clear timeline for electrification of trucks as they become commercially available. Ensure contracts with motor carriers include air quality incentives or requirements, such as providing incentives to fleets that meet United States Environmental Protection Agency (EPA) SmartWay standards or requiring use of ZE or NZE trucks.
    (e) Use a "clean fleet" of delivery vehicles as they become commercially available, but no later than 2025.
    (f) Use ZE yard equipment, such as forklifts, pallet trucks and jacks, and stackers.
    (g) Implement practices to control and remove fugitive dust and other contaminants from paved areas.

    Uses with fewer than five vehicles domiciled on-site are exempt from this policy.

The policies listed above aim to reduce pollution from industrial development to nearby sensitive receptors and would require more project-specific mitigation measures to reduce TACs, especially in Impacted Communities. Policy HS-P1.8 also pushes to reduce truck idling, promotes the replacement of older heavy-duty trucks, and supports near zero emissions operations.

Though the proposed General Plan includes policies and actions to reduce air pollutant emissions exposure within Impacted Communities, the proposed General Plan could result in specific development projects that could emit TACs and $PM_{2.5}$. The emissions associated with these facilities cannot be determined or modeled until specific development projects are proposed. Therefore, implementation of the proposed General Plan may result in projects that emit TACs and $PM_{2.5}$ in the vicinity of Impacted Communities and sensitive receptors and result in potentially significant localized air quality impacts.

Therefore, without project-specific analysis health risk impacts from nonpermitted sources associated with development of industrial and commercial land uses are considered potentially significant.

Proposed CAP

As discussed under Impact 5.3-2, implementation of the proposed CAP would not involve any land use changes that would result in indirect growth or change in building density or intensity; therefore, its implementation would not directly result in the generation of operation-related criteria air pollutants, TAC and $PM_{2.5}$ emissions, or generation of vehicle trips to produce CO hotspots. In addition, as stated under Impact 5.3-3, implementation of the CAP could result in beneficial long-term air quality impacts from the increase in energy

efficiency, usage of clean energy, and reduction in VMT. A reduction in vehicle trips would contribute to further minimizing the potential creation of CO hotpots. Therefore, implementation of the proposed CAP would not expose sensitive receptors to substantial pollutant concentrations of TACs, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-5 would be potentially significant.

Mitigation Measures

AQ-4 Prior to discretionary approval by the County, project applicants for new industrial or warehousing development projects that 1) have the potential to generate 100 or more diesel truck trips per day or have 40 or more trucks with operating diesel-powered transport refrigeration units, and 2) are within 1,000 feet of a sensitive land use (e.g., residential, schools, hospitals, nursing homes) or Impacted Community, as measured from the property line of the project to the property line of the nearest sensitive use, shall submit a health risk assessment (HRA) to the Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the cumulative and project-level incremental cancer risk, noncancer hazard index, and/or $PM_{2.5}$ exceeds the respective threshold, as established by BAAQMD (all areas of the unincorporated county) and project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000 feet of a BAAQMD Overburdened Community; ten in a million in all other areas; $PM_{2.5}$ emissions that exceed 0.3 $\mu g/m^3$; or the appropriate noncancer hazard index exceeds 1.0, the project applicant will be required to identify best available control technologies for toxics (T-BACTs) and appropriate enforcement mechanisms, and demonstrate that they are capable of reducing potential cancer, noncancer risks, and $PM_{2.5}$ to an acceptable level. T-BACTs may include but are not limited to:

- Restricting idling on-site beyond Air Toxic Control Measures idling restrictions
- Electrifying warehousing docks
- Requiring use of newer equipment
- Requiring near-zero or zero-emission trucks for a portion of the vehicle fleet based on opening year
- Truck Electric Vehicle (EV) Capable trailer spaces
- Restricting off-site truck travel through the creation of truck routes

T-BACTs identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site plan.

Level of Significance After Mitigation: Impact 5.3-5 would remain significant and unavoidable. Development allowed by the proposed project could result in new sources of TACs or $PM_{2.5}$ near existing or planned sensitive receptors. Review of development projects by BAAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities) in addition to proposed General Plan policies and actions would ensure that health risks are minimized. Additionally, Mitigation Measure AIR-4 would ensure mobile sources of TACs not covered under BAAQMD permits are considered during subsequent project-level review by the County. Individual development projects would be required to achieve the incremental risk thresholds established by BAAQMD, and TAC and $PM_{2.5}$ project-level impacts would be less than significant. However, these projects could contribute to significant cumulative risk in the Bay Area that could affect sensitive populations and Overburdened and Impacted Communities. As a result, the proposed project's contribution to cumulative health risk is considered significant and unavoidable.

Impact 5.3-6: The proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. [Threshold AQ-4]

Proposed General Plan

Construction-Related Odors

During construction activities of future development in the county, construction equipment exhaust and application of asphalt and architectural coatings would temporarily generate odors. Any construction-related odor emissions would be temporary and intermittent. Additionally, noxious odors would be confined to the immediate vicinity of the construction equipment. By the time such emissions reach any sensitive receptor sites, they would be diluted to well below any level of air quality concern, and impacts would be less than significant.

Operational-Related Odors

Industrial Land Uses

Industrial land uses are the primary types of land uses that have the potential to generate objectionable odors. Future environmental review could be required for industrial projects listed in BAAQMD's CEQA Guidelines Table 4 Project Screening Trigger Levels for Potential Odor Sources to ensure that sensitive land uses are not exposed to nuisance odors (BAAQMD 2023b). Consequently, review of projects using BAAQMD's odor screening distances is necessary to ensure that odor impacts are minimized. Odor impacts could be significant for new projects that have the potential to generate odors within the odor screening distances.

Residential and Other Land Uses

Residential and other nonresidential, nonindustrial land uses that would be accommodated by the proposed General Plan could result in the generation of odors such as exhaust from landscaping equipment and from cooking. Unlike industrial land uses, these are not considered potential generators of odor that could affect a substantial number of people.

Furthermore, nuisance odors are regulated under BAAQMD Regulation 7, Odorous Substances, which requires abatement of any nuisance generating an odor complaint. In addition, odors are also regulated under BAAQMD Regulation 1, Rule 1-301, *Public Nuisance*. Compliance with BAAQMD Regulation 7 would ensure that odor impacts associated with the proposed General Plan are minimized to a less than significant level.

Proposed CAP

As discussed under Impact 5.3-2, implementation of the proposed CAP would not involve any land use changes that would result in indirect growth or change in building density or intensity; therefore, its implementation would not directly result in the generation of odors or other emissions. Therefore, implementation of the proposed CAP would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-6 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.3-6 would be less than significant.

5.3.5 Cumulative Impacts

Construction

The cumulative setting for air quality is the Air Basin. The BAAQMD is designated nonattainment for O_3, $PM_{2.5}$, and PM_{10} under the California and/or National AAQS. Construction of cumulative projects would further degrade the regional and local air quality. Air quality would be temporarily impacted during construction activities. Implementation of mitigation measures for related projects would reduce cumulative impacts. However, project-related construction emissions could still potentially exceed the BAAQMD significance thresholds on a project and cumulative basis. Consequently, the proposed project's contribution to cumulative air quality impacts would be cumulatively considerable and would therefore be significant.

Operation

For operational air quality emissions, any project that does not exceed or can be mitigated to less than the daily regional threshold values is not considered by BAAQMD to be a substantial source of air pollution and does not add significantly to a cumulative impact. Operation of the proposed project would result in emissions in excess of the BAAQMD regional emissions thresholds for long-term operation. Therefore, the proposed project's air pollutant emissions would be cumulatively considerable and therefore significant.

Health Risk (TACs and $PM_{2.5}$)

Development allowed by the proposed General Plan could result in new sources of criteria air pollutant emissions and/or TACs near existing or planned sensitive receptors as well as proximate to other existing and planned major sources of air pollution including high volume roadways, truck distribution centers, ports,

railyards and rail lines, refineries, airports, chrome plating facilities, crematoriums, dry cleaners using perchloroethylene, generators, and gasoline dispensing facilities. Review of new development projects by BAAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities), in addition to proposed General Plan policies and actions, would ensure that health risks are minimized. Additionally, Mitigation Measure AQ-4 would ensure mobile sources of TACs not covered under BAAQMD permits are considered during subsequent project-level review by the County. Individual development projects would be required to achieve the incremental risk thresholds established by BAAQMD; therefore, project-level impacts would be less than significant. However, cumulative construction plus operation of these projects in areas with high background risk could contribute to significant cumulative risk in the Bay Area that could affect sensitive populations and disadvantaged communities. As a result, the proposed General Plan's contribution to cumulative health risk is considered significant.

5.3.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, some impacts would be less than significant: Impacts 5.3-1, 5.3-5, and 5.3-6.

Without mitigation, these impacts would be **potentially significant**:

- **Impact 5.3-2:** Short-term construction activities associated with the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State ambient air quality standards.
- **Impact 5.3-3:** Development under the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State AAQS.
- **Impact 5.3-4:** Construction activities associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations.
- **Impact 5.3-5:** Operational-phase emissions associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations and cumulatively contribute to elevated health risk in the Air Basin.

5.3.7 Mitigation Measures

Impact 5.3-2

AQ-1 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more shall prepare and submit a technical assessment evaluating potential project construction-related air quality impacts to the County Department of Conservation and Development for review and approval. The evaluation shall be prepared in conformance with the Bay Area Air Quality Management District (BAAQMD) methodology for assessing air quality impacts identified in their *CEQA Air Quality Guidelines*. If construction-related criteria air pollutants are determined to have the potential to exceed

the BAAQMD–adopted construction screening criteria and thresholds of significance, the Department of Conservation and Development shall require feasible mitigation measures to reduce air quality emissions. Potential measures may include:

- Require implementation of the BAAQMD Best Management Practices for fugitive dust control, such as:
  - All exposed surfaces (e.g., parking areas, staging areas, soil piles, grading areas, and unpaved access roads) shall be watered two times per day.
  - All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
  - All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
  - All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
  - All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
  - All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
  - All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
  - Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.
  - Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

Measures shall be incorporated into appropriate construction documents (e.g., construction management plans) submitted to the County and shall be verified by the Department of Conservation and Development.

Impact 5.3-3

AQ-2 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future project applicants shall prepare and submit a technical assessment evaluating potential project operation-phase-related air quality impacts to the Department of Conservation and

Development for review and approval. The evaluation shall be prepared in conformance with Bay Area Air Quality Management District (BAAQMD) methodology in assessing air quality impacts identified in their *CEQA Air Quality Guidelines*. If operation-related air pollutants are determined to have the potential to exceed the BAAQMD–adopted operational screening criteria and thresholds of significance, the Department of Conservation and Development shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce long-term emissions could include, but are not limited to the following:

- Implementing commute trip reduction programs.
- Unbundling residential parking costs from property costs.
- Expanding bikeway networks.
- Expanding transit network coverage or hours.
- Using cleaner-fueled vehicles.
- Exceeding the current Title 24 Building Envelope Energy Efficiency Standards.
- Establishing on-site renewable energy generation systems.
- Requiring all-electric buildings.
- Replacing gas-powered landscaping equipment with zero-emission alternatives.
- Expanding urban tree planting.

Impact 5.3-4

AQ-3 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more and within 1,000 feet of residential and other sensitive land uses (e.g., hospitals, nursing homes, schools, and day care centers) in the unincorporated county[8], shall submit a health risk assessment (HRA) to the County Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the Office of Environmental Health Hazard Assessment (OEHHA) and Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds the respective threshold, as established by the BAAQMD —project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000 feet of a BAAQMD Overburdened

[8] As measured from the property line of the project site to the property line of the source/edge of the nearest travel lane.

Community; ten in a million in all other areas; $PM_{2.5}$ emissions that exceed 0.3 $\mu g/m^3$; or the appropriate noncancer hazard index exceeds 1.0—the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks below the respective threshold, including appropriate enforcement mechanisms. Measures to reduce risk may include, but are not limited to:

- Use of construction equipment rated as US EPA Tier 4 Interim for equipment of 50 horsepower or more.
- Use of construction equipment fitted with Level 3 Diesel Particulate Filters for all equipment of 50 horsepower or more.

Measures identified in the HRA shall be included in the environmental document and/or incorporated into the site development plan as a component of the proposed project. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the Department of Conservation and Development clearly show incorporation of all applicable mitigation measures.

Impact 5.3-5

AQ-4 Prior to discretionary approval by the County, project applicants for new industrial or warehousing development projects that 1) have the potential to generate 100 or more diesel truck trips per day or have 40 or more trucks with operating diesel-powered transport refrigeration units, and 2) are within 1,000 feet of a sensitive land use (e.g., residential, schools, hospitals, nursing homes) or Impacted Community, as measured from the property line of the project to the property line of the nearest sensitive use, shall submit a health risk assessment (HRA) to the Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the State Office The HRA shall be prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the cumulative and project-level incremental cancer risk, noncancer hazard index, and/or $PM_{2.5}$ exceeds the respective threshold, as established by BAAQMD (all areas of the unincorporated County) and project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000 feet of a BAAQMD Overburdened Community; ten in a million in all other areas; $PM_{2.5}$ emissions that exceed 0.3 $\mu g/m^3$; or the appropriate noncancer hazard index exceeds 1.0, the project applicant will be required to identify best available control technologies for toxics (T-BACTs) and appropriate enforcement mechanisms, and demonstrate that they are capable of reducing potential cancer, noncancer risks, and $PM_{2.5}$ to an acceptable level. T-BACTs may include but are not limited to:

- Restricting idling on-site beyond Air Toxic Control Measures idling restrictions

- Electrifying warehousing docks
- Requiring use of newer equipment
- Requiring near-zero or zero-emission trucks for a portion of the vehicle fleet based on opening year.
- Truck Electric Vehicle (EV) Capable trailer spaces.
- Restricting off-site truck travel through the creation of truck routes.

T-BACTs identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site plan.

5.3.8 Level of Significance After Mitigation

Impact 5.3-2

Development in accordance with the proposed project would generate short-term emissions that would exceed BAAQMD's regional significance thresholds and cumulatively contribute to the nonattainment designations of the SFBAAB. Mitigation Measure AQ-1 would reduce construction-related air pollutant emissions to the extent feasible. However, individual projects accommodated under the proposed project may exceed the BAAQMD regional significance thresholds. Therefore, Impact 5.3-2 would remain ***significant and unavoidable***.

Impact 5.3-3

Development in accordance with the proposed project would generate long-term emissions that would exceed BAAQMD's regional significance thresholds and cumulatively contribute to the nonattainment designations of the SFBAAB. Mitigation Measure AQ-2 would reduce air pollutant emissions to the extent feasible. However, Impact 5.3-3 would remain ***significant and unavoidable***.

Contributing to the nonattainment status would also contribute to elevating health effects associated to these criteria air pollutants. Known health effects related to ozone include worsening of bronchitis, asthma, and emphysema and a decrease in lung function. Health effects associated with particulate matter include premature death of people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, decreased lung function, and increased respiratory symptoms. Reducing emissions would further contribute to reducing possible health effects related to criteria air pollutants.

It is speculative for this broad-based policy plan to determine how exceeding the regional thresholds would affect the number of days the region is in nonattainment since mass emissions are not correlated with concentrations of emissions, or how many additional individuals in the air basin would be affected by the health effects cited above.

This EIR quantifies the increase in criteria air pollutants emissions in the unincorporated county. However, at a programmatic level analysis, it is not feasible to quantify the increase in TACs from stationary sources associated with the proposed project or meaningfully correlate how regional criteria air pollutant emissions above the BAAQMD significance thresholds correlate with basinwide health impacts.

To determine cancer and noncancer health risk, the location, velocity of emissions, meteorology and topography of the area, and locations of receptors are equally important as model parameters as the quantity of TAC emissions. The white paper in Appendix C "We Can Model Regional Emissions, But Are the Results Meaningful for CEQA" describe several of the challenges of quantifying local effects—particularly health risks—for large-scale, regional projects, and these are applicable to both criteria air pollutants and TACs. Similarly, the two amicus briefs filed by the air districts on the Friant Ranch case (see Appendix 5.3-1) describe two positions regarding CEQA requirements, modeling feasibility, variables, and reliability of results for determining specific health risks associated with criteria air pollutants. The discussions also include the distinction between criteria air pollutant emissions and TACs with respect to health risks. The following summarizes major points about the infeasibility of assessing health risks of criteria air pollutant emissions and TACs associated with implementation of a general plan.

To achieve and maintain air quality standards, BAAQMD has established numerical emission indicators of significance for regional and localized air quality impacts for both construction and operational phases of a local plan or project. BAAQMD has established the thresholds based on "scientific and factual data that is contained in the federal and state Clean Air Acts" and recommends "that these thresholds be used by lead agencies in making a determination of significance." The numerical emission indicators are based on the recognition that the air basin is a distinct geographic area with a critical air pollution problem for which ambient air quality standards have been promulgated to protect public health. The thresholds represent the maximum emissions from a plan or project that are expected not to cause or contribute to an exceedance of the most stringent applicable national or state ambient air quality standard. By analyzing the plan's emissions against the thresholds, an EIR assesses whether these emissions directly contribute to any regional or local exceedances of the applicable ambient air quality standards and exposure levels.

BAAQMD currently does not have methodologies that would provide the County with a consistent, reliable, and meaningful analysis to correlate specific health impacts that may result from a proposed project's mass emissions.[9] For criteria air pollutants, exceedance of the regional significance thresholds cannot be used to correlate a project to quantifiable health impacts unless emissions are sufficiently high to use a regional model. BAAQMD has not provided methodology to assess the specific correlation between mass emissions generated

[9] In April 2019, the Sacramento Metropolitan Air Quality Management District (SMAQMD) published an Interim Recommendation on implementing Sierra Club v. County of Fresno (2018) 6 Cal.5th 502 ("Friant Ranch") in the review and analysis of proposed projects under CEQA in Sacramento County. Consistent with the expert opinions submitted to the court in Friant Ranch by the San Joaquin Valley Air Pollution Control District (SJVAPCD) and South Coast AQMD, the SMAQMD guidance confirms the absence of an acceptable or reliable quantitative methodology that would correlate the expected criteria air pollutant emissions of projects to likely health consequences for people from project-generated criteria air pollutant emissions. The SMAQMD guidance explains that while it is in the process of developing a methodology to assess these impacts, lead agencies should follow the Friant Court's advice to explain in meaningful detail why this analysis is not yet feasible. Since this interim memorandum SMAQMD has provided methodology to address health impacts. However, a similar analysis is not available for projects within the Bay Area.

and their effect on health (see Appendix C: San Joaquin Valley Air Pollution Control District's amicus brief, and South Coast AQMD's amicus brief).

Ozone concentrations depend on a variety of complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Secondary formation of particulate matter (PM) and ozone can occur far from sources as a result of regional transport due to wind and topography (e.g., low-level jet stream). Photochemical modeling depends on all emission sources in the entire domain (i.e., modeling grid). Low resolution and spatial averaging produce "noise" and modeling errors that usually exceed individual source contributions. Because of the complexities of predicting ground-level ozone concentrations in relation to the National and California AAQS, it is not possible to link health risks to the magnitude of emissions exceeding the significance thresholds.

Current models used in CEQA air quality analyses are designed to estimate potential project construction and operation emissions for defined projects. The estimated emissions are compared to significance thresholds, which are keyed to reducing emissions to levels that will not interfere with the region's ability to attain the health-based standards. This serves to protect public health in the overall region, but there is currently no CEQA methodology to determine the impact of emissions (e.g., pounds per day) on future concentration levels (e.g., parts per million or micrograms per cubic meter) in specific geographic areas. CEQA thresholds, therefore, are not specifically tied to potential health outcomes in the region.

The EIR must provide an analysis that is understandable for decision making and public disclosure. Regional-scale modeling may provide a technical method for this type of analysis, but it does not necessarily provide a meaningful way to connect the magnitude of a project's criteria pollutant emissions to health effects without speculation. Additionally, this type of analysis is not feasible at a general plan level because the location of emissions sources and quantity of emissions are not known. However, because cumulative development within the county would exceed the regional significance thresholds, the proposed project could contribute to an increase in health effects in the basin until the attainment standards are met in the Air Basin.

Impact 5.3-4

Mitigation Measure AQ-3 would require preparation of a construction health risk assessment (HRA) that would identify measures that would reduce DPM and $PM_{2.5}$ emissions below the BAAQMD significance thresholds by requiring use of newer, lower emitting construction equipment, and would not expose sensitive receptors to substantial pollutant concentrations. Therefore, Impact 5.3-4 would be *less than significant* with mitigation incorporated.

Impact 5.3-5

Development allowed by the proposed General Plan could result in new sources of criteria air pollutant emissions and/or TACs near existing or planned sensitive receptors. Review of development projects by BAAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities), in addition to proposed General Plan policies and actions, would ensure that health risks are minimized. Additionally, Mitigation Measure AQ-4 would ensure mobile sources of TACs not covered under BAAQMD permits are considered during subsequent project-level review by the County. Individual

development projects would be required to achieve the incremental risk thresholds established by BAAQMD; therefore, project-level impacts would be less than significant. However, cumulative construction and operation of these projects in areas with high background risk could contribute to significant cumulative risk in the Bay Area that could affect sensitive populations and disadvantaged communities. As a result, Impact 5.3-5 would remain ***significant and unavoidable***.

5.3.9 References

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5. Environmental Analysis
AIR QUALITY

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5.4 BIOLOGICAL RESOURCES

This section describes the potential impacts on biological resources associated with the adoption and implementation of the proposed project. This section describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential impacts to biological resources, and identifies proposed General Plan policies and actions that could minimize any potentially significant impacts.

The analysis in this section is based in part on the following technical studies:

- *Contra Costa County General Plan Update: Biological Resources Existing Conditions Report* (Existing Conditions Report), which is included as Appendix 5.4-1 to this Draft Environmental Impact Report (EIR).
- California Department of Fish and Wildlife: RareFind Report, Contra Costa County, included as Appendix 5.4-2 to this Draft EIR.

5.4.1 Environmental Setting

5.4.1.1 REGULATORY BACKGROUND

Federal and State

Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973, as amended, protects and conserves any species of plant or animal that is endangered or threatened with extinction, as well as the habitats where these species are found. "Take" of endangered species is prohibited under Section 9 of the FESA. "Take" means to "harass, harm, pursue, hunt, wound, kill, trap, capture, collect, or attempt to engage in any such conduct." Section 7 of the FESA requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) on proposed federal actions that may affect any endangered, threatened, or proposed (for listing) species or critical habitat that may support the species. Section 4(a) of the FESA requires that critical habitat be designated by the USFWS "to the maximum extent prudent and determinable, at the time a species is determined to be endangered or threatened." This provides guidance for planners/managers and biologists by indicating locations of suitable habitat and where preservation of a particular species has high priority. Section 10 of the FESA provides the regulatory mechanism for incidental take of a listed species by private interests and nonfederal government agencies during lawful activities. Habitat conservation plans (HCPs) for the impacted species must be developed in support of incidental take permits to minimize impacts to the species and formulate viable mitigation measures.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) affirms and implements the United States' commitment to four international conventions—with Canada, Japan, Mexico, and Russia—to protect shared migratory bird resources. The MBTA governs the take, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. It prohibits the take, possession, import, export, transport, sale, purchase, barter, or

offering of these items, except under a valid permit or as permitted in the implementing regulations. USFWS administers permits to take migratory birds in accordance with the MBTA.

Clean Water Act, Section 404

The U.S. Army Corps of Engineers (Corps) regulates discharge of dredged or fill material into "waters of the United States."[1] Any filling or dredging within waters of the United States requires a permit, which entails assessment of potential adverse impacts to Corps wetlands and jurisdictional waters and any mitigation measures that the Corps requires. Section 7 consultation with USFWS may be required for impacts to a federally listed species. If cultural resources may be present, Section 106 review may also be required. When a Section 404 permit is required, a Section 401 Water Quality Certification is also required from the Regional Water Quality Control Board (RWQCB).

Clean Water Act, Section 401 and 402

Section 401(a)(1) of the Clean Water Act (CWA) specifies that any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters shall provide the federal permitting agency with a certification, issued by the state in which the discharge originates, that any such discharge will comply with the applicable provisions of the CWA. In California, the applicable RWQCB must certify that the project will comply with water quality standards. Permits requiring Section 401 certification include Corps Section 404 permits and National Pollutant Discharge Elimination System (NPDES) permits issued by the Environmental Protection Agency (EPA) under Section 402 of the CWA. NPDES permits are issued by the applicable RWQCB. Contra Costa County is Region 2 (San Francisco Bay) and Region 5 (Central Valley).

California Fish and Game Code, Section 1602

Section 1602 of the California Fish and Game Code requires a project proponent to notify the California Department of Fish and Wildlife (CDFW) of any proposed alteration of streambeds, rivers, and lakes. The intent is to protect habitats that are important to fish and wildlife. CDFW may review and place conditions on the project, as part of a Streambed Alteration Agreement (SAA), that address potentially significant adverse impacts within CDFW's jurisdictional limits.

California Endangered Species Act

The California Endangered Species Act (CESA) generally parallels the main provisions of the FESA and is administered by CDFW. Its intent is to prohibit take and protect State-listed endangered and threatened species of fish, wildlife, and plants. Unlike its federal counterpart, CESA also applies the take prohibitions to species petitioned for listing (i.e., State candidates). Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission.

[1] "Waters of the United States," as applied to the jurisdictional limits of the Corps under the Clean Water Act, includes all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the tide; all interstate waters, including interstate wetlands; and all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds whose use, degradation, or destruction could affect interstate or foreign commerce; water impoundments; tributaries of waters; territorial seas; and wetlands adjacent to waters. The terminology used by Section 404 of the Clean Water Act includes "navigable waters," which is defined at Section 502(7) of the act as "waters of the United States, including the territorial seas."

Unlike the FESA, CESA does not include listing provisions for invertebrate species. Under certain conditions, CESA has provisions for take through a Section 2081 Incidental Take Permit or memorandum of understanding (MOU). In addition, some sensitive mammals and birds are protected by the State as "fully protected species." California "species of special concern" are species designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. This list is primarily a working document for the CDFW's California Natural Diversity Database (CNDDB), which maintains a record of known and recorded occurrences of sensitive species. Informally listed taxa are not protected per se but warrant consideration in the preparation of biological resources assessments.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, the RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, within any region that could affect the water of the state" (Water Code Section 13260(a)). Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code Section 13050 [e]). The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into waters of the State, that are not regulated by the Corps due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of waste discharge requirements for these activities. Although all waters of the United States that are within the borders of California are also waters of the State, the converse is not true (i.e., not all waters of the State are also waters of the United States). Thus, California retains authority to regulate discharges of waste into any waters of the State, regardless of whether the Corps has concurrent jurisdiction under CWA Section 404.

California Native Plant Protection Act

The California Native Plant Protection Act (NPPA) of 1977 (California Fish and Game Code Sections 1900–1913) was established with the intent to "preserve, protect and enhance rare and endangered plants in this state." CDFW administers the NPPA. The Fish and Game Commission has the authority to designate native plants as "endangered" or "rare."

The NPPA prohibits the take of plants listed under it, though the act contains exemptions to this prohibition that have not been clarified by regulation or judicial rule. In 1984, the CESA brought under its protection all plants previously listed as endangered under NPPA. Plants listed as rare under NPPA are not protected under the CESA but are still protected under the provisions of NPPA. The Fish and Game Commission no longer lists plants under NPPA, reserving all listings to the CESA.

California Fish and Game Code Special Protections for Birds

In addition to protections contained within the CESA and California Fish and Game Code Section 3511 described previously, the California Fish and Game Code includes several sections that specifically protect certain birds.

- Section 3800 states that it is unlawful to take nongame birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the California Fish and Game Commission or a mitigation plan approved by CDFW for mining operations.

- Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird.
- Section 3503.5 protects birds of prey (which includes eagles, hawks, falcons, kites, ospreys, and owls) and prohibits the take, possession, or destruction of any birds and their nests.
- Section 3505 makes it unlawful to take, sell, or purchase egrets, ospreys, and several exotic non-native species, or any part of these birds.
- Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

California Fully Protected Species

California Fish and Game Code Sections 3511, 3513, 4700, and 5050 pertain to fully protected wildlife species (i.e., birds in Sections 3511 [discussed previously] and 3513, mammals in Section 4700, and reptiles and amphibians in Section 5050) and strictly prohibit the take of these species. CDFW cannot issue a take permit for fully protected species, except under narrow conditions for scientific research or the protection of livestock, or if a natural community conservation plan has been adopted.

Local

Contra Costa County Ordinance Code

Chapter 82-1 – 65/35 Land Preservation Plan

This chapter states that urban development in the county shall be limited to no more than 35 percent of the land in the county. At least 65 percent of all land in the county shall be preserved for agriculture, open space, wetlands, parks, and other nonurban use. The County's Urban Limit Line (ULL) was established in 1990 and is integral to enforcing the 65/35 Plan.

Chapter 816-6 – Tree Protection and Preservation

Chapter 816-6, *Tree Protection and Preservation*, provides for the preservation of certain protected trees in the unincorporated area of the county. In addition, this chapter provides for the protection of trees on private property by controlling tree removal while allowing for reasonable enjoyment of private property rights and property development for the following reasons:

1. The County finds it necessary to preserve trees on private property in the interest of the public health, safety, and welfare, and to preserve scenic beauty.

2. Trees provide soil stability, improve drainage conditions, provide habitat for wildlife, and provide aesthetic beauty and screening for privacy.

3. Trees are a vital part of a visually pleasing, healthy environment for the unincorporated area of the county.

Division 1014 – Stormwater Management and Discharge Control

Division 1014, *Stormwater Management and Discharge Control,* provides the conditions and requirements for compliance with the County's MS4 permit issued by the San Francisco Bay RWQCB. The goal of this ordinance is to eliminate illicit discharges to the stormwater system, minimize increase in non-point source pollution, reduce stormwater runoff rates and volumes through stormwater management controls for new development, and promote no adverse impact policies as developed by the Federal Emergency Management Act (FEMA).

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)

The East Contra Costa County Habitat Conservancy developed the East Contra Costa County HCP/NCCP, which provides regional conservation and development guidelines to protect natural resources, including wetlands, while improving and streamlining the permit process for take of State and federally listed species. The 30-year Plan was approved at the local level in 2006 and 2007, and permits were issued by CDFW and USFWS in 2007. The Plan allows Contra Costa County, the Contra Costa County Flood Control and Water Conservation District, the East Bay Regional Park District (EBRPD), and the Cities of Brentwood, Clayton, Oakley, and Pittsburg—a group collectively referred to as the Permittees—to authorize endangered species permitting for activities and projects in the region, performed or approved by the Permittees, while providing comprehensive species, wetlands, and ecosystem conservation and contributing to the recovery of endangered species in Northern California. The East Contra Costa County HCP/NCCP allows projects that qualify as "covered activities" to obtain federal and State incidental take authorization for listed species. As part of receiving take authorization, East Contra Costa County HCP/NCCP participants can expedite their mitigation and compensation requirements through the East Contra Costa County HCP/NCCP, which would be consistent with federal and State recommendations and requirements. The East Contra Costa County HCP/NCCP implements a conservation strategy designed to achieve a comprehensive set of biological goals and objectives. Furthermore, as a Natural Community Conservation Plan, the Plan provides for broad-based planning to preserve natural communities at the ecosystem scale (East Contra Costa Habitat Conservancy 2018).

Over 150 rare species occur in the East County area, including the San Joaquin kit fox, California red-legged frog, Alameda whipsnake, western burrowing owl, vernal pool fairy shrimp, and Diablo helianthella. Growth will occur in East County in habitat for endangered species, setting up a potential conflict between conservation and economic development. The East Contra Costa County HCP/NCCP seeks to avoid such conflict, providing an opportunity to preserve these diverse ecosystems, unique species, and scenic landscapes while clearing regulatory obstacles to continued economic development and growth.

5.4.1.2 EXISTING CONDITIONS[2]

There is a diverse range of habitats and unique species in Contra Costa County. Much of the county's natural environment remains, while substantial areas have already received permanent public protection. The vast majority of privately held lands supporting vegetation and wildlife resources are within the agricultural areas of the county.

[2] This section is based on the Existing Conditions Report (Appendix 5.4-1), which describes and maps biological resources conditions in the county. However, as discussed in Chapter 3, *Project Description*, this EIR focuses on the analysis of potential impacts on lands only within unincorporated Contra Costa County, including land within and outside the ULL and inside each municipality's sphere of influence (SOI), but not inside municipality limits. This area is referred to as the "EIR Study Area" in this document and is shown in Figure 3-2, *EIR Study Area Boundaries*.

5. Environmental Analysis
BIOLOGICAL RESOURCES

The topographic variety of the county, from the summit of Mount Diablo to the San Francisco Bay/Delta estuary complex, combines to form the setting for its range of habitat and wildlife. There are unique biotic resources found within Contra Costa County which have biological and wildlife importance. While most of the significant habitat areas are found in unincorporated locations, several important wildlife areas are within city limits. Wetlands are one of the most important habitat resources within the county. Wetlands, especially marshes scattered along the county's shoreline, have been awarded substantial legal and policy protection.

Table 5.4-1, *Inventory of Significant Ecological Resources Areas of Contra Costa County,* lists the most important unique natural areas in the county. Figure 5.4-1, *Significant Ecological Resources Areas of Contra Costa County and Selected Locations of Protected Wildlife and Plant Species Areas*, shows the 41 unique biotic resource areas that have biological and wildlife importance identified in the existing General Plan. Furthermore, the existing General Plan identifies these areas as significant ecological resource areas, most of which contain aquatic habitat, such as freshwater marsh, seasonal and perennial wetlands, alkali mud flats, coastal salt marsh, and riparian vegetation.

Table 5.4-1 Inventory of Significant Ecological Resources Areas of Contra Costa County

#	Ecological Resource Area	Inventory
1.	Point Pinole	Tidal and freshwater marshes, mudflat, grassland, eucalyptus plantation, and fishing pier which extends 1/4 mile into San Pablo Bay. Valuable for migrating waterfowl and shorebirds. Habitat for soft-haired bird's beak, California clapper rail and salt marsh harvest mouse, possibly for black rail, Samuel's song sparrow and black-shouldered kite. Plantation serves as resting place for migrating monarch butterflies.
2.	San Pablo Creek & Wildcat Creek Marshes	Tidal marsh and mudflat. Potential for same species as described for Point Pinole.
3.	Brooks Island	Tidal marsh, scrub/brushland and coastal prairie grassland. Important stop for migrating waterfowl including Canada goose. Supports a population of California vole with an uncommon pelage (hair) color variation.
4.	Hoffman Marsh	Tidal marsh habitat for migrating waterfowl and shorebirds, possibly for California clapper rail and salt marsh harvest mouse.
5.	San Pablo Ridge	The grassland areas on clay and clay loam soils on San Pablo Ridge support a population of Santa Cruz Tarweed which was transplanted from a hillside in Pinole.
6.	Wildcat Creek Canyon	Grassy hillsides with riparian woodland along Wildcat Creek. Habitat for ornate shrew, western pond turtle, northern brown skink and possibly for Alameda whipsnake.
7.	Lone Tree Point	Stratified cliff face demonstrates the underlying trend of coastal uplift. Fossiliferous strata contain many marine-life fossils such as clams and oysters.
8.	Sobrante Ridge Manzanita Grove	A unique "island" stand of chaparral that supports two and possibly three species of manzanita, including the Alameda manzanita.
9.	Siesta Valley	Broadleaf evergreen forest, riparian woodland, grassland and scrub/brushland. Habitat for Alameda whipsnake, Berkeley kangaroo rat, northern brown skink, grasshopper sparrow, and ornate shrew. Readily observed geologic features include a faulted syncline with Siesta Formation outcropping in the fold and Moraga basalt forming the upper slopes of the valley. Some fossils of shells and land mammals.
10.	Huckleberry Botanic Regional Preserve	Chaparral and broadleaf evergreen forest in this 130-acre preserve supports Alameda manzanita, western leatherwood, and diverse avifauna.
11.	Redwood Regional Park	Fine example of coast redwood forest. Redwoods were extensively logged in the late 1800s; all existing trees are second-growth.
12.	Flicker Ridge	Concentration of many habitats: grassland, native grassland, scrub/brushland, chaparral, open oak woodland, broadleaf evergreen forest, knobcone pine forest, and agriculture. Includes patches of unique pygmy redwoods, stunted due largely to exposure and soil conditions.

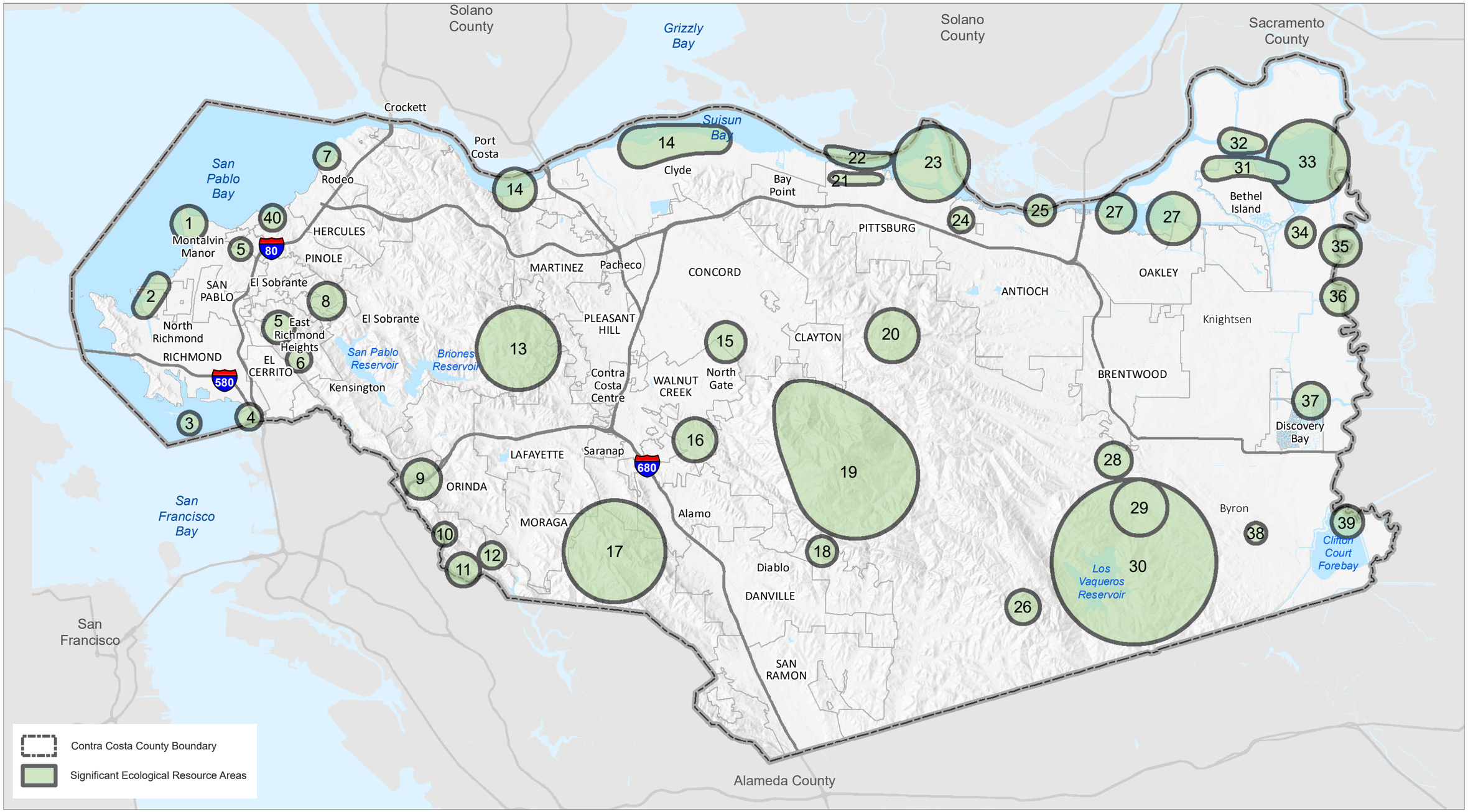
Table 5.4-1 Inventory of Significant Ecological Resources Areas of Contra Costa County

#	Ecological Resource Area	Inventory
13.	Briones Hills	Grasslands, oak woodland, riparian, and creeks support Mount Diablo fairy lantern, newts, western pond turtle, northern brown skink, ornate shrew, prairie falcon, mountain lion and possible Alameda whipsnake, grasshopper sparrow, golden eagle, badger, ringtail, and bobcat. Mount Diablo fairy lantern and Diablo helianthella are known and suspected to occur here, respectively.
14.	Shoreline between Martinez Waterfront & Concord Naval Weapons Station	Tidal marsh supports salt marsh harvest mouse, California clapper rail and possibly black rail. Ornate shrew, black-shouldered kite and Suisun song sparrow also occur here.
15.	Lime Ridge	Supports Mt. Diablo manzanita, and a buckwheat subspecies which is endemic to Lime Ridge.
16.	Shell Ridge	Open oak woodland and grasslands. Upturned geologic strata contain many marine fossils.
17.	Las Trampas and Rocky Ridges	Large area of rugged terrain, high ridges, and steep slopes. Grassland, scrub/brushland, chaparral, rock outcrops, open oak woodland, broadleaf evergreen forest, and riparian woodland. Habitat for Alameda whipsnake, black-chinned sparrow, prairie falcon, golden eagle, ringtail, badger, bobcat, and mountain lion.
18.	Blackhawk Ranch Fossil Locality	Upturned fossiliferous Pilocene strata indicates past climate, flora, and fauna. Diverse fossils include those of streamside trees, marine invertebrates, lizards, cranes, small mammals, carnivores, peccaries, camels, horses, and mastodons. Site was the edge of a salt water basin that extended inland to the Sierra Nevada.
19.	Mt. Diablo	Native grassland, serpentine chaparral, large rock outcrops, riparian woodland, dwarfed woodland, Coulter pine forest, knobcone pine forest, and springs. Many rare, endangered, depleted or otherwise unusual plants and animals, including an isolated population of northern sagebrush lizard, inhabit the mountain.
20.	Nortonville–Somersville	Northernmost limit of Coulter pine and black sage, southernmost limit of common manzanita. Mount Diablo manzanita, Diablo rock rose and Brewer's dwarf flax. Grassland, chaparral, open oak woodland, and Coulter pine forest. Area has been heavily mined for coal.
21.	Bay Point Salt Marsh	This marsh area is a habitat for salt marsh harvest mouse and the California black rail.
22.	Entrapment Zone	The entrapment zone is an area where suspended materials concentrate as a result of mixing by the outgoing freshwater flow above the saltwater wedge. Plankton concentrations are influenced by the location of the entrapment zone, and this in turn affects the location and productivity of fish in the bays and Delta. The location of the entrapment zone between the lower Delta and Suisun Bay varies according to the strength and phase of the tides, and the level of freshwater inflow from the Sacramento and San Joaquin Rivers.
23.	Browns Island and Winter Island	Freshwater and estuarine marshes. Habitat for Contra Costa wallflower, Mason's lilaeposis, Suisun song sparrow, black-shouldered kite, and possibly river otter. Black rail might also occur here.
24.	Mount of Contra Costa Canal	Salt water marsh provides habitat for black-shouldered kite.
25.	Antioch San Dunes	Small and only remaining remnants of riverine dunes, once part of the largest river-laid dunes in the state that stretched ten miles along the southern shore of the San Joaquin River. The remaining dunes support rare and/or endangered plants, at least six endangered and/or endemic insects and the California legless lizard.
26.	Los Vaqueros	This area contains fair densities of native bunchgrasses.
27.	Big Break	This is an emergent marsh supporting the California black rail.
28.	Marsh Creek Riparian Corridor and Marsh Creek Reservoir	These areas provide habitat for a variety of sensitive plant and animal species including large-flowered fiddleneck, Hoover cryptantha, Mt. Diablo buckwheat, diamond-petaled California poppy, stink bells, Diablo rock-rose, caper-fruited tropidocarpum, San Joaquin kit fox, California tiger salamander, California red-legged frog, and molestan blister beetle.
29.	Alakli Meadows and Northern Claypan Vernal Pools	Rare habitats in Contra Costa County and statewide. Specialized flora and invertebrate fauna are adapted to each habitat.

Table 5.4-1 Inventory of Significant Ecological Resources Areas of Contra Costa County

#	Ecological Resource Area	Inventory
30.	Los Vaqueros	Area of biological importance because of the presence of historical eagle nests and other outstanding natural features. This area provides habitat for the following species: San Joaquin kit fox, Alameda whipsnake, tricolored blackbird, California red-legged frog, California tiger salamander, western pond turtle, and freshwater shrimp. Also contains Alkali Meadows and Northern Claypan Vernal Pools, both of which are considered to be rare statewide.
31.	Bethel Island Wetlands	The Bethel Island area supports substantial acreage of seasonal and permanent wetlands. Over a square mile of ruderal wetland/upland also are found in the area. These have high values as biological habitat and are considered critical natural resources by the U.S. Army Corps of Engineers and other resource agencies.
32.	Little Franks Tract	This freshwater marsh habitat contains riparian shrub-brush along the levees which supports black-crowned night heron.
33.	Franks Tract	A flooded, formerly levee-encircled delta island. Freshwater marsh and riparian woodland habitats on borders, delta aquatic habitat with good spawning area for fish (striped bass, largemouth bass, white catfish, others). Possible habitat for giant garter snake.
34.	Sand Mound Slough	This area is an example of habitat found on the tule islands in the central and southern Delta. This area contains tules, bulrushes, common reed, rushes, and other marsh vegetation as well as riparian vegetation which provides a valuable habitat for wintering ducks and other waterfowl.
35.	Connection Slough, Quimby Island, Rhode Island, Old River Complex	A diverse mix of upland habitat, agricultural lands, riparian trees and shrub-brush, marsh and tule islands. Excellent wildlife habitat, particularly for raptors, songbirds, and game species. These areas support the rare California hibiscus.
36.	South Bank of Rock Slough	This area supports a small population of the Suisun marsh aster and California hibiscus.
37.	Indian Slough	California hibiscus is found at the confluence of Indian Slough.
38.	Byron Hot Springs	Alkali mud flats, salt marsh and hot mineral springs. A rare snail (*Helminthoglypta* spp.) inhabits the area, the site of an old resort-spa now in disrepair. A recently created shallow lake has enhanced the habitat for wildlife. The grassland hills to the west support San Joaquin kit fox.
39.	Eucalyptus Island	A freshwater marsh subject to tidal fluctuation. This area supports a variety of wildlife and is the habitat of the California hibiscus.
40.	Mouth of Pinole Creek	This coastal salt marsh area supports California black rail.
41.	Delta Islands and Peninsula	Additional Delta islands in Contra Costa include Jersey Island, Bradford Island, and Webb Tract. Veale Tract, which is a peninsula off the mainland, has similar habitat. The undeveloped shoreline and interior sections of these islands and peninsula have the potential for supporting the same species as described for Browns and Bethel Islands and Frank Tracts.

Source: Contra Costa County, 2000.



Source: ICF, 2019.

0 3.5
Scale (Miles)

Figure 5.4-1
Significant Ecological Resources Areas of Conta Costa County and Selected Locations of Protected Wildlife and Plant Species Areas

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Table 5.4-2, *Special-Status and Covered Plant Species in Contra Costa County*, and Table 5.4-3, *Special-Status and Covered Wildlife Species in Contra Costa County*, provide a list of the special-status plant and wildlife species that have been documented in the county by CNDDB and CNPS (see Appendix 5.4-2). For the purpose of this EIR, special-status plant and animal species are defined as those in one or more of the following categories.

- Listed, proposed for listing, or candidates for future listing as threatened or endangered under the FESA;
- Listed or candidates for future listing as threatened or endangered under the CESA;
- Meet the definitions of endangered or rare under Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- Identified as a Species of Special Concern (SSC) by the CDFW;
- Plants considered by CNPS to be "rare, threatened, or endangered in California" (California Rare Plant Rank [CRPR] 1 and 2);
- Plants listed as rare under the California NPPA, California Fish and Game Code, Section 1900 et seq.; or
- Are fully protected in California in accordance with the California Fish and Game Code, Sections 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes).

Tables 5.4-2 and 5.4-3 also include those designated as "covered species" in the East Contra Costa County HCP/NCCP, which includes 11 plant species and 17 wildlife species. Covered species means those species of plants and animals whose conservation and management are provided for by the HCP/NCCP and for which limited take is authorized pursuant to the State and federal permits. Three covered plant species have no CNDDB or CNPS occurrences within Contra Costa County, and one of these three plants has no federal, State, or CNPS listing. Additionally, one covered wildlife species has no federal or State listing.

Table 5.4-2 Special-Status and Covered Plant Species in Contra Costa County

Name (Common and Scientific)	Status[1]				Designated Critical Habitat in Contra Costa County (CCC)	Notes
	Federal	State	CNPS	HCP		
Large-flowered fiddleneck *Amsinckia grandiflora*	FE	SE	1B.1	-	-	4 CNDDB occurrences in CCC
Bent-flowered fiddleneck *Amsinckia lunaris*	FE	SE	1B.2	-	-	25 CNDDB occurrences in CCC
Mount Diablo manzanita *Arctostaphylos auriculata*	-	-	1B.3	CS	-	17 CNDDB occurrences in CCC
Contra Costa County manzanita *Arctostaphylos manzanita* ssp. *laevigata*	-	-	1B.2	-	-	10 CNDDB occurrences in CCC
Pallid manzanita *Arctostaphylos pallida*	FT	SE	1B.2		-	6 CNDDB occurrences in CCC
Alkali milkvetch *Astragalus tener* var. *tener*	-	-	1B.2	-	-	4 CNDDB occurrences in CCC
Heartscale *Atriplex cordulate var. cordulata*	-	-	1B.2	-	-	1 CNDDB occurrence in CCC
Brittlescale *Atriplex depressa*	-	-	1B.2	CS	-	11 CNDDB occurrences in CCC
San Joaquin spearscale *Atriplex joaquiniana*	-	-	1B.2	CS	-	No CNDDB or CNPS occurrences in CCC
Big tarplant *Blepharizonia plumosa*	FT	SE	1B.1	CS	-	28 CNDDB occurrences in CCC
Mount Diablo fairy lantern *Calochortus pulchellus*	-	-	1B.2	CS	-	50 CNDDB occurrences in CCC

Table 5.4-2 Special-Status and Covered Plant Species in Contra Costa County

Name (Common and Scientific)	Status[1]				Designated Critical Habitat in Contra Costa County (CCC)	Notes
	Federal	State	CNPS	HCP		
Coastal bluff morning-glory *Calystegia purpurata ssp. saxicola*	-	-	1B.2	-	-	1 CNDDB occurrence in CCC
Chaparral harebell *Campanula exigua*	-	-	1B.2	-	-	5 CNDDB and 0 CNPS occurrences in CCC
Bristly sedge *Carex comosa*	-	-	2B.1	-	-	1 CNDDB occurrence in CCC
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	-	-	1B.1	-	-	22 CNDDB occurrences in CCC
Soft bird's-beak *Cordylanthus mollis* ssp. *mollis*	FE	SR	1B.2	-	X	22 CNDDB occurrences in CCC
Bolander's water-hemlock *Cicuta maculata* var. *bolanderi*	-	-	2B.1	-	-	4 CNDDB occurrences in CCC
Franciscan thistle *Cirsium andrewsii*	-	-	1B.2	-	-	2 CNDDB occurrences in CCC
Mt. Diablo bird's-beak *Cordylanthus nidularius*	-	SR	1B.1	-	-	2 CNDDB occurrences in CCC
Hoover's cryptantha Cryptantha hooveri	-	-	1A	-	-	1 CNDDB occurrence in CCC
Hospital Canyon larkspur *Delphinium californicum* ssp. *interius*	-	-	1B.2	-	-	6 CNDDB occurrences in CCC
Recurved larkspur *Delphinium recurvatum*	-	-	1B.2	CS	-	3 CNDDB occurrences in CCC
Western Leatherwood *Dirca occidentalis*	-	-	1B.2	-	-	24 CNDDB occurrences in CCC
Lime Ridge eriastrum *Eriastrum ertterae*	-	CE	1B.1	-	-	2 CNDDB occurrences in CCC
Antioch Dunes buckwheat *Eriogonum nudum var. psychicola*	-	-	1B.1	-	-	1 CNDDB occurrence in CCC
Round-leaved filaree *Erodium macrophyllum*	-	-	1B.2	CS	-	No CNDDB or CNPS occurrences in CCC
Mount Diablo buckwheat *Eriogonum truncatum*	-	-	1B.1	-	-	6 CNDDB occurrences in CCC
Jepson's coyote-thistle Eryngium jepsonii	-	-	1B.2	-	-	7 CNDDB occurrences in CCC
Delta button-celery *Eryngium racemosum*	-	SE	1B.1	-	-	1 CNDDB occurrence in CCC
Spiny-sepaled button-celery *Eryngium spinosepalum*	-	-	1B.2	-	-	1 CNDDB occurrence in CCC
Contra Costa wallflower *Erysimum capitatum angustatum*	FE	SE	1B.1	-	X	4 CNDDB occurrences in CCC
Diamond-petaled California poppy *Eschscholzia rhombipetala*	-	-	1B.1	-	-	2 CNDDB occurrences in CCC
San Joaquin spearscale Extriplex joaquinana	-	-	1B.2	-	-	45 CNDDB occurrences in CCC
Fragrant fritillary *Fritillaria liliacea*	-	-	1B.2	-	-	8 CNDDB occurrences in CCC
Dark-eyed gilia Gilia millefoliata	-	-	1B.2	-	-	1 CNDDB occurrence in CCC
Toren's grimmia Grimmia torenii	-	-	1B.3	-	-	2 CNDDB occurrences in CCC
Diablo heliathella *Helianthella castanea*	-	-	1B.2	CS	-	96 CNDDB occurrences in CCC

Table 5.4-2 Special-Status and Covered Plant Species in Contra Costa County

Name (Common and Scientific)	Status[1]				Designated Critical Habitat in Contra Costa County (CCC)	Notes
	Federal	State	CNPS	HCP		
Brewer's western flax *Hesperolinon breweri*	-	-	1B.2	CS	-	20 CNDDB occurrences in CCC
Woolly rose-mallow *Hibiscus lasiocarpus* var. *occidentalis*	-	-	1B.2	-	-	36 CNDDB occurrences in CCC
Loma Prieta hoita *Hoita strobilina*	-	-	1B.1	-	-	2 CNDDB occurrences in CCC
Santa Cruz Tarplant *Holocarpha macradenia*	FT	SE	1B.1	-	X	13 CNDDB occurrences in CCC
Carquinez goldenbush *Isocoma arguta*	-	-	1B.1	-	-	1 CNDDB occurrence in CCC
Contra Costa goldfields *Lasthenia conjugens*	FE	-	1B.1	-	X	4 CNDDB occurrences in CCC
Delta tule pea *Lathyrus jepsonii* ssp. *jepsonii*	-	-	1B.2	-	-	27 CNDDB occurrences in CCC
Mason's lilaeopsis *Lilaeopsis masonii*	-	SR	1B.1	-	-	69 CNDDB occurrences in CCC
Delta mudwort *Limosella subulate*	-	-	2B.1	-	-	18 CNDDB occurrences in CCC
Showy golden madia *Madia radiata*	-	-	1B.1	CS	-	2 CNDDB occurrences in CCC
Hall's bush mallow *Malacothamnus hallii*	-	-	1B.2	-	-	8 CNDDB occurrences in CCC
Oregon meconella *Meconella oregana*	-	-	1B.1	-	-	4 CNDDB occurrences in CCC
Woodland woollythreads Monolopia gracilens	-	-	1B.2	-	-	8 CNDDB occurrences in CCC
Lime Ridge navarretia Navarretia gowenii	-	-	1B.1	-	-	2 CNDDB occurrences in CCC
Shining navarretia Navarretia nigelliformis ssp. radians	-	-	1B.2	-	-	3 CNDDB occurrences in CCC
Adobe navarretia *Navarretia nigelliformis* ssp. *nigelliformis*	-	-	-	CS	-	No CNDDB or CNPS occurrences in CCC
Antioch dunes evening primose *Oenothera deltoides howelli*	FE	SE	1B.1	-	X	9 CNDDB occurrences in CCC
Mount Diablo phacelia *Phacelia phacelioides*	-	-	1B.2	-	-	6 CNDDB occurrences in CCC
Eel-grass pondweed Potamogeton zosteriformis	-	-	2B.2	-	-	1 CNDDB occurrence in CCC
Rock sanicle *Sanicula saxitilis*	-	SR	1B.2	-	-	4 CNDDB occurrences in CCC
Marsh skullcap *Scutellaria galariculata*	-	-	2B.2	-	-	1 CNDDB occurrence in CCC
Chaparral ragwort *Senecio aphanactis*	-	-	2B.2	-	-	2 CNDDB occurrences in CCC
Long-styled sand-spurrey *Spergularia macrotheca var. longistyla*	-	-	1B.2	-	-	10 CNDDB occurrences in CCC
Most beautiful jewelflower *Streptanthus albidus* ssp. *peramoenus*	-	-	1B.2	-	-	5 CNDDB occurrences in CCC
Mount Diablo jewelflower *Streptanthus hispidus*	-	-	1B.3	-	-	8 CNDDB occurrences in CCC
Northern slender pondweed *Stuckenia filiformis ssp. alpina*	-	-	2B.2	-	-	2 CNDDB occurrences in CCC

5. Environmental Analysis
BIOLOGICAL RESOURCES

Table 5.4-2 Special-Status and Covered Plant Species in Contra Costa County

Name (Common and Scientific)	Status[1]				Designated Critical Habitat in Contra Costa County (CCC)	Notes
	Federal	State	CNPS	HCP		
California seablite *Suaeda californica*	FE	-	1B.1	-	-	1 CNDDB occurrence in CCC
Suisun Marsh aster *Symphyotrichum lentum*	-	-	1B.2	-	-	35 CNDDB occurrences in CCC
Saline clover Trifolium hydrophilum	-	-	1B.2	-	-	2 CNDDB occurrences in CCC
Coastal triquetrella Triquetrella californica	-	-	1B.2	-	-	1 CNDDB occurrence in CCC
Caper-fruited tropidocarpum *Tropidocarpum capparideum*	-	-	1B.1	-	-	5 CNDDB occurrences in CCC
Oval-leaved viburnum *Viburnum ellipticum*	-	-	2B.3	-	-	6 CNDDB occurrences in CCC

Sources: CNDDB 2023; CNPS 2023; and Jones & Stokes 2006.

[1] Status Explanations

Federal
FE = listed as endangered under the FESA.
FT = listed as threatened under the FESA.
– = no listing under the FESA.

State
SE = listed as endangered under the CESA.
SR = listed under the California NPPA as rare.
CE= candidate for endangered status under the CESA.

California Native Plant Society
1A = List 1A species: presumed extirpated in California and either rare or extinct elsewhere
1B = List 1B species: rare, threatened, or endangered in California and elsewhere.
2B = List 2 species: rare, threatened, or endangered in California but more common elsewhere.
– = no listing by the California Native Plant Society.

Code Extensions
.1 = seriously endangered in California (over 80% of occurrences threatened and/or have high degree and immediacy of threat).
.2 = fairly endangered in California (20%–80% of occurrences threatened and/or have moderate degree and immediacy of threat).
.3 = not very endangered in California (< 20% of occurrences threatened and/or have low degree and immediacy of threats or no current threats known).

East County Costa County HCP/NCCP
CS = Covered Species
– = no listing under the HCP/NCCP

Table 5.4-3 Special-Status and Covered Wildlife Species in Contra Costa County

Name (Common and Scientific)	Status[1]			Designated Critical Habitat in Contra Costa County (CCC)	Notes
	Federal	State	HCP		
Invertebrates					
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT	-	-	-	1 CNDDB occurrence in CCC
Lange's metalmark butterfly *Apodemia mormo langei*	FE	SE	-	-	1 CNDDB occurrence in CCC
Longhorn fairy shrimp *Branchinecta longiantenna*	FE	-	CS	X	2 CNDDB occurrences in CCC
Midvalley fairy shrimp *Branchinecta mesovalliensis*	-	-	CS	-	3 CNDDB occurrences in CCC
Monarch (overwintering population) *Danaus plexippus plexippus* pop. [1]	FC	-	-	-	2 CNDDB occurrences in CCC
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	-	CS	X	19 CNDDB occurrences in CCC
Vernal pool tadpole shrimp *Lepidurus packardi*	FT	-	CS	-	1 CNDDB occurrence in CCC
Western bumble bee *Bombus occidentalis*	-	CE	-	-	20 CNDDB occurrences in CCC
Amphibians					
California tiger salamander (Central Coast DPS) *Ambystoma californiense*	FT	ST	CS	-	216 CNDDB occurrences in CCC
California red-legged frog *Rana aurora draytonii*	FT	SSC	CS	X	61 CNDDB occurrence in CCC
Foothill yellow-legged frog (Central Coast DPS) *Rana boylii* pop. [4]	PT	SE	CS	-	9 CNDDB occurrences in CCC
Reptiles					
Alameda whipsnake *Masticophus lateralis euryxanthus*	FT	ST	CS	X	97 CNDDB occurrence in CCC
California glossy snake Arizona elegans occidentalis	-	SSC	-	-	1 CNDDB occurrence in CCC
Coast horned-lizard *Phrynosoma blainvillii*	-	SSC	-	-	4 CNDDB occurrence in CCC
Giant garter snake *Thamnophis gigas*	FT	ST	CS	-	5 CNDDB occurrence in CCC
Northern California legless lizard *Anniella pulchra*	-	SSC	CS	-	8 CNDDB occurrences in CCC
San Joaquin whipsnake Masticophis flagellum ruddocki	-	SSC	-	-	1 CNDDB occurrence in CCC
Western pond turtle *Emys marmorata*	-	SSC	CS	-	61 CNDDB occurrence in CCC
Birds					
Alameda song sparrow *Melospiza melodia pusillula*	-	SSC	-	-	3 CNDDB occurrences in CCC
American peregrine falcon (nesting) *Falco peregrinus*	D	FP	-	-	1 CNDDB occurrence in CCC

Table 5.4-3 Special-Status and Covered Wildlife Species in Contra Costa County

Name (Common and Scientific)	Status[1]			Designated Critical Habitat in Contra Costa County (CCC)	Notes
	Federal	State	HCP		
Black-crowned night heron (rookery) Nycticorax nycticorax	-	-	-	-	1 CNDDB occurrence in CCC
California black rail *Laterallus jamaicensis coturniculus*	-	ST, FP	-	-	30 CNDDB occurrences in CCC
California least tern (nesting colony) *Sterna antillarum browni*	FE	SE, FP	-	-	2 CNDDB occurrence in CCC
California Ridgway's rail *Rallus obsoletus obsoletus*	FE	SE, FP	-	-	12 CNDDB occurrences in CCC
Double-crested cormorant (rookery) *Phalacrocorax auratus*	-	-	-	-	1 CNDDB occurrence in CCC
Golden eagle (nesting and wintering) *Aquilla chrysaetos*	-	FP	CS	-	16 CNDDB occurrences in CCC
Loggerhead shrike (nesting) *Laniue ludovicianus*	-	SSC	-	-	1 CNDDB occurrence in CCC
Northern harrier (nesting) *Circus cyaneus*	-	SSC	-	-	2 CNDDB occurrences in CCC
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	-	SSC	-	-	5 CNDDB occurrences in CCC
San Pablo song sparrow *Melospoza melodia samuelis*	-	SSC	-	-	6 CNDDB occurrences in CCC
Short-eared owl (nesting) *Asio flammeus*	-	SSC	-	-	1 CNDDB occurrence in CCC
Snowy egret (rookery) *Egretta thula*	-	-	-	-	1 CNDDB occurrence in CCC
Song sparrow ("Modesto" population) *Melospiza melodia* (pop. 1)	-	SSC	-	-	14 CNDDB occurrences in CCC
Suisun song sparrow *Melospiza melodia maxillaris*	-	SSC	-	-	14 CNDDB occurrences in CCC
Swainson's hawk (nesting) *Buteo swainsoni*	-	ST	CS	-	41 CNDDB occurrences in CCC
Tricolored blackbird (nesting colony) *Agelaius tricolor*	-	ST, SSC	CS	-	11 CNDDB occurrences in CCC
Western burrowing owl *Athene cunicularia*	-	SSC	CS	-	110 CNDDB occurrences in CCC
White-tailed kite (nesting) *Elanus leucurus*	-	FP	-	-	8 CNDDB occurrences in CCC
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	-	SSC	-	-	1 CNDDB occurrence in CCC
Yellow rail *Coturnicops noveboracensis*	-	SSC	-	-	1 CNDDB occurrence in CCC

Table 5.4-3 Special-Status and Covered Wildlife Species in Contra Costa County

Name (Common and Scientific)	Status[1]			Designated Critical Habitat in Contra Costa County (CCC)	Notes
	Federal	State	HCP		
Mammals					
American badger *Taxidea taxus*	-	SSC	-	-	11 CNDDB occurrences in CCC
Big free-tailed bat *Nyctinomops macrotis*	-	SSC	-	-	1 CNDDB occurrence in CCC
Pallid bat *Antrozous pallidus*	-	SSC	-	-	12 CNDDB occurrences in CCC
San Franscisco dusky-footed woodrat *Neotoma fuscipes annectens*	-	SSC	-	-	5 CNDDB occurrences in CCC
Saltmarsh harvest mouse *Reithrodontomys raviventris*	FE	SE/FP	-	-	5 CNDDB occurrences in CCC
Salt marsh wandering shrew *Sorex vagrans halicoetes*	-	SSC	-	-	2 CNDDB occurrences in CCC
San Joaquin kit fox *Vulpes marcrotus mutica*	FE	ST	CS	-	24 CNDDB occurrences in CCC
San Pablo vole *Microtus californicus sanpabloenis*	-	SSC	-	-	8 CNDDB occurrences in CCC
Townsend's western big-eared bat *Corynorihinus townsendii townsendii*	-	SSC	CS	-	4 CNDDB occurrences in CCC
Western red bat *Lasiurus frantzii*	-	SSC	-	-	1 CNDDB occurrence in CCC
Fish					
Delta smelt *Hypomseus transpacificus*	FT	SE	-	X	8 CNDDB occurrences in CCC
Green sturgeon (southern DPS) *Acipenser medirostris*	FT	-	-	-	2 CNDDB occurrences in CCC
Eulachon *Thaleichthys pacificus*	FT	-	-	-	2 CNDDB occurrences in CCC
Longfin smelt *Spirinchus thaleichthys*	C	ST	-	-	10 CNDDB occurrences in CCC
Sacramento perch *Archoplites interruptus*	-	SSC	-	-	3 CNDDB occurrences in CCC
Steelhead (Central valley DPS) *Oncorhynchus mykiss irideus* pop. 11	FT	-	-	-	2 CNDDB occurrences in CCC

Sources: CNDDB 2023; Jones & Stokes 2006.

[1] Status Explanations

Federal
FE = listed as endangered under the FESA.
FT = listed as threatened under the FESA.
C = candidate for threatened or endangered status.
PT = proposed for threatened status.
D = delisted.
– = no listing under the FESA.

State
SE = listed as endangered under the CESA.
ST = listed as threatened under the CESA.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern in California.
– = no listing under the CESA.

East County Costa County HCP/NCCP
CS = Covered Species
– = no listing under the HCP/NCCP

The Existing Conditions Report (Appendix 5.4-1) includes a detailed description of the natural communities and land cover types in the county.

5.4.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

B-1 Have a substantial effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

B-2 Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.

B-3 Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

B-4 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

B-5 Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

B-6 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

5.4.3 Programs, Plans, and Policies

5.4.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to biological resources. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Goal LU-2.** Growth and conservation that are balanced to preserve and enhance the quality of life, protect the environment and public safety, and benefit all those who live or work in Contra Costa County.
    - ***Policy LU-P2.1:*** *Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.*
    - ***Policy LU-P2.2:*** *Enhance the ULL's effectiveness by supporting efforts to acquire and permanently protect land along the ULL boundary.*

- ***Policy LU-P2.3:*** *Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.*
- **Policy LU-P2.5:** Encourage infill development.
- **Policy LU-P2.6:** Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).

Conservation, Open Space, and Working Lands Element

- **Goal COS-1.** Preserved open space for environmental protection, resource management and production, recreation, scenic value, and climate resilience and adaptation.
  - **Policy COS-P1.1:** Support efforts by public agencies and nonprofit organizations to acquire and permanently protect open space areas containing important ecological or scenic resources and areas that connect protected lands to form a cohesive system of open space. Plan infrastructure to avoid interfering with such acquisitions whenever possible.
  - **Policy COS-P1.2:** Pursue opportunities for permanent open space dedication for habitat, scenic, or passive recreation benefits as part of future development approvals and major capital improvement projects.
  - ***Policy COS-P1.3:*** *Discourage conversion of land designated Resource Conservation or Parks and Recreation to urban uses. If such conversion occurs, require mitigation through permanent protection of other open space or park lands for habitat, scenic, or recreation benefits at a ratio to be determined based on the biological, scenic, or recreational value of the land, but not less than 3:1.*
  - ***Policy COS-P1.4:*** *Require new projects adjacent to protected open space areas, such as EBRPD lands, to establish buffers on their properties as necessary to minimize conflicts and protect the open space. If conflicts arise between protected open spaces and other uses, prioritize maintaining the viability of the open space functions.*
  - **Action COS-A1.1:** Convene an annual staff-level meeting with involved agencies (e.g., East Contra Costa County Habitat Conservancy, EBRPD), land trusts, and conservation groups to review current and planned efforts to protect and maintain open space.

- **Goal COS-4.** Preserved and enhanced ecological resources and wildlife habitat.
  - ***Policy COS-P4.1:*** *Maintain ecologically significant resource areas in their natural state to the greatest extent possible. Limit development in and near these areas to compatible low-intensity uses with adequate provisions to protect sensitive resources, including setbacks around resource areas. Prohibit projects that would lead to fragmentation of ecologically significant resource areas.*
  - **Policy COS-P4.2:** Support land conservation and restoration consistent with the HCP/NCCP and discourage development in areas where such conservation is planned, as shown on Figure COS-3. Support actions to preserve land and resources within PCAs mapped by ABAG, as shown on Figure COS-4.
  - ***Policy COS-P4.3:*** *Require a biological resources assessment prepared according to State and federal protocols for projects with the potential to impact rare, threatened, endangered, or special-status species or their habitat, and implement appropriate mitigation for identified impacts.*

- ***Policy COS-P4.4:*** *Protect habitat and wildlife migration corridors, and support projects that enhance these areas.*
- ***Policy COS-P4.5:*** *Discourage the use of fencing that poses risks to wildlife.*
- ***Policy COS-P4.6:*** *Require appropriately-timed, comprehensive floristic and vegetation surveys prepared according to State and federal protocols when development is proposed on land with potentially suitable habitat for special-status plant species, including areas mapped by the California Native Plant Society as Botanical Priority Protection Areas.*
- ***Policy COS-P4.7:*** *Require avoidance and protection of sensitive ecological resources not approved for disturbance or removal during project entitlement, and require restitution in exceedance of standard mitigation ratios for inadvertent damage to these resources.*
- ***Policy COS-P4.8:*** *Require majority use of native plant species in landscaping for new developments, and require construction practices that avoid spread of invasive plant species by minimizing surface disturbance; seeding, and mulching disturbed areas with certified weed-free native mixes; disinfecting/ decontaminating equipment; and using native, noninvasive, drought-resistant species in erosion-control plantings.*
- ***Action COS-A4.1****: For the portion of the county not covered by the HCP/NCCP, prepare and maintain a similarly detailed inventory of ecologically significant resource areas, including unique natural areas, wetlands, floodplains, riparian resources, and the habitat of rare, threatened, endangered, and other uncommon and protected species.*
- ***Action COS-A4.2****: Amend County Ordinance Code Title 8 – Zoning to include development standards, and possibly adopt accompanying design guidelines, for urban land uses that interface with ecologically significant resource areas and other protected conservation lands, addressing, at minimum:*
  - *(a) Setbacks on urban properties to provide a buffer for resource areas.*
  - *(b) Clustering of development to maximize ecological and conservation benefits.*
  - *(c) Lighting, fencing, screening, and landscaping/vegetation that support, and do not interfere with, wildlife migration and other conservation purposes.*

- **Goal COS-5.** Protected and restored natural watercourses, riparian corridors, and wetland areas that improve habitat, water quality, wildlife diversity, stormwater flows, and scenic values.
  - **Policy COS-P5.1:** Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
  - ***Policy COS-P5.2:*** *Require new public infrastructure and development projects to preserve, and whenever possible enhance, natural watercourses, floodplains, and riparian habitat.*
  - ***Policy COS-P5.3:*** *Require avoidance, minimization, and/or compensatory mitigation for development that would impact a wetland, wetland species, or adjacent upland habitat areas. Where feasible, compensation shall be in-kind (i.e., the same type of habitat), provided on-site, and based on a ratio that provides a margin of safety reflecting the expected degree of success and accounting for the relative functions and values of the lost and created wetlands.*
  - ***Policy COS-P5.4:*** *Require new buildings and structures on private property be set back at least 75 feet from the edge of any wetland area, unless a peer-reviewed, site-specific evaluation indicates that a different setback is appropriate for protecting the wetland and adjacent upland habitat areas. Allow encroachment into a required wetland setback area only when a parcel would otherwise be rendered unbuildable, or impacts have been adequately mitigated.*

- ***Policy COS-P5.5:*** *Acquire deeded development rights to setback areas surrounding wetlands, floodplains, and natural watercourses to ensure preservation of the resource and protect adjacent improvements.*
- ***Policy COS-P5.6:*** *Require increased setbacks for animal-handling uses whenever necessary to protect natural watercourses, riparian habitat, or erosion-prone soils. Setback increases can be applied to all aspects of the use, such as manure storage areas, and are not limited to buildings and structures.*
- ***Policy COS-P5.8:*** *Prohibit direct runoff of pollutants and siltation into marsh, creek, and wetland areas from outfalls serving urban development.*
- ***Action COS-A5.1****: Inventory wetlands, floodplains, marshlands, and adjacent lands that could potentially support climate adaptation (e.g., through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration).*
- ***Action COS-A5.2:*** *Amend the County Ordinance Code to include the wetland setback requirement described in Policy COS-P5.4.*
- ***Action COS-A5.3:*** *Amend the County Ordinance Code to apply the creek setback requirements in Title 9 - Subdivisions to all projects, including those that are not part of a subdivision.*

- **Goal COS-6.** Preserved and enhanced native upland habitat, including woodlands, grasslands, and rangelands.
  - ***Policy COS-P6.1:*** *Preserve natural woodlands and significant trees, particularly mature native species.*
  - **Policy COS-P6.2:** Encourage planting and propagation of native trees throughout the county to enhance the natural landscape, provide shade, sustain wildlife, absorb stormwater, and sequester carbon.
  - **Policy COS-P6.3:** Support protection of native trees, especially oaks, in foothill woodlands and agricultural areas by encouraging voluntary installation of fencing around individuals or clusters of trees to prevent grazing and promoting replanting of native species.
  - **Policy COS-P6.4:** Encourage removal of invasive, non-native tree species, especially those known to pose threats to public safety. **Policy COS-P6.5:** Encourage revegetation of native species in areas that were previously converted for agriculture, but are no longer in production.
  - ***Action COS-A6.1:*** *Update County Ordinance Code Chapter 816-6 – Tree Protection and Preservation, to enhance tree protections and strengthen mitigation requirements/restitution for tree removal.*
  - ***Action COS-A6.2:*** *Develop an Oak Woodland Conservation Program that establishes special mitigation ratios for removal of oak trees, along with specific tree replacement and planting standards to ensure long-term growth and survival. Amend the County Ordinance Code as needed to implement the program.*

- **Goal COS-8.** Protected quality of surface water and groundwater resources.
  - ***Policy COS-8.1:*** *Protect public water supplies by denying applications for projects that would introduce significant new pollution sources in groundwater basins and watersheds feeding major reservoirs, and support efforts to acquire and permanently protect reservoir watersheds.*
  - ***Policy COS-8.2:*** *Coordinate with other agencies to control point and non-point sources of water pollution and maintain water quality standards.*

- **Policy COS-8.3:** Support development and implementation of a long-term, area-wide integrated vegetation management program to control invasive weeds in a way that reduces pesticide use and preserves water quality.
- ***Policy COS-8.4:*** *Require new development to retain natural vegetation and topography whenever feasible and require projects involving erosion-inducing activities to use best management practices to minimize erosion.*

- **Goal COS-9.** Protected, preserved, and enhanced scenic quality, recreational value, and natural resources of the San Francisco Bay/Sacramento-San Joaquin Delta estuary system and shoreline.
  - **Policy COS-9.1:** Advocate for increased freshwater flow into, through, and from the Delta into San Francisco Bay, and support other efforts to protect and improve Delta water quality.
  - **Policy COS-9.2:** Support continued maintenance and improvement of Delta levees to protect water quality, ecosystems, agricultural land, and at-risk communities.
  - **Policy COS-9.3:** Oppose all efforts to construct an isolated conveyance (e.g., peripheral canal, tunnel) or any other water diversion system that reduces Delta water flows unless and until it can be conclusively demonstrated that such a system would protect, preserve, and enhance water quality and fisheries of the San Francisco Bay/Delta estuary system.
  - ***Policy COS-9.4:*** *Plan for land uses along shorelines that do not pose a threat to Bay or Delta resources, including water quality and shoreline and marshland habitats.*
  - ***Action COS-A9.1:*** *Amend County Ordinance Code Title 8 – Zoning to incorporate the following requirements for new or expanded marinas and docks:*

    (g) Compatibility with nearby conservation/habitat lands.

- **Goal COS-12.** Protected natural features with high scenic value, such as visual landmarks, major ridges, prominent hillsides, and stands of mature trees.
  - ***Policy COS-P12.1:*** *Prohibit destruction of unique and irreplaceable natural features.*
  - ***Policy COS-P12.5:*** *Require restoration of natural contours and vegetation after grading and other land disturbances.*
  - ***Policy COS-P12.6:*** *Prohibit extreme topographic modification, such as filling in canyons or removing prominent hilltops. Exemptions may be considered for landfills, mining operations, and public or semi-public projects that necessitate such modifications.*
  - **Policy COS-P12.7:** Support preservation and enhancement of natural and human-made features that contribute to the scenic quality of the landscape and viewshed along designated scenic routes, and discourage projects that interfere with public views of those features.
  - **Action COS-A12.2:** Adopt design guidelines to preserve views, vistas, and defining natural features along designated scenic routes.

5.4.3.2 PROPOSED CAP STRATEGIES AND ACTIONS

The following strategies and actions in the proposed Climate Action Plan (CAP) are applicable to biological resources:

Strategy NI-1: Protect against and adapt to changes in sea levels and other shoreline flooding conditions.

Strategy NI-1 Actions:

- Require new development to locate habitable areas of buildings above the highest water level expected accounting for sea level rise and other changes in flood conditions, or construct natural and nature-based features, or a levee, if necessary, adequately designed to protect the project for its expected life.
- Support the use of natural infrastructure, including ecosystem restoration and green infrastructure, to protect against sea level rise and associated shoreline flooding.
- Coordinate with State and regional agencies, neighboring jurisdictions, property owners, utilities, and others to prepare a sea level rise adaptation plan.
- Seek funding and pursue implementation of wetland restoration and other adaptation efforts for sea level rise.
- Convene a working group that includes local jurisdictions, local shoreline communities, community-based organizations, property owners, businesses, and other stakeholders to collaborate on shoreline flooding adaptation strategies.
- Identify opportunities for employing natural areas as buffers against rising sea levels.

Strategy NI-4: Sequester carbon on natural and working lands in Contra Costa County.

Strategy NI-4 Actions:

- Pursue implementation of recommendations from carbon sequestration feasibility study, Healthy Lands, Healthy People.
- Continue to support and work with key partners to maintain existing and establish new pilot programs for carbon sequestration on agricultural land.
- Promote restorative agricultural and landscaping techniques that incorporate cover crops, mulching, compost application, field borders, alley cropping, conservation crop rotation, prescribed grazing, and reduced tillage to promote healthy soil and soil conservation.
- Support soil conservation and restoration programs. Encourage agricultural landowners to work with agencies such as the USDA's NRCS and Contra Costa RCD to reduce erosion and soil loss.
- Coordinate with farming groups, ranchers, the Contra Costa Resource Conservation District, and the University of California Cooperative Extension to identify and promote varieties of feedstock, livestock, and crops that are resilient to rising temperatures and changing precipitation patterns and that increase carbon sequestration.
- Explore ways to increase carbon sequestration on County-owned facilities.
- Partner with regional landowners and agencies to establish carbon sequestration programs and incentives.
- Consider the development of carbon offset protocols and guidance for use by carbon sequestration program applicants and County permitting staff to promote appropriate sequestration on natural and developed lands.

- Ensure that any local or regional carbon sequestration program that the County establishes, promotes, supports, or joins must provide benefits to unincorporated communities that face environmental justice issues.
- Explore the potential for the public to support tree planting and maintenance of existing trees.
- Establish a mechanism to support expanded tree planting and maintenance activities, particularly in areas with few trees.
- Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
- Inventory wetlands, floodplains, marshlands, and adjacent lands that could potentially support climate adaptation (e.g., through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration).
- Encourage and support conservation of natural lands outside the urban limit line in the unincorporated county.
- Explore the creation of a Climate Resilience District.
- Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to local residents. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible. If the project site is within or adjacent to an Impacted Community, require offsets or mitigation within that community unless determined infeasible by the County.

Strategy NI-5: Minimize heat island effects through the use of cool roofs and green infrastructure.

Strategy NI-5 Actions:

- Require landscaping for new development to be drought-tolerant, filter and retain runoff, and support flood management and groundwater recharge.
- Promote installation of drought-tolerant green infrastructure, including street trees, in landscaped public areas.
- Increase tree planting in urbanized areas, and open spaces where ecologically appropriate, emphasizing areas with limited existing tree cover, using low-maintenance native tree species that are low fire risk and ensuring water supply resources are not compromised.
- Consider preparing and implementing a Tree Master Plan for the unincorporated county.
- Provide shade trees or shade structures at parks, plazas, and other outdoor spaces.
- Update County tree ordinance to consider whether factors for approval of tree removal and/or replanting requirements are adequately considering Impacted Communities (e.g., tree cover, replanting standard).
- Support efforts to develop incentive programs for home and business owners, school districts, and other local and regional property owners to increase the adoption of cool roofs and green infrastructure on private property.

5.4.4 Environmental Impacts

Impact 5.4-1: Implementation of the proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plan, policies, or regulations or by the CDFW or USFWS. [Threshold B-1]

Proposed General Plan

Implementation of the proposed General Plan could potentially result in impacts on special-status species in the EIR Study Area.

Tables 5.4-2 and 5.4-3 list all the special-status plant and wildlife species in the county (including the EIR Study Area) that have been documented in the CNDDB and CNPS. The county contains 66 special-status plant species that are found across the diverse and, in some cases, specialized habitats in the county. Special-status plants are more abundant in the eastern portions of the EIR Study Area, which retains a rural development pattern that is compatible with the habitat needs of many of the special-status plant species. A total of 59 special-status wildlife species are known to occur in the EIR Study Area. Similar to its benefits for special-status plant species, the rural eastern portion of the county provides some of the best remaining undeveloped habitat for special-status wildlife species. Often, these special-status wildlife species occur in protected areas, such as Mount Diablo State Park or Los Vaqueros Reservoir, or in various East Bay regional parks.

As detailed in Tables 5.4-2 and 5.4-3, critical habitat occurs in the county (including the EIR Study Area) for five plant and five wildlife species. Impacts on special-status species would include the direct loss of individuals or localized populations, elimination or degradation of habitat, and isolation of subpopulations due to habitat fragmentation. The conversion of existing natural habitat to urban development, roadways, or other infrastructure could result in the elimination of populations of special-status species where present within the limits of development. Indirect impacts could include disruption of critical functions, affecting reproductive success; degradation of habitat quality to such an extent that occupied habitat would no longer be suitable for individual survival; and other influences. Indirect impacts on special-status species could also occur because of increases in stormwater runoff, erosion and downstream sedimentation, and the use of pesticides for agriculture and landscaping. However, given that most development under the proposed General Plan is anticipated to occur within the ULL, specific impacts may be lessened through implementation of the goals, policies, and actions of the proposed General Plan.

As detailed in Section 5.4.1.1, there are a number of federal and State regulations in place to protect biological resources, including special-status species and their habitat, within the EIR Study Area. In addition, the proposed General Plan policies take a comprehensive approach to the protection of biological resources, including special-status species and their habitats. The Conservation, Open Space, and Working Lands Element of the proposed General Plan includes policies and actions that would mitigate potential impacts on special-status species and their habitats, including policies and actions associated with goals that aim to preserve and enhance ecological resources and wildlife habitat (Goal COS-4); protect and restore natural watercourses, riparian corridors, and wetland areas (Goal COS-5); preserve and enhance native upland habitat (Goal COS-6); and protect, preserve, and enhance natural resources of the San Francisco Bay/Sacramento-San Joaquin Delta estuary system and shoreline (Goal COS-9). For example, Policy COS-P4.3 requires a biological resources

assessment to be prepared according to State and federal protocols for projects with the potential to affect rare, threatened, endangered, or special-status species or their habitat, with appropriate mitigation implemented for identified impacts; Policy COS-P4.6 requires well-timed, comprehensive floristic and vegetation surveys to be prepared according to State and federal protocols when development is proposed on land with potentially suitable habitat for special-status plant species, including areas mapped by CNPS as Botanical Priority Protection Areas; Policy COS-P5.3 requires avoidance, minimization, and/or compensatory mitigation for development that would affect a wetland, wetland species, or adjacent upland habitat areas; and Policy COS-9.3 opposes all efforts to construct an isolated conveyance (e.g., peripheral canal, tunnel) or any other water diversion system that would reduce Delta water flows unless and until it can be conclusively demonstrated that such a system would protect, preserve, and enhance water quality and fisheries of the San Francisco Bay/Delta estuary system. In addition, Action COS-A4.1 directs the County to prepare and maintain a detailed inventory of ecologically significant resource areas, including unique natural areas, wetlands, floodplains, riparian resources, and the habitat of rare, threatened, endangered, and other uncommon and protected species, for the portion of the county not covered by the HCP/NCCP. Furthermore, Land Use Element Goal LU-2 seeks to balance growth and conservation while protecting the environment, including special-status species and their habitat, through policies to preserve natural habitat and open space (Policy LU-P2.1); enhance the effectiveness of the ULL (Policy LU-P2.2); limit development outside the ULL (Policy LU-P2.3); encourage infill in already-developed areas (Policy LU-P2.5); and reduce the footprint of development (Policy LU-P2.6). The protection of natural features with high scenic value (see Policies COS-P12.1 through COS-P12.7) provides a further benefit by preserving important habitat areas that provide space for a variety of special-status species.

The goals, policies, and actions in the proposed General Plan, in combination with existing policies and regulations under the FESA, MBTA, CESA, California Fish and Game Code, CWA, and NPPA, as well as consistency with the East Contra Costa County HCP/NCCP, would ensure that the potential impacts of the proposed General Plan on special-status species would be less than significant.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects. However, projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could potentially impact special-status species. Projects that would implement the proposed CAP strategies and actions would be required to be consistent with the proposed General Plan, applicable provisions of the Contra Costa County Ordinance Code, the East Contra Costa County HCP/NCCP, and existing policies and regulations under the FESA, MBTA, CESA, California Fish and Game Code, CWA, and NPPA. Compliance with the aforementioned policies and regulations would reduce potential impacts of the proposed CAP on special-status species to a less-than-significant level.

Level of Significance Before Mitigation: Impact 5.4-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Impact 5.4-2: Implementation of the proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS. [Threshold B-2]

Proposed General Plan

Implementation of the proposed General Plan could potentially result in impacts on riparian habitat or other sensitive natural communities in the EIR Study Area.

As explained in Appendix 5.4.2, riparian habitat (i.e., riparian woodland) makes up only 0.16 percent of the county, which includes the EIR Study Area. Most creeks and streams in the EIR Study Area are disconnected from their historic floodplains by levees and channelization. Many of these streams are maintained as flood control channels, which support little or no riparian vegetation, and most drainages outside the urbanized areas are ephemeral or intermittent, generally supporting narrow floodplains with limited riparian habitat (Jones & Stokes 2006). Additional sensitive natural communities in the EIR Study Area include shrublands, woodlands, conifer forests, wetlands and ponds, and baylands. Altogether, nine sensitive natural communities are mapped in the CNDDB as occurring within the county, which includes the EIR Study Area. All but two of these communities are aquatic; thus, most of the sensitive natural communities mapped in the CNDDB are located along the edge of the Delta and/or San Francisco Bay. The eastern portion of the EIR Study Area, in the vicinity of the Los Vaqueros Watershed and Bryon Hills/Vasco Caves, is also a hot spot for sensitive habitats. It contains one of the upland vegetation communities, valley needlegrass grassland. The other upland community, serpentine bunchgrass, is found on the Contra Costa-Alameda County boundary, southwest of the cities in vicinity of Oakland.

Construction activities could have direct and indirect impacts on riparian habitat and other sensitive natural communities. Construction projects in the EIR Study Area could also affect sensitive natural communities by spreading or introducing invasive plant species to currently uninfected areas. Invasive species spread aggressively and crowd out native species, potentially altering the species composition of natural communities. A predominance of invasive species reduces the overall habitat quality for native plants and wildlife. However, given that most development under the proposed General Plan is anticipated to occur within the ULL, specific impacts may be lessened through implementation of the goals, policies, and actions of the proposed General Plan. The Conservation, Open Space, and Working Lands Element of the proposed General Plan includes policies and actions that would mitigate potential impacts on riparian habitat or other sensitive natural communities, including policies and actions associated with goals that aim to preserve open space for environmental protection (Goal COS-1); preserve and enhance ecological resources and wildlife habitat (Goal COS-4); protect and restore natural watercourses, riparian corridors, and wetland areas (Goal COS-5); preserve and enhance native upland habitat (Goal COS-6); protect water quality (Goal COS-8); and protect, preserve, and enhance natural resources of the San Francisco Bay/Sacramento-San Joaquin Delta estuary system and shoreline (Goal COS-9). For example, Policy COS-P1.3 requires permanent protection of open space or parklands; Policy COS-P4.6 requires avoidance, protection, and restitution related to sensitive ecological resources; Policy COS-P5.2 requires new public infrastructure and development projects to preserve and, whenever possible, enhance natural watercourses, floodplains, and riparian habitat; Policy COS-P5.3 requires avoidance, minimization, and/or compensatory mitigation for development that would affect a wetland, wetland species, or adjacent upland habitat areas; Policy COS-P6.1 requires the preservation of natural

woodlands and significant trees; and Policy COS-9.4 requires plans for land uses along shorelines to not pose a threat to Bay or Delta resources, including water quality and shoreline and marshland habitats. In addition, Action COS-A4.1 directs the County to prepare and maintain a detailed inventory of ecologically significant resource areas, including unique natural areas, wetlands, floodplains, and riparian resources, for the portion of the county not covered by the HCP/NCCP; Action COS-A6.1 directs the County to update County Ordinance Code Chapter 816-6, Tree Protection and Preservation, to enhance protection for specified native trees and strengthen mitigation requirements for tree removal; and Action COS-A6.2 directs the County to develop an Oak Woodland Conservation Program that establishes special mitigation ratios for the removal of oak trees, along with specific tree replacement and planting standards to ensure long-term growth and survival. In addition, Land Use Element Goal LU-2 seeks to balance growth and conservation while protecting the environment, including sensitive natural communities, through policies to preserve natural habitat and open space (Policy LU-P2.1); enhance the effectiveness of the ULL (Policy LU-P2.2); limit development outside the ULL (Policy LU-P2.3); encourage infill in already-developed areas (Policy LU-P2.5); and reduce the footprint of development (Policy LU-P2.6).

Regarding the spread or introduction of invasive plant species, Policy COS-P4.8 requires the use of native plant species in the majority of landscaping for new developments as well as construction practices that avoid the spread of invasive plant species by minimizing surface disturbance, seeding and mulching disturbed areas with certified weed-free native mixes, disinfecting/decontaminating equipment, and using native noninvasive, drought-resistant species in erosion-control plantings. Policy COS-P6.4 encourages the removal of invasive non-native tree species, and Policy COS-P8.3 supports development and implementation of a long-term, area-wide integrated vegetation management program to control invasive weeds in a way that reduces pesticide use and preserves water quality. Furthermore, any disturbance or alteration of streams, lakes, or non-federally protected (non-jurisdictional) wetlands would require a permit with conditions that would protect sensitive natural communities. A Section 1602 SAA would be needed from the CDFW prior to initiation of project construction activities that would divert, obstruct, or change the natural flow of a river, stream, or lake or use material from a streambed. Non-jurisdictional wetlands include wetland features that are not hydrologically connected to navigable waters in rivers and are not under Corps jurisdiction. These wetlands would still be considered waters of the State and would be regulated according to the waste discharge requirements that would be issued by the RWQCB.

Implementation of proposed General Plan goals, policies, and actions, including conditions associated with SAAs and waste discharge requirements, would ensure that the potential impacts of the proposed General Plan on riparian corridors and other sensitive natural communities would be less than significant.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects. However, projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could potentially impact riparian corridors and other sensitive natural communities. Projects that would implement the proposed CAP strategies and actions would be required to be consistent with the proposed General Plan as well as conditions associated with SAAs and waste discharge requirements. Compliance with the

aforementioned policies and regulations would reduce potential impacts of the proposed CAP on riparian corridors and other sensitive natural communities to a less-than-significant level.

Level of Significance Before Mitigation: Impact 5.4-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Impact 5.4-3: Implementation of the proposed project would not have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. [Threshold B-3]

Proposed General Plan

Implementation of the proposed General Plan could potentially result in impacts on State or federally protected wetlands in the EIR Study Area.

The EIR Study Area contains waters of the United States, which include jurisdictional wetlands and other waters. Construction activities could have direct and indirect impacts on waters of the United States. However, given that most development under the proposed General Plan is anticipated to occur within the ULL, specific impacts may be lessened through implementation of the goals, policies, and actions of the proposed General Plan. The Conservation, Open Space, and Working Lands Element of the proposed General Plan includes policies and actions that would mitigate potential impacts on wetlands, including policies and actions associated with goals that aim to protect and restore natural watercourses, riparian corridors, wetland areas (Goal COS-5) and water quality (Goal COS-8). For example, Policy COS-P5.1 supports the protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands; Policy COS-P5.2 requires new public infrastructure and development projects to preserve and, whenever possible, enhance natural watercourses, floodplains, and riparian habitat; Policy COS-P5.3 requires avoidance, minimization, and/or compensatory mitigation for development that would affect a wetland, wetland species, or adjacent upland habitat areas; Policy COS-P5.4 requires new buildings and structures on private property to be set back from the edge of any wetland area and allows encroachment into a required wetland setback area only when a parcel would otherwise be rendered unbuildable and impacts have been adequately mitigated; Policy COS-P5.5 requires acquisition of deeded development rights to setback areas surrounding wetlands, floodplains, and natural watercourses to ensure preservation of the resources and protect adjacent improvements; Policy COS-P5.8 prohibits direct runoff of pollutants and siltation into marsh, creek, and wetland areas from outfalls serving urban development; and Policy COS-8.2 requires coordination with other agencies to control point and non-point sources of water pollution and maintain water quality standards. In addition, Action COS-A4.1 directs the County to prepare and maintain a detailed inventory of ecologically significant resource areas, including wetlands, for the portion of the county not covered by the HCP/NCCP. Action COS-A5.2 directs the County to amend the County Ordinance Code to include the wetland setback requirement described in Policy COS-P5.4. Land Use Element Goal LU-2 seeks to balance growth and conservation while protecting the environment, including wetland habitat, through policies that preserve natural habitat and open space (Policy LU-P2.1); enhance the effectiveness of the ULL (Policy LU-P2.2); limit development outside the ULL (Policy

LU-P2.3); encourage infill in already-developed areas (Policy LU-P2.5); and reduce the footprint of development (Policy LU-P2.6).

Implementation of the proposed General Plan policies and actions that would require project-specific analyses and the incorporation of mitigation, in addition to the conditions associated with Section 404 permits and Section 401 water quality certifications, would ensure that the potential impacts of the proposed General Plan on State and federally protected wetlands would be less than significant.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects. However, projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could potentially impact federally protected wetlands. Projects that would implement the proposed CAP strategies and actions would be required to be consistent with the proposed General Plan, conditions associated with Section 404 permits and Section 401 water quality certifications, as well as additional mitigation protection for wetlands during construction activities. Compliance with the aforementioned policies and regulations would reduce potential impacts of the proposed CAP on federally protected wetlands to a less-than-significant level.

Level of Significance Before Mitigation: Impact 5.4-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Impact 5.4-4: Implementation of the proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. [Threshold B-4]

Proposed General Plan

Implementation of the proposed General Plan could potentially interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites in the EIR Study Area.

The definition of "wildlife corridor," along with an explanation of critical linkages, natural landscape blocks, and essential connectivity areas that occur in the county, are provided in the Existing Conditions Report (Appendix 5.4-1, Figure 3-5). Two linkages that are crucial to maintaining connectivity for wildlife between large landscape blocks[3] within and adjacent to the nine-county Bay Area, as well as overlapping Contra Costa County, are the East Bay Hills: Diablo Range linkage and the Mount Diablo: Diablo Range linkage. Natural landscape blocks[4] and essential connectivity areas[5] overlap the Diablo Range in the county. Furthermore, the

[3] Protected areas, areas with conservation easements, and roadless areas with more than 500 acres (Penrod et al. 2013).

[4] Natural habitat blocks that support native biodiversity (Spencer et al. 2010).

[5] Areas essential for ecological connectivity between natural landscape blocks (Spencer et al. 2010).

East Contra Costa County HCP/NCCP identifies four potential movement routes (i.e., Round Valley, Briones Valley, Deer Valley, and Horse and Lone Tree Valleys) between the Los Vaqueros Watershed and Black Diamond Mines Regional Preserve.

Regarding movement within natural communities, the baylands west of the EIR Study Area's western boundary and the Baylands along the EIR Study Area's northern boundary serve as a migratory corridor for anadromous fish, including green sturgeon and steelhead. The riparian woodland community also provides movement corridors for fish and wildlife species. The grassland natural community is an important movement corridor for species such as American badger, Alameda whipsnake, and San Joaquin kit fox. Grasslands in the eastern county connect to grassland communities in counties to the south, including Alameda County and San Joaquin County, providing a movement corridor to greater habitat patches and facilitating a genetic exchange with other populations of San Joaquin kit fox and American badger. Aquatic habitats such as streams and ponds provide breeding habitat for California red-legged frog and California tiger salamander, while the matrix of upland grassland habitats between the aquatic habitats and riparian corridors provide dispersal habitat.

Development under the proposed General Plan could restrict local or regional movement of native wildlife and fish species by fragmenting intact habitat areas. Development in natural or open space areas serves to fragment habitat areas, which reduces the number of special-status species within these areas. This reduction in habitat, including movement corridors or wildlife nursery areas, affects the ability of special-status species to increase in number and increases the probability that such species will be affected by other environmental factors (e.g., disease, catastrophic weather, and predation). However, given that most development under the proposed General Plan is anticipated to occur within the ULL, specific impacts may be lessened through implementation of the goals, policies, and actions of the proposed General Plan.

The Conservation, Open Space, and Working Lands Element of proposed General Plan includes policies and actions that would mitigate potential impacts associated with the movement of native resident or migratory fish or wildlife species, or established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. This includes policies and actions that are associated with goals that aim to preserve open space for environmental protection (Goal COS-1); preserve and enhance ecological resources and wildlife habitat (Goal COS-4); protect and restore natural watercourses, riparian corridors, and wetland areas (Goal COS-5); preserve and enhance native upland habitat (Goal COS-6); and protect, preserve, and enhance natural resources of the San Francisco Bay/Sacramento-San Joaquin Delta estuary system and shoreline (Goal COS-9). For example, Policy COS-P1.1 supports efforts to acquire and permanently protect areas that connect protected lands in order to form a cohesive system of open space and plan infrastructure so as to avoid interfering with such acquisitions whenever possible; Policy COS-P1.3 discourages the conversion of designated Resource Conservation or Parks and Recreation land to urban uses; Policy COS-P1.4 requires new projects adjacent to protected open space areas to establish buffers; Policy COS-P4.1 requires setbacks around ecologically significant resource areas and prohibits projects that would lead to fragmentation of ecologically significant resource areas; Policy COS-P4.4 protects habitat and wildlife migration corridors; Policy COS-P4.5 discourages the use of fencing that poses risks to wildlife; Policy COS-P5.1 supports protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands; Policy COS-P5.2 requires new public infrastructure and development projects to preserve and, whenever possible, enhance natural watercourses, floodplains, and riparian habitat; Policy COS-P5.3 requires avoidance, minimization, and/or compensatory mitigation for development that would affect a wetland or adjacent upland habitat; Policy COS-P5.4 requires

new buildings and structures on private property to be set back from wetlands; and Policy COS-P6.1 requires preserving natural woodlands and significant trees. In addition, Action COS-A1.1 directs the County to convene an annual staff-level meeting with involved agencies (e.g., East Contra Costa County Habitat Conservancy and EBRPD), land trusts, and conservation groups to review current and planned efforts to protect and maintain open space and prioritize acquisitions. Action COS-A4.2 directs the County to amend County Ordinance Code Title 8 to include development standards and possibly adopt accompanying design guidelines for urban land uses that interface with ecologically significant resource areas and other protected conservation lands, addressing, at minimum, (a) setbacks on urban properties that provide a buffer to resource areas, (b) the clustering of development to maximize ecological and conservation benefits, and (c) the provision of fencing, lighting, screening, and landscaping/vegetation that supports, and does not interfere with, wildlife migration and other conservation purposes. Action COS-A5.2 directs the County to amend the County Ordinance Code to include the wetland setback requirement described in Policy COS-P5.4. Furthermore, Land Use Element Goal LU-2 seeks to balance growth and conservation while protecting the environment, including wildlife corridors and nursery sites, through policies that preserve natural habitat and open space (Policy LU-P2.1); enhance the effectiveness of the ULL (Policy LU-P2.2); limit development outside the ULL (Policy LU-P2.3); encourage infill -development (Policy LU-P2.5); and reduce the footprint of development (Policy LU-P2.6).

As detailed in Section 5.4.1.1, a number of federal and State regulations are in place to protect wildlife movement, wildlife corridors, and nursery sites within Contra Costa County. However, even with implementation of the proposed General Plan goals, policies, and actions, the regulations would not fully reduce potential impacts associated with the movement of wildlife species, migratory wildlife corridors, or native wildlife nursery sites. Additional project-specific analysis would be required to ensure that development does not impede wildlife movement in the identified areas. Therefore, this is considered a potentially significant impact.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects. However, projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could potentially impact wildlife species, migratory wildlife corridors, or native wildlife nursery sites. Projects that would implement the proposed CAP strategies and actions would be required to be consistent with the proposed General Plan, as well as a number of federal and State regulations that are in place to protect wildlife movement, wildlife corridors, and nursery sites, as detailed in Section 5.4.1.1. However, even with implementation of the proposed General Plan goals, policies, and actions, the regulations would not fully reduce potential impacts of the proposed CAP associated with the movement of wildlife species, migratory wildlife corridors, or native wildlife nursery sites. Therefore, this is considered a potentially significant impact.

Level of Significance Before Mitigation: Impact 5.4-4 would be potentially significant.

Mitigation Measures

BIO-1 Prior to the issuance of a building permit for projects not exempt from the California Environmental Quality Act, the County shall require a habitat connectivity/wildlife corridor evaluation for future development that may impact existing connectivity areas and wildlife linkages. The evaluation shall identify project design features that would reduce potential impacts and maintain habitat and wildlife movement. To this end, the County shall incorporate the following measures, to the extent practicable, for projects impacting wildlife movement corridors:

- Encourage clustering of development
- Avoid known sensitive biological resources
- Provide shielded lighting adjacent to sensitive habitat areas
- Encourage development plans that maximize wildlife movement
- Provide buffers between development and wetland/riparian areas
- Protect wetland/riparian areas through regulatory agency permitting process
- Encourage wildlife-passable fence designs (e.g., three-strand barbless wire fence) on property boundaries.
- Encourage preservation of native habitat on developed parcels
- Minimize road/roadway development to help prevent loss of habitat due to roadkill and habitat loss
- Use native, drought-resistant plant species in landscape design
- Encourage participation in local/regional recreational trail design efforts

Level of Significance After Mitigation: Impact 5.4-4 would be less than significant.

Impact 5.4-5: The proposed project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan. [Thresholds B-5 and B-6]

Proposed General Plan

Implementation of the proposed General Plan could potentially conflict with local policies or ordinances protecting biological resources in the EIR Study Area.

As discussed in Chapter 3, *Project Description*, in 1990 voters adopted Measure C-1990, which created the 65/35 Land Preservation Standard and ULL. County Ordinance Code Chapter 82-1, Section 82-1.010, *Urban Limit Line*, establishes the ULL to ensure the enforcement of the 65/35 Standard set forth in Section 82-1.006 of the County Ordinance Code. The 65/35 Standard limits the amount of land that can be devoted to urban

development, while the ULL limits the areas where such development can occur. The 65/35 Standard limits urban development to no more than 35 percent of the land area of the county. The remaining 65 percent must be preserved for agriculture, open space, wetlands, parks, and other non-urban uses. Institutional/public uses such as schools, transit facilities, fire and police stations, water and wastewater treatment plants, correctional facilities, and airports are also categorized as non-urban. Urban and non-urban uses are allowed inside the ULL while only non-urban uses are allowed outside. Any expansion of the ULL that exceeds 30 acres is subject to a four-fifths vote of the Board of Supervisors and requires countywide voter approval. In addition, County Ordinance Code Chapter 816-6, *Tree Protection and Preservation*, requires preservation of significant trees and outlines permitting requirements for projects proposing to remove or otherwise impact such trees.

The policies in the proposed General Plan would not conflict with existing aforementioned County ordinances for the protection of biological resources but, rather, would expand on them to address issues regarding sensitive biological resources. Regarding County Ordinance Code Chapter 82-1, Policy LU-P2.1 requires continued implementation of the 65/35 Land Preservation Standard, using the County ULL to focus development while preserving agricultural land, rangeland, natural habitats, watersheds, and open space; Policy LU-P2.2 enhances the ULL's effectiveness by supporting efforts to acquire and permanently protect land along the ULL boundary; and Policy LU-P2.3 limits development outside the ULL to non-urban uses. Regarding County Ordinance Code Chapter 816-6, Policy COS-P6.1 requires the preservation of natural woodlands and significant trees, particularly mature native species; Policy COS-P6.3 supports the protection of native trees, especially oaks, in foothill woodlands and agricultural areas by encouraging the voluntary installation of fencing around individuals or clusters of trees to prevent grazing and promoting the replanting of native species. Action COS-A6.1 directs the County to update County Ordinance Code Chapter 816-6 to enhance tree protections of specified native trees and strengthen mitigation requirements/restitution for tree removal; Action COS-A6.2 directs the County to develop an Oak Woodland Conservation Program that establishes special mitigation ratios for the removal of oak trees, along with specific tree replacement and planting standards to ensure long-term growth and survival and amendments to the County Ordinance Code as needed to implement the program.

The proposed General Plan also includes policies supporting the East Contra Costa County HCP/NCCP. For example, Policy COS-P4.2 supports land conservation and restoration consistent with the HCP/NCCP and discourages development in areas where such conservation is planned. Additional policies for the protection of biological resources are also consistent with the HCP/NCCP, including Policy COS-P4.3, which requires a biological resources assessment, prepared according to State and federal protocols, for projects with the potential to affect rare, threatened, endangered, or special-status species or their habitat and implementation of appropriate mitigation for identified impacts; Policy COS-P4.4, which protects habitat and wildlife migration corridors; Policy COS-P4.6, which requires floristic and vegetation surveys, prepared according to State and federal protocols, when development is proposed on land with potentially suitable habitat for special-status plant species, including areas mapped by CNPS as Botanical Priority Protection Areas; and Policy COS-P5.1, which supports the protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands.

Implementation of proposed General Plan goals, policies, and actions, as well as conditions associated with County Ordinance Code Chapters 82-1 and 816-6, would ensure that the potential impacts of the proposed General Plan related to local policies or ordinances for the protection of biological resources or an adopted

habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan would be less than significant.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects. However, projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could potentially conflict with local policies or ordinances for the protection of biological resources or an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan. Projects that would implement the proposed CAP strategies and actions would be required to be consistent with the proposed General Plan as well as conditions associated with County Ordinance Code Chapters 82-1 and 816-6. Compliance with the aforementioned policies and regulations would reduce potential conflicts of the proposed CAP with local policies or ordinances for the protection of biological resources or an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan to a less-than-significant level.

Level of Significance Before Mitigation: Impact 5.4-5 would be less than significant.

Mitigation Measures

No mitigation measures are required.

5.4.5 Cumulative Impacts

As discussed in Section 4.4, *Assumptions Regarding Cumulative Impacts*, in Chapter 4, *Environmental Setting*, this Draft EIR analyzes the environmental impacts of projected development under the proposed General Plan. As a result, this Draft EIR addresses the cumulative impacts of the proposed General Plan within the county and Bay Area region, as appropriate. The area considered for cumulative impacts on biological resources is the entire county, including inside the city or town limits of incorporated municipalities.

In general, cumulative impacts to biological resources would occur when a series of actions contribute to the ongoing conversion of undeveloped lands that support sensitive biological resources, including special-status species, sensitive natural communities, federally protected wetlands, and wildlife and fish movement corridors in the county to developed uses. Cumulative projects could result in the loss and degradation of natural communities, wetlands, and riparian or other sensitive habitats. Implementation of the proposed General Plan in combination with other cumulative projects in the area could result in the cumulative loss of habitat and sensitive natural communities, which could potentially contribute to a general decline for the county, and might result in the loss or displacement of wildlife that would have to compete for suitable habitats with existing adjacent populations. Therefore, there would be a significant cumulative impact to biological resources.

The proposed General Plan contains goals, policies, and actions to mitigate impacts on undeveloped lands that support sensitive biological resources, including special-status species, sensitive natural communities, federally protected wetlands, and wildlife and fish movement corridors, and minimize the effects of development on biological resources in general. Projected development that could occur under the proposed General Plan would contribute to the ongoing loss of undeveloped lands that support such sensitive biological resources in the

county. The cumulative loss of habitat and sensitive natural communities in the county could contribute to a general decline for such habitats and communities in the region and result in the loss or displacement of wildlife, which would have to compete for suitable habitats within existing adjacent populations. This potential change would occur as an intrinsic part of the land use changes allowed under the proposed General Plan to accommodate the expected continued growth in population and economic activity in the county. Furthermore, development within incorporated municipalities is beyond the County's ability to regulate or control. Therefore, the incremental effects of future development resulting from implementation of the proposed General Plan would add substantially to the effects of the cumulative projects, and the proposed project's contribution would be cumulatively considerable.

5.4.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, some impacts would be less than significant: Impact 5.4-1, Impact 5.4-2, Impact 5.4-3, and Impact 5.4-5.

Without mitigation, these impacts would be **potentially significant**:

- **Impact 5.4-4:** Implementation of the proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

5.4.7 Mitigation Measures

Impact 5.4-4

BIO-1 Prior to the issuance of a building permit for projects not exempt from the California Environmental Quality Act, the County shall require a habitat connectivity/wildlife corridor evaluation for future development that may impact existing connectivity areas and wildlife linkages. The evaluation shall identify project design features that would reduce potential impacts and maintain habitat and wildlife movement. To this end, the County shall incorporate the following measures, to the extent practicable, for projects impacting wildlife movement corridors:

- Encourage clustering of development
- Avoid known sensitive biological resources
- Provide shielded lighting adjacent to sensitive habitat areas
- Encourage development plans that maximize wildlife movement
- Provide buffers between development and wetland/riparian areas
- Protect wetland/riparian areas through regulatory agency permitting process
- Encourage wildlife-passable fence designs (e.g., three-strand barbless wire fence) on property boundaries.

- Encourage preservation of native habitat on developed parcels
- Minimize road/roadway development to help prevent loss of habitat due to roadkill and habitat loss
- Use native, drought-resistant plant species in landscape design
- Encourage participation in local/regional recreational trail design efforts

5.4.8 Level of Significance After Mitigation

Impact 5.4-4

Implementation of Mitigation Measure BIO-1 would require projects that may impact wildlife migration corridors to conduct an evaluation that identifies potential impacts and project design features that can be feasibly implemented to reduce impacts. This would ensure that impacts to wildlife migration corridors are identified and reduced to the extent possible under project-level review. As such, impacts would be **less than significant.**

5.4.9 References

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5.5 CULTURAL RESOURCES AND TRIBAL CULTURAL RESOURCES

This section describes the potential impacts to cultural and tribal cultural resources associated with the adoption and implementation of the proposed project. This section describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential cultural and tribal cultural resources impacts, and identifies proposed General Plan policies and actions that could minimize any potentially significant impacts.

The analysis in this section is based in part on the *Contra Costa County General Plan Update: Cultural Resources Existing Conditions Report* (Existing Conditions Report), which is included as Appendix 5.5-1 to this Draft Environmental Impact Report (EIR). Correspondence with tribes pursuant to Assembly Bill (AB) 52 and Senate Bill (SB) 18 is included as Appendix 5.5-2 in this Draft EIR.

5.5.1 Environmental Setting

5.5.1.1 REGULATORY BACKGROUND

Federal

National Historic Preservation Act

The National Historic Preservation Act of 1966 (NHPA) coordinates public and private efforts to identify, evaluate, and protect the nation's historic and archaeological resources. The act authorized the National Register of Historic Places, which lists districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture.

Section 106 (Protection of Historic Properties) of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties. Section 106 review ensures that historic properties are considered during federal project planning and implementation. The Advisory Council on Historic Preservation, an independent federal agency, administers the review process with assistance from state historic preservation offices.

Archaeological Resources Protection Act

The Archaeological Resources Protection Act of 1979 regulates the protection of archaeological resources and sites on federal and Native American lands.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) is a federal law passed in 1990 that mandates museums and federal agencies to return certain Native American cultural items—such as human remains, funerary objects, sacred objects, or objects of cultural patrimony—to lineal descendants or culturally affiliated Native American tribes.

Secretary of the Interior's Standards for the Treatment of Historic Properties

The Secretary of the Interior's Standards for the Treatment of Historic Properties (Secretary's Standards) promote responsible practices that help protect the nation's irreplaceable cultural resources. The Secretary of the Interior's Standards are neither technical nor prescriptive, and cannot, in and of themselves, be used to make essential decisions about which features of the historic building should be saved and which can be changed. But once a treatment is selected, the Secretary of the Interior's Standards provide for philosophical consistency in the work. An individual set of the Secretary of the Interior's Standards has been formulated for each of four identified treatment approaches: Preservation, Rehabilitation, Restoration, and Reconstruction. The four approaches are defined below:

- *Preservation* requires retention of the greatest amount of historic fabric, along with the building's historic form, features, and detailing as they have evolved over time.
- *Rehabilitation* acknowledges the need to alter or add to a historic building to meet continuing or new uses while retaining the building's historic character.
- *Restoration* allows for the depiction of a building at a particular time in its history by preserving materials from the period of significance and removing materials from other periods.
- *Reconstruction* establishes a limited framework for recreating a vanished or nonsurviving building with new materials, primarily for interpretive purposes.

Secretary of the Interior's Professional Qualifications Standards

The Secretary of the Interior's Professional Qualifications Standards define minimum education and experience required to perform historic resources identification, evaluation, registration, and treatment activities. The areas of expertise defined by the Professional Qualifications Standards include History, Archaeology, Architectural History, Architecture, and Historic Architecture.

State

California Public Resources Code

Archaeological, paleontological, and historical sites are protected under a wide variety of State policies and regulations in the California Public Resources Code (PRC). In addition, cultural and paleontological resources are recognized as nonrenewable resources and receive protection under the PRC and the California Environmental Quality Act (CEQA).

PRC Section 5097.9–5097.991 provides protection to Native American historical and cultural resources and sacred sites and identifies the powers and duties of the Native American Heritage Commission (NAHC). It also requires notification to descendants of discoveries of Native American human remains and provides for treatment and disposition of human remains and associated graved goods.

PRC Section 5097.993 establishes that a person who unlawfully and maliciously excavates, removes, destroys, or defaces a Native American historic, cultural, or scared site that is listed or may be eligible for listing in the California Register of Historical Resources (California Register) is guilty of a misdemeanor if the act was

committed with specific intent to vandalize, deface, destroy, steal, convert, possess, collect, or sell a Native American artifact, art object, inscription, feature, or site. Civil penalties include imprisonment and fines up to $50,000 per violation.

Traditional Tribal Cultural Places

Government Code Sections 65352.3, 65352.4, 65562.5, and 65092 establish the responsibilities of cities and counties with respect to contacting and providing notice to California Native American tribes. The term "California Native American tribe" is defined as "a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC." Prior to the adoption or amendment of a city or county's general plan or adoption or amendment of specific plans, the city or county must consult with California Native American tribes for the purpose of preserving specified places, features, and objects within the city or county's jurisdiction.

California Health and Safety Code

California Health and Safety Code Section 7050.5 requires that if human remains are discovered on a project site, disturbance of the site shall halt and remain halted until the coroner has conducted an investigation into the circumstances, manner, and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative. If the coroner determines that the remains are not subject to his or her authority and recognizes or has reason to believe the human remains are those of Native American descent, he or she shall contact, by telephone within 24 hours, the NAHC.

California Register of Historic Resources

The California Register of Historic Resources is the State version of the National Register of Historic Resources Program. It was enacted in 1992 and became official on January 1, 1993. The California Register was established to serve as an authoritative guide to the state's significant historical and archaeological resources. Resources that may be eligible for listing include buildings, sites, structures, objects, and historic districts. According to PRC Section 5024.1(c), a resource may be listed as a historical resource in the California Register if it meets any of the four National Register criteria.

California Senate Bill 18

Existing law provides limited protection for Native American prehistoric, archaeological, cultural, spiritual, and ceremonial places. These places may include sanctified cemeteries, religious sites, ceremonial sites, shrines, burial ground, prehistoric ruins, archaeological or historic sites, Native American rock art inscriptions, or features of Native American historic, cultural, and sacred sites.

SB 18 was signed into law in September 2004 and went into effect on March 1, 2005. It placed new requirements on local governments for developments within or near "traditional tribal cultural places" (TTCP). The law requires local jurisdictions to provide opportunities for involvement of California Native American tribes in the land planning process for the purpose of preserving traditional tribal cultural places. The Final Guidelines recommend that the NAHC provide written information as soon as possible but no later than 30 days after

receiving a request to inform the lead agency if the proposed project is determined to be in proximity to a TTCP and another 90 days for tribes to respond to a local government if they want to consult to determine whether the project would have an adverse impact on the TTCP. There is no statutory limit on the consultation duration. Forty-five days before the action is publicly considered, the local government refers action to agencies, following the CEQA public review timeframe. The CEQA public distribution list may include tribes listed by the NAHC who have requested consultation, or it may not.

SB 18 is triggered before the adoption, revision, amendment, or update of a city's or county's general plan. In addition, SB 18 provides a new definition of TTCP requiring a traditional association of the site with Native American traditional beliefs, cultural practices, or ceremonies, or the site must be shown to actually have been used for activities related to traditional beliefs, cultural practices, or ceremonies (previously, the site was defined to require only an association with traditional beliefs, practices, lifeways, and ceremonial activities). SB 18 also amended Civil Code Section 815.3 and adds California Native American tribes to the list of entities that can acquire and hold conservation easements for the purpose of protecting their cultural places.

Assembly Bill 52

Assembly Bill (AB) 52 took effect July 1, 2015, and requires inclusion of a new section in CEQA documents titled Tribal Cultural Resources, which includes heritage sites. Under AB 52, a tribal cultural resource is defined as similar to tribal cultural places under SB 18—sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or eligible for inclusion in the California Register of Historic Resources or included in a local register of historical resources. Or the lead agency, supported by substantial evidence, chooses at its discretion to treat the resources as a tribal cultural resource.

Similar to SB 18, AB 52 requires consultation with tribes at an early stage to determine whether a project would have an adverse impact on a tribal cultural resource (TCR) and define mitigation to protect them. Per AB 52, within 14 days of deciding to undertake a project or determining that a project application is complete, the lead agency must provide formal written notification to all tribes who have requested it. The tribe then has 30 days of receiving the notification to respond if it wishes to engage in consultation. The lead agency must initiate consultation within 30 days of receiving the request from the tribe. Consultation concludes when both parties have agreed on measures to mitigate or avoid a significant effect to a tribal cultural resource, or a party, after a reasonable effort in good faith, decides that mutual agreement cannot be reached. Regardless of the outcome of consultation, the CEQA document must disclose significant impacts on TCRs and discuss feasible alternatives or mitigation that avoid or lessen the impact.

5.5.1.2 EXISTING CONDITIONS[1]

The Existing Conditions Report (Appendix 5.5-1) includes a detailed description of the built historic resources, archaeological resources, and tribal communities in the county.

Archaeological Resources

As of the date of preparation of this document, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county. The existing General Plan identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the Northwest Information Center (NWIC). The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the existing General Plan. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The results of the 2018 records search for archaeological sites are included in Appendix 5.5-1 (see Appendix B to that appendix).

Built Historic Resources

The existing General Plan references a Historic Resources Inventory (HRI), the result of a 1976 collaboration between Contra Costa County local historical societies. The HRI is the official approved list of historical resources within the unincorporated areas of the county. The most recent update to the HRI was approved and published by the Contra Costa County Historic Landmarks Advisory Committee (HLAC) in 2016. The 2016 Draft HRI identifies a total of 376 built historic resources in the unincorporated areas of the county. In total, there are 380 built historical resources in the unincorporated areas of the county, including the 376 built historic resources identified in the 2016 Draft HRI, three built historic resources added to the HRI by the Contra Costa Board of Supervisors, and one built historic resource identified in a 2018 updated records search. Buildings, structures, sites, objects, districts, and landscapes associated with important historical themes that are found to meet the criteria for listing in the California Register or that are listed in the County's HRI would qualify as CEQA historical resources.

The proposed General Plan Conservation, Open Space, and Working Lands Element provides the following overview of the important historical trends in the county:

> Although the Spanish explored Contra Costa County as early as 1772, significant European settlements were not established until the nineteenth century. In 1822, the newly independent Mexican government began issuing land grants, called ranchos, to its citizens in California. Sixteen ranchos were located in what is now Contra Costa County, and most of the land was used for grazing or growing wheat. One rancho

[1] This section is based on the Existing Conditions Report (Appendix 5.5-1), which describes and maps cultural resources conditions in the county. However, as discussed in Chapter 3, *Project Description*, this EIR focuses on the analysis of potential impacts on lands only in unincorporated Contra Costa County, including land within and outside the ULL and inside each municipality's sphere of influence (SOI), but not inside municipality limits. This area is referred to as the "EIR Study Area" in this document and is shown in Figure 3-2, *EIR Study Area Boundaries*.

was later purchased by a settler named John Marsh in 1837. It became known as Marsh's Landing, near present day Antioch, and grew into an important commercial center along the San Joaquin River during the California Gold Rush. The success of Marsh's Landing encouraged other American immigrants to purchase land in the area, and permanent communities began to take shape. Following the Gold Rush, agriculture was the economic driver in the region, boosted by the Southern Pacific Railroad's expansion into the area in the late nineteenth century.

Industrial development and associated residential development to house workers shaped the western portions of Contra Costa County from the early twentieth century. In 1906, the C&H Sugar Factory was established in Crockett, taking advantage of cargo ship access via the Carquinez Strait. Petroleum refineries were also developed during the late 1800s and early 1900s. World War II brought rapid expansion of industrial development to support war efforts, including the famous Kaiser Richmond Shipyards.

Over centuries, people have immigrated to the region from other cities, states, and countries, and the diverse population forms the unique fabric of modern-day Contra Costa County. This history is represented in the almost 400 historic sites, buildings, and other structures that have been identified in Contra Costa County's Historic Resources Inventory. They range from historic buildings that were part of the early industrialization of the western county, like the C&H Sugar Factory, to historic ranches and homes, like the home of John Muir, which is part of the John Muir National Historic Site in Martinez.

In 2019, the United States Congress established the Sacramento-San Joaquin Delta National Heritage Area (NHA), which runs from the east side of San Pablo Bay through the Carquinez Strait to the Delta. The Delta NHA is recognized as a cohesive, nationally significant landscape arising from patterns of human activity shaped by the geography. As of 2023, the Delta Protection Commission is drafting a management plan to promote historic preservation, cultural conservation, education and interpretation, development of recreational assets, nature conservation, tourism, and economic development throughout the Delta NHA.

Tribal Communities

The county is in an area where the traditional territories of three tribal communities converged: Bay Miwok, Northern Valley Yokuts, and Ohlone. The proposed General Plan Conservation, Open Space, and Working Lands Element provides the following overview of the history of tribal communities in the county:

Contra Costa County is in an area where traditional territories of three Native American tribal communities – the Bay Miwok, Northern Valley Yokuts, and Ohlone – converged.

The Bay Miwok inhabited the inner Coast Range, with territory stretching through eastern Contra Costa County, from Mount Diablo into the Delta. The Bay Miwok were politically organized by tribelet, which consisted of one or more villages and camps within a defined territory.

The Northern Valley Yokuts are the historical occupants of the central and northern San Joaquin Valley, and their territory extended into eastern Contra Costa County. Their main settlements were built atop low mounds on or near the banks of large watercourses for protection against flooding. Each subtribe was autonomous with a headman, and populations averaged around 300 individuals.

The territory of the Ohlone people extended along the coast from the Golden Gate south to just below Carmel, as well as along several inland valleys that led from the coastline. The Ohlone were also politically organized by tribelet, with each having a designated territory.

All of these tribal communities were primarily hunter-gatherers; they hunted animals like mule deer, tule elk, pronged antelope, mountain lions, whales, and waterfowl. They would travel seasonally into the foothills or plains to gather specific plant resources, such as acorns, buckeye nuts, hazelnuts, and pine nuts, as well as seeds, roots, and berries. These and other resources likely supported hundreds of individual villages throughout what is now Contra Costa County.

Despite the violence and displacement that accompanied European and Mexican settlement of this area and decimated indigenous communities, the indigenous inhabitants of the land are still present. Today, there are several Ohlone nations in Contra Costa, Alameda, Solano, Napa, and San Joaquin Counties, each with its own culture and language, including the Lisjan (Ohlone), Karkin (Ohlone), Bay Miwok, Plains Miwok, Delta Yokut, and Napian (Patwin).

This rich tribal history and living tribal culture are reflected in a range of tribal cultural resources throughout the county. Tribal cultural resources often are less tangible than an object or a site itself. For example, sometimes the importance is tied to views of or access to a sacred site. Therefore, consultation with culturally affiliated Native American tribes is key to identifying tribal cultural resources, as required by Assembly Bill 52.

A record search of the NAHC Sacred Lands File (SLF) was completed and confirmed negative results for the EIR Study Area (see Appendix 5.5-2). This does not, however, mean that no resources exist within the EIR Study Area. In accordance with SB 18 requirements, the County sent letters to representatives of the Native American tribes provided by the NAHC on January 15, 2021, formally inviting tribes to consult with the County on the upcoming General Plan Update. The Confederated Villages of Lisjan Nation Tribe requested consultation and consulted with the County in November 2021 regarding the draft goals, policies, and actions of the General Plan Update. In accordance with AB 52 requirements, an updated invitation for consultation was sent out to the County's AB 52 Tribal Consultation List on October 5, 2023. The Lisjan Tribe responded on October 25, 2023, and requested additional information about the proposed project, which was provided to the tribe. No other tribes responded and no consultation was requested.

During the SB 18 consultation process in 2021, the Lisjan Tribe provided comments and edits for the General Plan in addition to mitigation measures that have been incorporated into the proposed project as Mitigation Measures TCR-5 through TCR-9. No further consultation was requested from the Lisjan Tribe.

5.5.2 Thresholds of Significance

CEQA Guidelines Section 15064.5 provides direction on determining significance of impacts to archaeological and historical resources. Generally, a resource shall be considered "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated the with lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history (PRC Section 5024.1; 14 CCR Section 4852).

The fact that a resource is not listed in the California Register of Historical Resources, not determined to be eligible for listing, or not included in a local register of historical resources does not preclude a lead agency from determining that it may be a historical resource.

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

C-1 Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.

C-2 Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.

C-3 Disturb any human remains, including those interred outside of dedicated cemeteries.

TCR-1 Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Public Resources Code Section 5024.1(c). In applying the criteria set forth in Public Resource Code Section 5024.1(c), the lead agency shall consider the significance of the resource to a California Native American tribe.

5.5.3 Programs, Plans, and Policies

5.5.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to cultural resources and tribal cultural resources. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Conservation, Open Space, and Working Lands Element

- **Goal COS-10:** Archaeological, cultural, and historic resources that are identified and preserved.
  - ***Policy COS-P10.1:*** *Prioritize preservation and adaptive reuse of buildings, sites, and areas having identifiable archaeological, cultural, or historic significance. Require new construction and renovation projects in historic areas to incorporate compatible and high-quality design that protects the overall historic integrity of the area and adjacent historic resources.*
  - **Policy COS-P10.2:** Encourage sensitive restoration and adaptive reuse of historic resources following the Secretary of the Interior's Standards for the Treatment of Historic Properties, including additions and alterations to buildings that do not diminish historic integrity.
  - **Policy COS-P10.3:** Encourage owners of historic properties to make use of the State of California Historic Building Code to protect and rehabilitate historic resources.
  - **Policy COS-P10.4:** Encourage owners of eligible historic properties to apply for State and federal designation as historic properties and participate in tax incentive programs, such as allowed under the Mills Act, for historic preservation.
  - ***Policy COS-P10.5:*** *When a project involves a resource that is listed in the County's Historic Resources Inventory, or as otherwise necessitated by the CEQA process, require applicants to engage a qualified consultant to prepare an evaluation of potential and previously identified archaeological, cultural, and historic resources that may be present on the project site.*
  - **Policy COS-P10.6:** Upon discovery of significant historic or prehistoric archaeological artifacts or fossils during project construction, require ground-disturbing activities to halt within a 50-foot radius of the find until its significance can be determined by a qualified historian, archaeologist, or paleontologist and appropriate protection and preservation measures developed.
  - ***Policy COS-P10.7:*** *Require significant historic, archaeological, and paleontological resources to be either preserved onsite or adequately documented as a condition of removal.*
  - **Policy COS-P10.8:** Emphasize native people, immigrant populations, and the environmental and cultural heritage of the region as significant themes related to historic preservation. Consider natural, agricultural, ranching, mining, commercial, industrial, residential, political, transportation, recreation, education, maritime, and military themes when evaluating the significance of historic resources.
  - **Policy COS-P10.9:** Ensure new cultural/historic resource evaluations consider potential social and cultural significance of resources in addition to architectural significance.
  - **Policy COS-P10.10:** Coordinate with cities and special districts to identify and preserve archaeological, cultural, and historic resources countywide.

- **Policy COS-P10.11:** Partner with other agencies, culturally affiliated tribes, private entities, and nonprofit organizations to establish programs and funding mechanisms to preserve, restore, and enhance cultural, historic, and archaeologic sites.
- **Action COS-A10.1:** Beginning in 2024, then every five years thereafter, review and update the County's Historic Resources Inventory and Archaeological Sensitivity Map in consultation with culturally affiliated tribes to ensure these remain useful tools for evaluating potential cultural resources impacts and guiding preservation efforts. As part of the 2024 update to the Historic Resources Inventory, create a map of the listed historic resources, and update the map upon each update to the Historic Resources Inventory. Ensure tribal cultural resources identified through these updates remain confidential.
- **Action COS-A10.2:** Evaluate and implement one or more measures to protect and preserve historic and cultural resources, such as a historic and cultural resources ordinance, overlay district, and/or design guidelines.
- **Action COS-A10.3:** Prepare a historic context statement that provides necessary background information about historic, archaeological, and cultural resources and a framework for identifying and evaluating historic resources. The context statement should include the overarching significance themes described in Policy COS-P10.8.
- **Action COS-A10.4:** Partner with the Delta Protection Commission to support preparation and implementation of the management plan for the Delta National Heritage Area.

- **Goal COS-11:** Robust tribal collaboration to preserve, restore, and enhance tribal cultural resources.
  - ***Policy COS-P11.1:*** *Respect and protect tribal cultural resources, including historic, cultural, and sacred sites; cultural landscapes; views of or access to resources; and objects with cultural value to California Native American tribes.*
  - ***Policy COS-P11.2:*** *Establish and maintain collaborative relationships with local Native American tribal representatives to facilitate tribal consultation and preservation of tribal cultural resources.*
  - ***Policy COS-P11.3:*** *Consult with culturally affiliated tribes on General Plan and Specific Plan amendments with potential to impact tribal cultural resources. If an amendment redesignates a tribal cultural resource site for open space purposes, evaluate the appropriateness of developing a treatment and management plan for tribal cultural resources in the affected area.*
  - ***Policy COS-P11.4:*** *Consult with culturally affiliated tribes to identify and appropriately address tribal cultural resources through the discretionary development review process.*
  - ***Policy COS-P11.5:*** *Consult with culturally affiliated tribes to assess the sensitivity of sites and protect recorded and unrecorded tribal cultural resources.*
  - **Policy COS-P11.6:** Encourage voluntary landowner efforts to protect tribal cultural resources.
  - **Policy COS-P11.7:** Support tribal acquisition of conservation easements on terms mutually satisfactory to the tribe and landowner for purposes of protecting tribal cultural resources.
  - **Policy COS-P11.8:** Encourage special districts, such as EBRPD, to consult with culturally affiliated tribes when pursuing land acquisitions for recreation or other public purposes to ensure tribal access to tribal cultural resources.

- ***Policy COS-P11.9:*** *Avoid impacts of development on Native American archaeological resources and tribal cultural resources whenever possible. When impacts cannot be avoided, mitigate to the maximum feasible extent.*
- ***Policy COS-P11.10:*** *Consult with culturally affiliated tribes when developing mitigation measures to avoid or minimize impacts on tribal cultural resources. Mitigation could include, but is not limited to, a cultural resources treatment agreement between the developer and affected tribe(s) that addresses the treatment and disposition of cultural resources and human remains and tribal monitoring during earth-disturbing activities.*
- ***Policy COS-P11.11:*** *Upon discovery of a burial, human remains, or suspected human remains, require immediate halt to ground-disturbing activities such as excavation or grading, protection of the area surrounding the find, notification of the County Coroner, and compliance with the provisions of California Health and Safety Code Section 7050.5, including California Public Resources Code Section 5097.98, if applicable. If human remains are determined to be Native American, require the applicant to consult with the Most Likely Descendants list to determine appropriate treatment, as prescribed in Public Resources Code Section 5097 et seq.*
- **Policy COS-P11.12:** Encourage landowners to relinquish ownership of Native American cultural artifacts found on project sites to the culturally affiliated tribe for proper treatment and disposition.
- **Action COS-A11.1:** In consultation with local Native American tribes, prepare informational materials about living Native American culture in the region, the history of Native Americans in what is now Contra Costa County, and how the County's relationship with local Native American tribes has evolved. Make these materials easily accessible to the public, project applicants, and County staff.
- **Action COS-A11.2:** Work with local Native American tribes to establish programs and secure funding to implement actions aimed at preserving tribal cultural resources.

5.5.3.2 PROPOSED CAP STRATEGIES AND ACTIONS

There are no strategies or actions in the proposed Climate Action Plan (CAP) that are applicable to cultural resources or tribal cultural resources.

5.5.4 Environmental Impacts

Impact 5.5-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5. [Threshold C-1]

Proposed General Plan

Section 15064.5 (b)(1) of the CEQA Guidelines defines a substantial adverse change in the significance of a historic resource to be the "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." Implementation of the proposed General Plan could potentially result in impacts on historical resources in the EIR Study Area. Specifically, direct impacts could occur if buildings determined to be historic are demolished or significantly altered as a result of implementation of the proposed General Plan.

As detailed in Section 5.5.1.1, there are a number of federal and State regulations in place to protect historical resources within the EIR Study Area. Currently known or future historic sites or resources listed in the National or California Registers or the Contra Costa County HRI would be protected through State and federal regulations restricting alteration, relocation, and demolition of historical resources. Compliance with the State and federal regulations is intended to ensure that development would not result in adverse impacts to identified historic and cultural resources. Historical resources are protected under the regulations of the NHPA when projects involve federal agencies. In addition, the proposed General Plan policies take a comprehensive approach to the protection of historical resources. The Conservation, Open Space, and Working Lands Element of the proposed General Plan includes policies and actions that would mitigate potential impacts on historical resources, including through the policies and actions under Goal COS-10, which aims to identify and preserve historic resources. For example, Policies COS-P10.1 and COS-P10.2 encourage the preservation and adaptive reuse of historic resources. This includes using the Secretary of the Interior's Standards for the Treatment of Historic Properties, where possible. Policy COS-P10.11 seeks to incentivize preservation and adaptive reuse by establishing programs and funding mechanisms that support the preservation, restoration, and enhancement of cultural, historic, and archaeological sites. Policy COS-P10.5 requires applicants to engage a qualified consultant to prepare an evaluation of historic resources that may be present on a project site when a project involves a resource listed on the County's HRI or as otherwise necessitated through the CEQA process. Policy COS-P10.7 requires significant historic resources to be either preserved onsite or adequately documented as a condition of removal. Actions COS-A10.1 through COS-A10.4 support these policies, ensuring that surveys of existing and as-yet unknown resources are performed and updated regularly, and that planning tools, such as ordinances, design guidelines, context statements, and management plans are put in place to support implementation of the policies.

The proposed General Plan would not substantially alter any policies regarding the significance of impacts on historical resources. In addition, the proposed General Plan would not alter the significance of impacts on historical resources compared to existing conditions. Furthermore, the proposed General Plan would not modify the procedures or policies regarding how historical resources are identified or evaluated for historical significance, nor would it change how impacts on historical resources are assessed or mitigated under the General Plan.

The goals, policies, and actions in the proposed General Plan, in combination with existing federal and State regulations in place to protect historical resources within the EIR Study Area, are intended to ensure that development would not result in adverse impacts to identified historic and cultural resources; however, it is always a potential. Under CEQA, conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties would normally mitigate impacts to a less-than-significant level. Because the proposed project is a program-level effort, it is not possible to determine whether individual future projects would be able to conform with the Secretary of Interior's Standards. However, CEQA would require that future projects with the potential to significantly impact historic resources be subject to project-level CEQA review wherein the project's potential to affect the significance of a surrounding historic resource would be evaluated and mitigated to the extent feasible. The requirement for subsequent CEQA review would minimize the potential for new development to indirectly affect the significance of historic resources to the maximum extent practicable.

Even with implementation of the proposed General Plan goals, policies, and actions, the regulations would not fully reduce potential impacts on historic resources at the programmatic level. Therefore, this is considered a potentially significant impact.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects. However, projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could adversely impact historic resources in the EIR Study Area through changes to accommodate adaptive use, removal, or reconstruction. Projects that would implement the proposed CAP strategies and actions would be required to be consistent with the proposed General Plan as well as federal and State regulations in place to protect historic resources within the EIR Study Area. However, even with implementation of the proposed General Plan goals, policies, and actions, the regulations would not fully reduce potential impacts of the proposed CAP on historic resources. Therefore, this is considered a potentially significant impact.

Level of Significance Before Mitigation: Impact 5.5-1 would be potentially significant.

Mitigation Measures

There are no mitigation measures available to reduce impacts to less than significant. Policies and actions in the proposed General Plan, in addition to State regulations, would reduce impacts to the extent possible and additional project-specific mitigation measures would be incorporated pursuant to future project-specific review.

Level of Significance After Mitigation: Impact 5.5-1 would remain significant and unavoidable.

Impact 5.5-2: Implementation of the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines, Section 15064.5. [Threshold C-2]

Proposed General Plan

Archaeological resources are known to be present in the EIR Study Area. Implementation of the proposed General Plan could potentially result in direct or indirect impacts on both prehistoric and historic archaeological resources in the EIR Study Area. If archaeological resources are present in the areas where development is planned, they could be damaged by earth-disturbing construction activities, such as those associated with excavating foundations, placing fill, trenching for utility systems, or grading the site for roads and staging areas. In particular, construction activities may disturb resources by exposing them to potential vandalism or causing them to be displaced from the original context. This could result in a significant impact on archaeological resources.

As detailed in Section 5.5.1.1, there are a number of federal and State regulations in place to protect archaeological resources within the EIR Study Area. Compliance with the State and federal regulations is intended to ensure that development would not result in adverse impacts to identified archaeological resources.

In addition, the proposed General Plan policies take a comprehensive approach to the protection of archaeological resources. The proposed Conservation, Open Space, and Working Lands Element includes policies and actions that would mitigate potential impacts on archaeological resources, including through the policies and actions under Goal COS-10, which aims to identify and preserve archaeological resources. For example, Policy COS-P10.1 encourages the preservation of sites and areas having identifiable archaeological significance. Policy COS-P10.5 requires applicants to engage a qualified consultant to prepare an evaluation of archaeological resources that may be present on a project site when warranted through the CEQA process. Policy COS-P10.6 requires that upon discovery of a significant archaeological artifact during construction, ground disturbing activities must halt within a 50-foot radius of the find until its significance can be determined by a qualified archeologist and appropriate protection and preservation measures developed. Policy COS-P10.7 requires significant archaeological resources to be either preserved onsite or adequately documented as a condition of removal, COS-A10.1 through COS-A10.4 support these policies, ensuring that surveys of existing and as-yet unknown resources are performed and updated regularly, and that planning tools, such as ordinances, design guidelines, context statements, and management plans are put in place to support implementation of the policies.

The proposed General Plan would not substantially alter any policies regarding the significance of impacts on archaeological resources. In addition, the proposed General Plan would not alter the significance of impacts on archaeological resources compared to the existing General Plan. Furthermore, the proposed General Plan would not modify the procedures or policies regarding how archaeological resources are identified or evaluated for historical significance, nor would it change how impacts on archaeological resources are assessed or mitigated under the General Plan.

As noted previously, the proposed General Plan includes multiple policies that attempt to mitigate impacts on archaeological resources through preservation and evaluation. The proposed General Plan also includes policies and actions that attempt to provide better documentation and improve the review of archaeological resources to protect known and as-yet unknown historic resources. Overall, the goals, policies, and actions in the proposed General Plan, in combination with existing federal and State regulations in place to protect archaeological resources within the EIR Study Area, would help to avoid adverse impacts to archaeological resources; however, they do not prevent ground-disturbing activities from occurring that could potentially impact archaeological resources. Therefore, this is considered a potentially significant impact.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects. However, projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could potentially impact archaeological resources in the EIR Study Area. Projects that would implement the proposed CAP strategies and actions would be required to be consistent with the proposed General Plan as well as federal and State regulations in place to protect archaeological resources within the EIR Study Area. However, even with implementation of the proposed General Plan goals, policies, and actions, the regulations would not fully reduce potential impacts of the proposed CAP on archaeological resources. Therefore, this is considered a potentially significant impact.

Level of Significance Before Mitigation: Impact 5.5-2 would be potentially significant.

Mitigation Measures

CUL-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County, the project applicant shall be required to retain an archaeologist that meets the Secretary of the Interior's Professionally Qualified Standards to conduct a cultural records search. If the records search identifies sensitivity for archaeological resources, the archaeologist shall be retained on an on-call basis. The project applicant shall defer to the recommendations of the consulting archaeologist, in consultation with culturally affiliated tribes and their designated monitors, regarding the evaluation and treatment of any cultural resources discovered on the project site.

Level of Significance After Mitigation: Impact 5.5-2 would be less than significant.

Impact 5.5-3: Implementation of the proposed project would not disturb any human remains, including those interred outside of dedicated cemeteries. [Threshold C-3]

Proposed General Plan

The EIR Study Area has been long inhabited by Native Americans. Therefore, Native American burials may be found in the future on sites where no record of such burials exists. Buried human remains that were not identified during previous research and field studies could be inadvertently unearthed during ground-disturbing activities, possibly resulting in damage to the remains. Accordingly, implementation of the proposed General Plan could potentially damage or destroy human remains in the EIR Study Area.

In the event that human remains are discovered during grading or construction activities, compliance with California Health and Safety Code Section 7050.5, which includes specific provisions for the protection of human remains in the event of discovery, would be required. The treatment of Native American human remains is regulated by Public Resources Code Section 5097.98, as amended by AB 2641, which addresses the disposition of Native American burials, protects remains, and appoints the NAHC to resolve disputes. In addition, California Health and Safety Code Section 7052 makes the willful mutilation, disinterment, or removal of human remains a felony. The Health and Safety Code is applicable to any project where ground disturbance would occur. The proposed Conservation, Open Space, and Working Lands Element of the General Plan includes policies and actions that would mitigate potential impacts on human remains. Specifically, in the event of the discovery of a burial, human remains, or suspected human remains, Policy POS-P11.11 requires excavation and grading activities to halt immediately, protection of the area surrounding the find, notification of the County Coroner, and compliance with California Health and Safety Code Section 7050.5.

The proposed General Plan policy guidance, in combination with existing federal and State regulations in place to protect human remains within the EIR Study Area, would ensure that the potential impacts of the proposed General Plan on human remains would be less than significant.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects. However, projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could potentially impact human remains in the EIR Study Area. Projects that would implement the proposed CAP strategies and actions would be required to be consistent with the proposed General Plan, California Health and Safety Code Section 7050.5, and Public Resources Code Section 5097.98. Compliance with these policies and regulations would reduce potential impacts of the proposed CAP on human remains to a less-than-significant level.

Level of Significance Before Mitigation: Impact 5.5-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Impact 5.5-4: Implementation of the proposed project could cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or a local register of historical resources, as defined in Public Resources Code Section 5020.1(k), or determined to be significant pursuant to the criteria set forth in Public Resources Code Section 5024.1(c). [Threshold TCR-1]

Proposed General Plan

TCRs are known to be present in the EIR Study Area. Ground-disturbing activities could occur on sites that may have sensitive TCRs. Grading and construction activities of undeveloped areas or redevelopment that requires more intensive soil excavation than needed for the existing development could potentially cause disturbance to TCRs by potentially unearthing previously unknown or unrecorded TCRs. Accordingly, implementation of the proposed General Plan could potentially cause a substantial adverse change in the significance of TCRs in the EIR Study Area.

In compliance with the tribal consultation requirements discussed, invitations for consultation were sent to representatives of the Native American tribes provided by the NAHC on January 15, 2021, and to the County's AB 52 Tribal Consultation List on October 5, 2023. The Confederated Villages of Lisjan Nation Tribe requested consultation and consulted with the County in November 2021 regarding the draft goals, policies, and actions of the General Plan Update. During this process, the Lisjan Tribe provided comments and edits for the General Plan that have been incorporated as new and modified policies and actions. Additionally, the tribe provided mitigation measures that have been incorporated as Mitigation Measures TCR-1 and TCR-2 and within Mitigation Measure CUL-1. No further consultation was requested from the Lisjan Tribe. The tribe also responded on October 25, 2023, to the updated consultation invitation, requesting information about the proposed project that was sent to the tribe. No additional consultation was requested.

As detailed in Section 5.5.1.1, there are a number of federal and State regulations in place to protect TCRs within the EIR Study Area. Compliance with the State and federal regulations is intended to ensure that development would not result in adverse impacts to TCRs. In addition, the proposed General Plan policies and actions take a comprehensive approach to the protection of TCRs. The proposed Conservation, Open Space, and Working Lands Element includes policies and actions that would mitigate potential impacts on TCRs, including policies and actions under Goal COS-11, which aims to preserve, restore, and enhance TCRs. For example, Policy COS-P11.1 encourages respecting and protecting TCRs. Policies COS-P11.2, COS-P11.3, COS-P11.4, COS-P11.5, and COS-P11.8 promote establishing and maintaining collaborative relationships with local Native American tribal representatives as well as consulting with culturally affiliated tribes to identify and protect TCRs. In addition, Policies COS-P11.9 and COS-P11.10 require avoiding impacts of development on Native American TCRs whenever possible and consulting with culturally affiliated tribes when developing mitigation measures (e.g., cultural resources treatment agreement between a developer and the appropriate tribe[s] that address tribal monitoring during earth-disturbing activities).

The goals, policies, and actions in the proposed General Plan and mitigation measures requested by the Lisjan Tribe, in combination with existing federal and State regulations in place to protect TCRs within the EIR Study Area, would reduce impacts to a less-than-significant level. Without mitigation, though, impacts would be potentially significant.

Proposed CAP

The proposed CAP is a policy document that does not include specific projects. However, projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could potentially impact TCRs in the EIR Study Area. Projects that would implement the proposed CAP strategies and actions would be required to be consistent with the proposed General Plan, applicable provisions of the Contra Costa County Ordinance Code, and SB 18 and AB 52. Compliance with the aforementioned policies and regulations and Mitigation Measures would reduce potential impacts of the proposed CAP on TCRs to a less-than-significant level, though impacts would be potentially significant before mitigation.

Level of Significance Before Mitigation: Impact 5.5-4 would be potentially significant.

Mitigation Measures

Implement Mitigation Measure CUL-1.

TCR-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County, the project applicant may be required to enter into a cultural resources treatment agreement with the culturally affiliated tribe. If required, the agreement would address the treatment and disposition of cultural resources and human remains that may be impacted as a result of the development as well as provisions for tribal monitors. If an agreement is required, the applicant must provide a copy of the cultural resources treatment agreement to the County prior to issuance of a grading or building permit. Regardless of whether an agreement is

required, if cultural resources are discovered during project construction, all work in the area shall cease and a qualified archaeologist and representatives of the culturally affiliated tribe shall be retained by the project sponsor to investigate the find and make recommendations as to treatment and mitigation.

TCR-2 Tribal monitors from the culturally affiliated tribe shall be allowed to monitor all grading, excavation, and ground-breaking activities, including archaeological surveys, testing, and studies for discretionary projects that are not exempt from CEQA and that would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County.

Level of Significance After Mitigation: Impact 5.5-4 would be less than significant.

5.5.5 Cumulative Impacts

As discussed in Section 4.4, *Assumptions Regarding Cumulative Impacts*, in Chapter 4, *Environmental Setting*, this Draft EIR analyzes the environmental impacts of projected development under the proposed General Plan. As a result, this Draft EIR addresses the cumulative impacts of the proposed General Plan within the county and Bay Area region, as appropriate. The area considered for cumulative impacts on cultural resources is the area within a one-half-mile radius for historical and archaeological resources. The area considered for cumulative impacts on TCRs is based on the local Native American tribe's culturally significant areas, which includes, but are not limited to, cultural landscapes and regions to specific heritage sites and other tribal cultural places.

In general, cumulative impacts to cultural resources sites would occur when a series of actions leads to the loss of a substantial type of site, building, or resource. For example, while the loss of a single historic building may not be significant to the character of a neighborhood or streetscape, continued loss of such resources on a project-by-project basis could constitute a significant cumulative effect. This is most obvious in historic districts, where destruction or alteration of a percentage of the contributing elements may lead to a loss of integrity of the district overall. Changes to the setting or character of an area, for example, by adding modern structures on all sides of a historically significant building, thus altering the aesthetics of the streetscape, would create a significant impact. Destruction or relocation of historic buildings would also significantly impact the setting. Cumulative projects could result in changes (e.g., demolition and new construction) to the built environment within a one-half-mile radius of historical resources. Cumulative projects could also entail ground disturbance, which has the potential to impact known or as of yet unidentified archaeological and TCRs. Implementation of the proposed General Plan, in combination with other cumulative projects in the area, has the potential to affect the same cultural resources and TCRs. Therefore, there would be a significant cumulative impact to cultural resources and TCRs.

The proposed General Plan contains goals, policies, and actions to minimize the effects of development on cultural resources in general. Projected development that could occur under the proposed General Plan would be required to comply with AB 52, PRC Section 5097.9–5097.991, and California Health and Safety Code Section 7050.5, which address accidental discoveries of archaeological sites and resources, including TCRs, as well as human remains. Thus, the proposed project's contribution to impacts on archaeological resources or TCRs would not be cumulatively considerable. However, demolition of historic structures cannot be mitigated,

and as such, the proposed project's contribution to impacts on built historic resources would be cumulatively considerable.

5.5.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, some impacts would be less than significant: Impact 5.5-3.

Without mitigation, these impacts would be **potentially significant**:

- **Impact 5.5-1:** Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.
- **Impact 5.5-2:** Implementation of the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines, Section 15064.5.
- **Impact 5.5-4:** Implementation of the proposed project could cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or a local register of historical resources, as defined in Public Resources Code Section 5020.1(k), or determined to be significant pursuant to the criteria set forth in Public Resources Code Section 5024.1(c).

5.5.7 Mitigation Measures

Impact 5.5-1

No feasible mitigation measures are available. Policies and actions in the proposed General Plan, including Policy COS-P10.5 requiring evaluation of historic resources for projects that may impact a resource listed in the County's Historic Resources Inventory, and Policy COS-P10.7 requiring significant historic resources to be either preserved on-site or adequately documented as a condition of removal, in addition to federal and State regulations, would reduce impacts to the extent possible and additional project-specific mitigation measures would be incorporated pursuant to future project-specific review.

Impact 5.5-2

CUL-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County, the project applicant shall be required to retain an archaeologist that meets the Secretary of the Interior's Professionally Qualified Standards to conduct a cultural records search. If the records search identifies sensitivity for archaeological resources, the archaeologist shall be retained on an on-call basis. The project applicant shall defer to the recommendations of the consulting archaeologist, in consultation with culturally affiliated tribes and their designated monitors, regarding the evaluation and treatment of any cultural resources discovered on the project site.

Impact 5.5-4

TCR-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County, the project applicant may be required to enter into a cultural resources treatment agreement with the culturally affiliated tribe. If required, the agreement would address the treatment and disposition of cultural resources and human remains that may be impacted as a result of the development as well as provisions for tribal monitors. If an agreement is required, the applicant must provide a copy of the cultural resources treatment agreement to the County prior to issuance of a grading or building permit. Regardless of whether an agreement is required, if cultural resources are discovered during project construction, all work in the area shall cease and a qualified archaeologist and representatives of the culturally affiliated tribe shall be retained by the project sponsor to investigate the find and make recommendations as to treatment and mitigation.

TCR-2 Tribal monitors from the culturally affiliated tribe shall be allowed to monitor all grading, excavation, and ground-breaking activities, including archaeological surveys, testing, and studies for discretionary projects that are not exempt from CEQA and that would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County.

5.5.8 Level of Significance After Mitigation

Impact 5.5-1

Development allowed by the proposed General Plan could result in new development affecting historic sites. Policies in the proposed General Plan, including COS-P10.5 and COS-P10.7, would help to identify potential impacts to historic resources for subsequent projects and would require documentation or preservation of such resources. Additionally, compliance with The Secretary of the Interior's Standards for the Treatment of Historic Properties for projects that would impact historic resources would also help to reduce impacts to less than significant. However, these measures do not prevent the reuse or modification of historic sites and project-specific analyses for future projects would be needed to ensure that impacts are less than significant. Therefore, at this programmatic-level, Impact 5.5-1 would be **significant and unavoidable**.

Impact 5.5-2

Development under the proposed project could impact undiscovered archaeological resources during ground disturbing activities. Mitigation Measure CUL-1 requires project applicants to retain a qualified archaeologist to monitor ground-disturbing activities for non-CEQA exempt projects that involve ground disturbance on previously disturbed sites or as directed by the County. This would ensure that potential resources are identified and protected. With implementation of Mitigation Measure CUL-1, Impact 5.5-2 would be *less than significant*.

Impact 5.5-4

Mitigation Measures TCR-1 through TCR-2 would ensure that tribal cultural resources would be properly handled if identified during development under the proposed project. Compliance with these measures would reduce impacts to tribal cultural resources to *less than significant*.

5.5.9 References

Grimmer, Anne. 2017. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*. https://www.nps.gov/orgs/1739/upload/treatment-guidelines-2017-part1-preservation-rehabilitation.pdf

ICF. 2019, January. *Contra Costa County General Plan Update: Cultural Resources Existing Conditions Report*. Appendix 5.5-1 to this Draft EIR.

See all additional references for this section in Appendix 5.5-1.

5.6 ENERGY

This section describes the potential energy impacts associated with the adoption and implementation of the proposed project. This section describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential energy impacts, and identifies proposed General Plan policies and feasible mitigation measures that could mitigate any potentially significant impacts.

5.6.1 Environmental Setting

Section 21100(b)(3) of the California Environmental Quality Act (CEQA) requires that an Environmental Impact Report (EIR) include a detailed statement setting for the mitigation measures proposed to minimize significant effects on the environment, including but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy. Appendix F of State CEQA Guidelines states that, to ensure that energy implications are considered in project decisions, the potential energy implications of a project shall be considered in an EIR, to the extent relevant and applicable to the project. Appendix F further states that a project's energy consumption and proposed conservation measures may be addressed, as relevant and applicable, in the project description, environmental setting, and impact analysis portions of technical sections, as well as through mitigation measures and alternatives.

In accordance with Appendices F and G of the State CEQA Guidelines, this EIR includes relevant information and analyses that address the energy implications of the proposed project. This section summarizes the proposed project's anticipated energy needs, impacts, and conservation measures. Information found herein, as well as related aspects of the proposed project's energy implications, are discussed in greater detail elsewhere in this EIR, including Sections 5.3, *Air Quality;* 5.8, *Greenhouse Gas Emissions*; and 5.16, *Transportation.*

5.6.1.1 REGULATORY BACKGROUND

Federal

Federal Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 was established in response to the 1973 oil crisis. The Act created the Strategic Petroleum Reserve, established vehicle fuel economy standards, and prohibited the export of U.S. crude oil (with a few limited exceptions). It also created Corporate Average Fuel Economy (CAFE) standards for passenger cars starting in model year 1978. The CAFE Standards are updated periodically to account for changes in vehicle technologies, driver behavior, and/or driving conditions.

The federal government issued new CAFE standards in 2012 for model years 2017 to 2025 that required a fleet average of 54.5 miles per gallon (MPG) for model year 2025. However, on March 30, 2020, the U.S. Environmental Protection Agency (USEPA) finalized updated CAFE and greenhouse gas (GHG) emissions standards for passenger cars and light trucks, covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021–2026. Under SAFE, the fuel economy standards will increase 1.5 percent per year compared to the 5 percent per year under the CAFE

standards established in 2012. Overall, SAFE requires a fleet average of 40.4 MPG for model year 2026 vehicles (85 Federal Register 24174 [April 30, 2020]).

On December 21, 2021, under direction of Executive Order (EO) 13990 issued by President Biden, the National Highway Traffic Safety Administration repealed SAFE Vehicles Rule Part One, which had preempted state and local laws related to fuel economy standards. In addition, on March 31, 2022, the National Highway Traffic Safety Administration finalized new fuel standards in response to EO 13990. Fuel efficiency under the standards proposed will increase 8 percent annually for model years 2024 to 2025 and 10 percent for model year 2026. Overall, the new CAFE standards require a fleet average of 49 MPG for passenger vehicles and light trucks for model year 2026, which would be a 10 MPG increase relative to model year 2021 (National Highway Traffic Safety Administration 2022).

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (Public Law 110-140) seeks to provide the nation with greater energy independence and security by increasing the production of clean renewable fuels; improving vehicle fuel economy; and increasing the efficiency of products, buildings, and vehicles. The Act sets increased CAFE standards; the Renewable Fuel Standard; appliance energy efficiency standards; building energy efficiency standards; and accelerated research and development tasks on renewable energy sources (e.g., solar energy, geothermal energy, and marine and hydrokinetic renewable energy technologies), carbon capture, and sequestration (USEPA 2022).

Energy Policy Act of 2005

Passed by Congress in July 2005, the Energy Policy Act includes a comprehensive set of provisions to address energy issues. This Act includes tax incentives for energy conservation improvements in commercial and residential buildings, fossil fuel production and clean coal facilities, and construction and operation of nuclear power plants, among other things. Subsidies are also included for geothermal, wind energy, and other alternative energy producers.

National Energy Policy

Established in 2001 by the National Energy Policy Development Group, the National Energy Policy is designed to help the private sector and state and local governments promote dependable, affordable, and environmentally sound production and distribution of energy for the future. Key issues addressed by the energy policy are energy conservation, repair and expansion of energy infrastructure, and ways of increasing energy supplies while protecting the environment.

Natural Gas Pipeline Safety Act of 1968

The Natural Gas Pipeline Safety Act of 1968 authorizes the U.S. Department of Transportation to regulate pipeline transportation of flammable, toxic, or corrosive natural gas and other gases as well as the transportation and storage of liquefied natural gas. The Pipeline and Hazardous Materials Safety Administration within the Department of Transportation develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.6 million-mile pipeline transportation system.

State

Warren-Alquist Act

Enacted in 1974, the Warren-Alquist Act created the California Energy Commission (CEC) in response to the energy crisis of the early 1970s and the state's unsustainable growing demand for energy resources. As discussed further below, the CEC's core responsibilities include advancing State energy policy, encouraging energy efficiency, certifying thermal power plants, investing in energy innovation, developing renewable energy, transforming transportation, and preparing for energy emergencies. The Warren-Alquist Act is updated annually to address current energy needs and issues, and its latest edition is from January 2023.

California Energy Commission

The CEC was created in 1974 as the State's principal energy planning organization in order to meet the energy challenges facing the state in response to the 1973 oil embargo. The CEC is charged with six basic responsibilities when designing State energy policy:

- Forecast statewide electricity needs.
- License power plants to meet those needs.
- Promote energy conservation and efficiency measures.
- Develop renewable energy resources and alternative energy technologies.
- Promote research, development, and demonstration.
- Plan for and direct the State's response to energy emergencies.

California Public Utilities Commission

In September 2008, the California Public Utilities Commission (CPUC) adopted the Long-Term Energy Efficiency Strategic Plan, which provides a framework for energy efficiency in California through the year 2020 and beyond. It articulates a long-term vision, as well as goals for each economic sector, identifying specific near-term, mid-term, and long-term strategies to assist in achieving these goals. This Plan sets forth the following four goals, known as Big Bold Energy Efficiency Strategies, to achieve significant reductions in energy demand (CPUC 2011):

- All new residential construction in California will be zero net energy (ZNE) by 2020;[1]
- All new commercial construction in California will be ZNE by 2030;
- Heating, ventilation, and air conditioning commonly referred to as "HVAC" will be transformed to ensure that its energy performance is optimal for California's climate; and
- All eligible low-income customers will be given the opportunity to participate in the low-income energy efficiency program by 2020.

[1] ZNE buildings are buildings in which the total amount of energy used on an annual basis is equal to or less than the amount of renewable energy created on the site.

With respect to the commercial sector, the Long-Term Energy Efficiency Strategic Plan notes that commercial buildings, which include schools, hospitals, and public buildings, consume more electricity than any other end-use sector in California. The commercial sector's five billion-plus square feet of space accounts for 38 percent of the state's power use and over 25 percent of natural gas consumption. Lighting, cooling, refrigeration, and ventilation account for 75 percent of all commercial electric use, while space heating, water heating, and cooking account for over 90 percent of gas use. In 2006, office, retail, and schools and colleges were in the top five facility types for electricity and gas consumption, accounting for approximately 10 percent of state's electricity and gas use (CPUC 2011).

The CPUC and CEC have adopted the following goals to achieve ZNE levels by 2030 in the commercial sector:

- **Goal 1**. New construction will increasingly embrace ZNE performance (including clean, distributed generation), reaching 100 percent penetration of new starts in 2030.
- **Goal 2.** 50 percent of existing buildings will be retrofit to ZNE by 2030 through achievement of deep levels of energy efficiency and with the addition of clean distributed generation.
- **Goal 3.** Transform the commercial lighting market through technological advancement and innovative utility initiatives.

Renewables Portfolio Standard

Senate Bills 1078, 107, X1-2, and Executive Order S-14-08

The California Renewables Portfolio Standard (RPS) Program was established in 2002 under Senate Bill (SB) 1078 (Sher) and 107 (Simitian). The RPS program required investor-owned utilities, electric service providers, and community choice aggregators to increase the use of eligible renewable energy resources to 33 percent of total procurement by 2020. Initially under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08 was signed in November 2008, which expanded the State's Renewable Energy Standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). The CPUC is required to provide quarterly progress reports on progress toward RPS goals. This has accelerated the development of renewable energy projects throughout the state. For year 2020, the three largest retail energy utilities provided an average of 43 percent of their supplies from renewable energy sources. Community choice aggregators provided an average of 41 percent of its supplies from renewable sources (CPUC 2021).

Senate Bill 350

Governor Jerry Brown signed SB 350 on October 7, 2015, which expanded the RPS by establishing a goal of 50 percent of the total electricity sold to retail customers in California per year to be from renewable sources by December 31, 2030. In addition, SB 350 included a goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also required the CPUC, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal. SB 350 also provided for the transformation of the California Independent System Operator (CAISO) into a regional organization to promote the development of regional

electricity transmission markets in the western states and to improve the access of consumers served by the CAISO to those markets, pursuant to a specified process.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, which replaces the SB 350 requirements, now requiring 50 precent renewable by 2026 and 60 percent by 2050. SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. The bill establishes an overall State policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resources shuffling to achieve the 100 percent carbon-free electricity target.

Senate Bill 1020

SB 1020 was signed into law on September 16, 2022. It requires renewable energy and zero-carbon resources to supply 90 percent of all retail electricity sales by 2035 and 95 percent by 2040. Additionally, SB 1020 requires all State agencies to procure 100 percent of electricity from renewable energy and zero-carbon resources by 2035.

Energy Efficiency

Appliance Efficiency Regulations

California's Appliance Efficiency Regulations contain energy performance, energy design, water performance, and water design standards for appliances (including refrigerators, ice makers, vending machines, freezers, water heaters, fans, boilers, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings) that are sold or offered for sale in California (California Code of Regulations [CCR] Title 20, Parts 1600–1608). These standards are updated regularly to allow consideration of new energy efficiency technologies and methods (CEC 2023a).

California Building Energy Code: Title 24, Part 6, Energy Efficiency Standards

Energy efficiency standards for new development were adopted by the California Energy Resource Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2022 (CCR Title 24, Part 6). Title 24, Part 6, *Building Energy Code* ("Energy Code") requires the design of building shells and building components to conserve energy. The standards are updated every 3 years and replace the preceding code cycle. The 2022 standards became effective and replaced the 2019 standards on January 1, 2023.

The Energy Code contains mandatory requirements, which are required for all new development and include standards covering space conditioning, water heating, cooking and furnace equipment, building insulation, lighting controls, electrical distribution, and solar readiness. In addition to the mandatory requirements, for a new development to demonstrate compliance with the Energy Code, it must demonstrate compliance with either the *Prescriptive Approach* or *Performance Approach*. The *Prescriptive Approach* contains various prescribed features, such as solar water heaters, solar panel arrays, and battery storage, depending on the building

occupancy types and location. For instance, the single-family and low-rise (three or fewer habitable stories) multifamily residential occupancy types would require a photovoltaic (solar) system but no battery storage under the prescriptive pathway, while high-rise (greater than three habitable stories) multifamily residential, grocery, office, financial institution, unleased tenant space, retail, school, warehouse, auditorium, convention center, hotel, motel, library, medical office building/clinic, restaurant, and theater occupancy types would require both solar and battery storage systems under the *Prescriptive Approach*.

Under the *Prescriptive Approach*, a new development's building design is called the "Standard Design Building," which represents the energy efficiency performance of that project should it include all prescribed features (e.g., solar, battery storage) with no additional energy efficiency features beyond what is required at minimum under the mandatory requirements and prescriptive pathway. A project may instead demonstrate compliance with the Energy Code using the *Performance Approach* without including prescriptive features like solar or battery storage; however, that building design must match or exceed the energy efficiency performance of the Standard Design Building—that is, what the building's energy efficiency performance would be if it were to include solar and battery storage. For example, if a project would be required to include solar and battery storage under the *Prescriptive Approach*, it can instead choose to comply with the *Performance Approach* and not include solar and battery storage so long as it can demonstrate that it would achieve the same energy efficiency performance as if solar and battery storage were included, as applicable.

California Building Code: Title 24, Part 11, Green Building Standards

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (CCR Title 24, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code (CBSC). It includes mandatory requirements for new residential and nonresidential buildings throughout California. CALGreen is intended to: 1) reduce GHG emissions from buildings; 2) promote environmentally responsible, cost-effective, healthier places to live and work; 3) reduce energy and water consumption; and 4) respond to the directives by the governor. The mandatory provisions of CALGreen became effective January 1, 2011, and were last updated in 2022. The 2022 CALGreen update, which was approved as part of the 2022 Energy Code, became effective on January 1, 2023, and provides updates to the residential and non-residential voluntary measures.

Overall, the Code reduces construction waste, makes buildings more efficient in the use of materials and energy, and reduces environmental impacts during and after construction. CALGreen contains requirements for construction site selection, stormwater control during construction, construction waste reduction, indoor water use reduction, materials selection, natural resource conservation, and site irrigation conservation, among other requirements. It provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. CALGreen also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency (CBSC 2022).

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR Section 1601–1608) were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. They contain energy performance, energy design, water performance, and water design standards for appliances (including refrigerators, ice makers, vending machines, freezers, water heaters, fans, boilers, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings) that are sold or offered for sale in California (CCR Title 20, Parts 1600–1608). These standards are updated regularly to allow consideration of new energy efficiency technologies and methods.

Off-Road Equipment and Transportation-Related Regulations

Assembly Bill 1493

California vehicle GHG emission standards were enacted under Assembly Bill (AB) 1493 (Pavley I). Pavley I is a clean-car standard that reduced GHG emissions from new passenger vehicles (i.e., light-duty auto to medium-duty vehicles) from 2009 through 2016 and was anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implemented the Pavley I Standards through a waiver granted to California by the USEPA. In 2012, the USEPA issued a Final Rulemaking that set even more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles. In January 2012, the California Air Resources Board (CARB) approved the Pavley Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combined the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions (CARB 2017).

Title 13, Chapter 9, Article 4.8, Section 2449

Section 2449 of the CCR, Title 13, Chapter 9, Article 4.8 was adopted on May 2, 2008, limiting non-essential idling of fleets to no more than five consecutive minutes at any location. This idling restriction applies to all vehicles in California with a diesel-fueled or alternative diesel-fueled off-road engine, unless a waiver provides sufficient justification that such idling is necessary.

Senate Bill 375

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the State's 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (i.e., it excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce vehicle miles traveled (VMT) and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPOs) in the state. The Association of Bay Area Governments (ABAG) is the MPO for the Bay Area region, which includes Contra Costa County. Pursuant to the recommendations of the Regional Transportation Advisory Committee (RTAC), CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

Executive Order N-79-20

On September 23, 2020, Executive Order N-79-20 was issued, which sets a time frame for the transition to zero-emissions (ZE) passenger vehicles and trucks in addition to off-road equipment. It directs CARB to develop and propose the following:

- Passenger vehicle and truck regulations requiring increasing volumes of new zero-emission vehicles (ZEV) sold in California toward the target of 100 percent of in-state sales by 2035.
- Medium- and heavy-duty vehicle regulations requiring increasing volumes of new ZE trucks and buses sold and operated in California toward the target of 100 percent of the fleet transitioning to ZEVs by 2045 everywhere feasible, and for all drayage trucks (i.e., short-haul transport, typically in an urban area) to be ZE by 2035.

On August 25, 2022, CARB adopted the Advanced Clean Cars II (ACC II) regulations that codify the EO goal of 100 percent of in-state sales of new passenger vehicles and trucks be ZE by 2035. Starting in year 2026, ACC II requires that 35 percent of new vehicles sold be ZE or plug-in hybrids.

Advanced Clean Fleets Regulation

In April 2023, CARB released the Advanced Clean Fleets (ACF) regulation to accelerate the transition to ZE medium- and heavy-duty vehicles (CARB 2023). In conjunction with the Advanced Clean Trucks (ACT) regulation, the ACF regulations help to ensure that medium- and heavy-duty ZEVs are brought to the market by requiring certain fleets to purchase ZEVs. The ACF ZEV phase-in approach, which provides initial focus where the best fleet electrification opportunities exist, sets clear targets for regulated fleets to make a full conversion to ZEVs and creates a catalyst to accelerate development of a heavy-duty public infrastructure network.

The ACF regulations cover four main elements:

- **Manufacturer sales mandate.** Manufacturers may sell only ZE medium- and heavy-duty vehicles starting in 2036.
- **Drayage fleets.** Beginning January 1, 2024, trucks must be registered in the CARB Online System to conduct drayage activities in California. Non-ZE "legacy" drayage trucks may register in the CARB Online System through December 31, 2023. Legacy drayage trucks can continue to operate through their minimum useful life. Beginning January 1, 2024, only ZE drayage trucks may register in the CARB Online System. All drayage trucks entering seaports and intermodal railyards would be required to be ZE by 2035.
- **High-priority and federal fleets.** High priority and federal fleets must comply with the Model Year Schedule or may elect to use the optional ZEV Milestones Option to phase ZEVs into their fleets:
  - ***Model Year Schedule:*** Fleets must purchase only ZEVs beginning 2024 and, starting January 1, 2025, must remove internal combustion engine vehicles at the end of their useful life as specified in the regulation.
  - ***ZEV Milestones Option (Optional):*** Instead of the Model Year Schedule, fleets may elect to meet ZEV targets as a percentage of the total fleet starting with vehicle types that are most suitable for electrification.

- **State and local agencies.** State and local government fleets, including city, county, special district, and State agency fleets, are required to ensure 50 percent of vehicle purchases are ZE beginning in 2024 and 100 percent are ZE by 2027. Small government fleets (those with 10 or fewer vehicles) and those in designated counties would start their ZEV purchase requirements beginning in 2027. Alternately, State and local government fleet owners may elect to meet ZEV targets using the ZEV Milestones Option. State and local government fleets may purchase either ZEVs or near-ZEVs, or a combination of ZEVs and near-ZEVs, until 2035. Starting in 2035, only ZEVs will meet the requirements.

The ACF regulations also establish requirements that transform the medium- and heavy-duty vehicle sector and demonstrate independent utility through achievement of the following objectives:

- Achieve criteria and GHG emissions reductions consistent with the goals identified in the State Implementation Plan (SIP) Strategy and Scoping Plan.
- Provide emissions reductions in disadvantaged communities (DAC), thereby supporting the implementation of AB 617 (Garcia, C., Chapter 136, Statutes of 2017).
- Support the goals of Executive Order N-79-20, which call for accelerated ZEV deployment with these targets:
  - 100 percent ZE drayage by 2035
  - 100 percent ZE trucks and buses where feasible by 2045
- Ensure requirements, such as ZEV deployment schedules and related infrastructure buildout, are technologically feasible, cost-effective, and support market conditions.
- Lead the transition away from petroleum fuels and towards electric drivetrains.
- Contribute towards achieving carbon neutrality in California pursuant to SB 100, and in accordance with Executive Order B-55-18.
- Mindfully set requirements to allow time for public ZE infrastructure buildout for smaller fleets or for regional haul applications who would be reliant on a regional network of public chargers.
- Ensure manufacturers and fleets work together to place ZEVs in service suitably and successfully as market expands.
- Establish a fair and level playing field among fleet owners.
- Ensure institutional capacity for CARB to manage, implement, and enforce requirements.

Energy Storage

California has set ambitious long-term goals for energy storage beyond 2026 to support its clean energy and climate goals. The State aims to reach 100 percent carbon-free electricity by 2045, which will require significant investment in renewable energy sources like wind and solar, as well as energy storage technologies, to balance the variability of these sources.

CAISO has a total energy storage capacity of more than 3,160 megawatts (MW) as of June 2022 (CAISO 2022). This includes both large-scale and distributed energy storage systems, such as batteries, pumped hydroelectric storage, and thermal storage. CAISO is responsible for managing the electricity grid for much of California, and it has set a target of adding 3,300 MW of additional energy storage capacity by 2024 to support the

integration of more renewable energy sources like wind and solar (CAISO 2022). As part of SB 100, load serving entities (LSEs) were required to procure no less than 1.3 gigawatts (GW) of energy storage capacity by 2020, and 3 GW by 2030. Additionally, the CPUC has established a target of 15 GW of energy storage capacity by 2030 (CPUC 2022).

The Integrated Resource Plan (IRP)

CAISO develops a coordinated grid management plan to integrate the generation and storage capacities of LSEs, called the Integrated Resource Plan (IRP). The IRP is a comprehensive planning document that outlines CAISO's forecasts for electricity demand, supply, and transmission needs over a 20-year planning horizon, as well as its strategies for integrating renewable energy resources and other grid services to meet those needs. The IRP is developed in collaboration with LSEs, regulators, and other stakeholders, and is updated periodically to reflect changes in the energy landscape and evolving policy goals. Overall, the IRP plays a critical role in ensuring the reliability and resilience of California's electricity grid as the state continues to transition to a cleaner and more sustainable energy system.

When an individual Battery Energy Storage (BES) facility or generation infrastructure (i.e., solar panels) comes online in California, it is typically included in the IRP through a process known as the Interconnection Queue. The Interconnection Queue is managed by the CAISO, which oversees the operation of the State's electricity grid.

The Interconnection Queue

The Interconnection Queue is an application process that functions as a waiting list of proposed electricity generation and storage projects that are seeking to connect to the grid. When a new BES facility or generation infrastructure is proposed, the developer submits an application to CAISO to request an interconnection to the grid. CAISO evaluates the application to ensure that the facility meets technical and operational requirements, such as voltage regulation and frequency response, and that it can be integrated effectively into the grid.

Once the BES facility or generation infrastructure is approved by CAISO, it is assigned a point of interconnection on the grid, and its output is added to the IRP as a resource that can provide electricity and other grid services, such as frequency regulation or ramping support. The facility is then dispatched by CAISO based on its bids into the day-ahead and real-time electricity markets, and its output is used to help balance supply and demand on the grid in real-time.

Overall, the Interconnection Queue is an important mechanism for integrating new BES facilities and other electricity resources into the California grid, and for ensuring that the grid remains reliable and resilient as the State continues to transition to a cleaner and more sustainable energy system.

Regional

Plan Bay Area 2050

The Metropolitan Transportation Commission (MTC) and ABAG adopted *Plan Bay Area 2050* on October 21, 2021 (ABAG/MTC 2021a). *Plan Bay Area 2050* provides transportation and environmental strategies to continue to meet the regional transportation-related GHG reduction goals of SB 375. Under the *Plan Bay Area 2050* strategies, just under half of all Bay Area households would live within one half-mile of frequent transit by 2050, with this share increasing to over 70 percent for households with low incomes. Transportation and environmental strategies that support active and shared modes, combined with a transit-supportive land use pattern, are forecasted to lower the share of Bay Area residents that drive to work alone from over 50 percent in 2015 to 36 percent in 2050. GHG emissions from transportation would decrease significantly as a result of these transportation and land use changes, and the Bay Area would meet the State mandate of a 19-percent reduction in per-capita emissions by 2035 — but only if all strategies are implemented (ABAG/MTC 2021a).

To achieve MTC's/ABAG's sustainable vision for the Bay Area, the *Plan Bay Area* land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities. An overarching goal of the regional plan is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle, VMT, and associated GHG emissions reductions. Several PDAs have been designated in the EIR Study Area (ABAG/MTC 2021b).

Bay Area Clean Air Plan

The Bay Area Air Quality Management District (BAAQMD) adopted the 2017 Clean Air Plan, Spare the Air, Cool the Climate on April 19, 2017. The 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use (BAAQMD 2017).

A comprehensive multipollutant control strategy has been developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, toxic air contaminants, and GHG from a full range of emission sources. These control measures cover the following sectors: (1) stationary (industrial) sources; (2) transportation; (3) energy; (4) agriculture; (5) natural and working lands; (6) waste management; (7) water; and (8) super-GHG pollutants. Overall, the proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of "super-GHGs" such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (i.e., gasoline, diesel, and natural gas).
  - Increase efficiency of the energy and transportation systems.
  - Reduce demand for vehicle travel and high-carbon goods and services.
- Decarbonize the energy system.
  - Make the electricity supply carbon-free.
  - Electrify the transportation and building sectors.

Local

Contra Costa County Congestion Management Program

The Contra Costa Transportation Authority (CCTA) is Contra Costa County's designated Congestion Management Agency (CMA). It is responsible for implementing programs to ensure traffic levels remain manageable. As the CMA, CCTA is in charge of coordinating land use, air quality, and transportation planning among local jurisdictions.

The Congestion Management Program (CMP) outlines transportation demand management efforts and a land use evaluation program – both of which are built on CCTA's Growth Management Program established by Measure J. The CMP strives to enhance sensitivity to the environment, improve air quality, reduce GHG emissions, and promote sustainable communities (CCTA 2021).

Contra Costa County Ordinance Code

Chapter 718-12, *Solar Energy Systems*, of the Contra Costa County Ordinance Code requires a building permit to install a solar energy system. The County has an expedited, streamlined permitting process that applies for small residential rooftop solar energy systems, as described in Section 718-14.004, *Review of Applications for Small Residential Rooftop Solar Energy Systems*.

Chapter 88-3, *Wind Energy Conversion Systems*, of the Contra Costa County Ordinance Code promotes the effective and efficient use of wind energy conversion systems, regulates their placement, and establishes safeguards to ensure public health, safety, and welfare.

Chapter 88-30, *Solar Energy Facilities*, of the Contra Costa County Ordinance Code regulates the establishment of commercial solar energy facilities.

Ordinance No. 2022-02, *All-Electric Ordinance (New Construction)*, amends the 2019 California Energy Code to require the following building types to be all-electric:

- Residential (including single-family and multi-family buildings)
- Detached Accessory Dwelling Units
- Hotel
- Office
- Retail

The County Ordinance Code includes other various directives pertaining to energy, including:

- Division 76, *Electrical Code*, adopts the 2022 California Electrical Code as the rules, regulations, and standards within the county as to all matters except as changes, additions, and deletions set forth in the County Ordinance Code.
- Division 74, *Building Code*, adopts the 2022 California Building Code, the 2022 California Residential Code, the 2022 California Existing Building Code, and the 2022 California Energy Code as amended by the changes, additions, and deletions set forth in the County Ordinance Code. This includes local amendments regarding electric vehicle charging and space design for different types of new constructions.

5.6.1.2 EXISTING CONDITIONS

Energy Providers

Two energy providers, Marin Clean Energy (MCE) and Pacific Gas and Electric Company (PG&E), serve the EIR Study Area. Both entities provide electrical services to the unincorporated county. PG&E is the sole provider for natural gas services. PG&E provides distribution of electrical services to the county, while MCE provides the electrical commodity for its customers. MCE works in conjunction with PG&E to provide electricity to consumers through the use of PG&E's distribution infrastructure and network. Both utilities are regulated by CPUC.

MCE

As of October 2023, the majority of Contra Costa County residents (i.e., residents in Concord, Danville, Martinez, Moraga, Oakley, Pinole, Pittsburg, Pleasant Hill, San Ramon, Walnut Creek, Lafayette, Richmond, San Pablo, El Cerrito, and the unincorporated areas) are buying electricity from MCE, a not-for-profit clean energy provider (Contra Costa 2023). On March 24, 2020, the Board of Supervisors voted to go Deep Green 100 percent renewable (i.e., all power which customers buy comes from 100 percent non-polluting wind and solar power) with MCE for the majority of the County's accounts (MCE 2020).

Customers also have the option of selecting MCE's Light Green, which provides 60 percent renewable electricity (MCE 2023). Conversely, customers have the option to opt out of MCE renewable energy sources and receive their energy service from PG&E. PG&E is responsible for maintaining transmission lines, handling customer billing, and responding to new service requests and emergencies. MCE determines the power source or electric generation, while PG&E continues to deliver the electricity, maintain power lines, provide repairs, and send customers a monthly bill within the MCE service area.

PG&E

PG&E is a publicly traded utility company that generates, purchases, and transmits energy under contract with the CPUC. Its service territory is 70,000 square miles in area, roughly extending north to south from Eureka to Bakersfield, and east to west from the Sierra Nevada range to the Pacific Ocean.

In 2021, roughly half of PG&E's energy generated came from renewable resources including biopower, geothermal, small hydroelectric, solar, and wind power. PG&E's portfolio consists of 7 percent natural gas, 39 percent non-emitting nuclear generation, 4 percent large hydroelectric facilities, and 50 percent eligible renewable energies, which includes small hydroelectric and wind (PG&E 2023c).

Electricity

The electricity distribution system of PG&E consists of 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines (PG&E 2023a). PG&E owns and maintains above and below ground networks of electric and gas transmission and distribution facilities throughout the unincorporated county.

PG&E electricity is generated by a combination of sources such as nuclear power plants and hydro-electric dams, as well as newer sources of energy, such as wind turbines and photovoltaic plants or "solar farms." "The Grid," or bulk electric grid, is a network of high-voltage transmission lines, linked to power plants within the PG&E system. The distribution system, made up of lower voltage secondary lines, is at the street and neighborhood level, and consists of overhead or underground distribution lines, transformers, and individual service "drops" that connect to the individual customer.

Natural Gas

PG&E gas transmission pipeline systems serve approximately 4.5 million gas customers in northern and central California (PG&E 2023a). The system is operated under an inspection and monitoring program. The system operates in real time on a 24-hour basis, and includes leak inspections, surveys, and patrols of the pipelines. PG&E also adopted the Pipeline 2020 program, which aims to modernize critical pipeline infrastructure, expand the use of automatic or remotely operated shut-off valves, catalyze development of next-generation inspection technologies, develop industry-leading best practices, and enhance public safety partnerships with local communities, public officials, and first responders. Total natural gas consumption in PG&E's service area was 4,493,020,712 kilo-BTU (KBTU) in 2021 (CEC 2023b).

Electricity and Natural Gas

Electricity is quantified using kilowatts (kW) and kilowatt-hours (kWh). A kW is a measure of 1,000 watts of electrical power and a kWh is a measure of electrical energy equivalent to a power consumption of 1,000 watts for one hour. The kWh is commonly used as a billing unit for energy delivered to consumers by electric utilities. According to the CEC's "Tracking Progress" regarding statewide energy demand, total electric energy usage in California was 277,764 gigawatt hours in 2021 (CEC 2021b). A gigawatt is equal to one million kilowatts.

Natural gas is measured in therms. A therm is a measurement of the amount of heat energy in natural gas, equal to 100,000 British thermal units (BTUs). The volumetric billing unit used for natural gas delivered to customers is typically expressed in hundreds of cubic feet (Ccf)—approximately 0.01 therm per Ccf—or thousands of cubic feet (Mcf)—approximately 10.37 therms per Mcf (USEIA 2023).

The existing electricity and natural gas demand in Contra Costa County is shown in Table 5.6-1, *Estimated Existing Electricity and Natural Gas Demand.*

Table 5.6-1 Estimated Existing Electricity and Natural Gas Demand

Land Use	Electricity Usage (kWh per year)	Natural Gas Usage (Therms per year)
Residential	293,561,300	30,100,640
Nonresidential	626,049,910	13,784,410
Total	**919,611,210**	**43,885,050**

Source: Natural gas and electricity use for residential and nonresidential land uses in the county were modeled based on data provided by PG&E and MCE as part of the proposed CAP (Appendix 5.8-1).
Note: Electricity total makes use of a five-year (2016–2020) annual electricity consumption average based on data provided by PG&E and MCE.

Propane

Liquefied petroleum gas (LPG), or propane, is a mixture of hydrocarbon gases predominantly composed of propane and butane and is used as an alternative source of fuel. Propane is commonly used for residential and commercial heating, cooking, transportation, agriculture, industrial processes, power generation, refrigeration, and air conditioning. Within Contra Costa County, propane suppliers include Suburban Propane, AmeriGas, US Alloys, Pacific States Petroleum, and Allied Propane Services, which generally supply propane for residential uses. Nonresidential propane consumption is not a substantial contribution to propane consumption in the unincorporated county.

The existing propane demand in Contra Costa County is shown in Table 5.6-2, *Estimated Existing Propane Demand.*

Table 5.6-2 Estimated Existing Propane Demand

Land Use	Propane Usage (gallons per year)	Propane Usage (MMBTU per year)
Residential	1,021,340	92,942
Total	**1,021,340**	**92,942**

Source: Activity data sourced as part of the proposed CAP (see Appendix 5.3-1 & Appendix 5.8-1).
Note: Only residential propane demand was evaluated as part of the proposed CAP.

Transportation Energy

California is among the top producers of petroleum in the country, with crude oil pipelines throughout the state connecting to oil refineries in the Los Angeles, San Francisco Bay, and Central Valley regions. In addition to producing petroleum, California is also one of the top consumers of fuel for transportation. California's transportation sector accounted for approximately 35 percent of California's total energy demand in 2020, amounting to approximately 2,355.5 trillion BTUs (USEIA 2020a). In addition, in 2020, California's transportation sector consumed approximately 433 million barrels of petroleum fuels (USEIA 2020b).

According to the CEC, California's 2021 fuel sales were approximately 13,818 million gallons of gasoline and 3,744 million gallons of diesel (CEC 2022). In Contra Costa County, approximately 374 million gallons of gasoline and 28 million gallons of diesel fuel were sold in 2021 (CEC 2022).

Alternative fuels for the transportation sector, such as hydrogen, biodiesel, and electricity, are used to reduce the demand of petroleum. Use of these fuels is encouraged through statewide regulations and plans, including the Low Carbon Fuel Standard (LCFS) and SB 32. In particular, use of electricity within the transportation sector has become more prominent. Electric and plug-in hybrid vehicles may rely directly on electricity from

the power grid. In addition, emerging technology such as fuel cells are currently being explored to use electricity generated from the vehicle to power motors. California currently has 14,132 electric vehicle charging stations, with approximately 37,970 charging ports across all station locations (USDE 2023).

Table 5.6-3*, Existing Transportation-Related Annual Fuel Usage,* shows the fuel usage associated with VMT currently generated in the EIR Study Area under existing baseline conditions based on fuel usage data obtained from EMFAC2021, Version 1.0.1, and VMT data provided by Fehr and Peers (see Appendix 5.16-1, *Transportation Data,* of this Draft EIR). VMT is based on vehicle trips beginning and ending in the county and from external/internal trips (i.e., trips that either begin or end in the county).

Table 5.6-3 Existing Transportation-Related Annual Fuel Usage

	Gas		Diesel		Compressed Natural Gas		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
Existing Baseline	1,055,664,330	46,151,714	62,129,682	7,412,023	1,070,505	213,066	18,046,572	6,503,224

Source: EMFAC2021, version 1.0.1.
Note: VMT based on daily VMT provided by Fehr and Peers. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008).

5.6.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

E-1 Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

E-2 Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

E-3 Require or result in the relocation or construction of new or expanded energy facilities, the construction or relocation of which could cause significant environmental effects.

5.6.3 Programs, Plans, and Policies

5.6.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to energy impacts. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Policy LU-P3.7:** Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.

- **Action LU-A4.1:** Amend the County Ordinance Code to include requirements for Low-Impact Development, use of low-carbon concrete, water and energy conservation, reclaimed water, renewable energy use, green building, and other measures that reduce the environmental impacts of development, based on the best available science.

Transportation Element

- **Policy TR-P1.3:** Ensure emerging transportation technologies and travel options, such as autonomous and ZEV's and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.
- ***Policy TR-P1.4:*** *Reduce single-occupant vehicle usage, at a minimum using strategies defined in the TDM Ordinance.*
- **Policy TR-P1.11:** Support transitioning all on-road vehicles, including personal vehicles and business, government, and public transit fleets, to electric power from renewable sources or other zero-emission fuels.
- ***Policy TR-P1.13:*** *Require designs for new parking facilities to incorporate ZEV charging/fueling infrastructure and maximize opportunities for adaptive reuse.*
- **Policy TR-P2.3:** Require installation of or provide energy-efficient street lighting to improve public safety and comfort in urbanized areas. Prioritize installation in Impacted Communities, particularly at parks, transit stops, alleyways, bike and pedestrian paths, trails, and other appropriate areas, consistent with community preferences.
- **Policy TR-P4.7:** Encourage walkability and safety by streamlining implementation of traffic-calming measures through the Neighborhood Traffic Management Program.
- **Policy TR-P5.2:** Coordinate with Caltrans to provide safe and comfortable highway interchange crossings for people of all ages and abilities who walk, bike, or use micromobility.
- **Policy TR-P5.7:** Encourage walking, bicycling, and micromobility as the travel modes of choice for short to medium-length trips, such as trips to schools, parks, transit stops, local shopping areas, and neighborhood services.

Conservation, Open Space, and Working Lands Element

- ***Policy COS-P7.1:*** *Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and recycled water, where available.*

- **Goal COS-14:** Increased generation of and reliance on renewable, sustainable, and zero-carbon energy and reduced energy use.
  - **Policy COS-P14.1:** Implement Climate Action Plan strategies to improve energy efficiency and conservation, promote carbon-free energy sources, and reduce energy-related GHG emissions.
  - **Policy COS-P14.2:** Partner with regional and State agencies (e.g., California Public Utilities Commission, California Energy Commission, and ABAG/MTC) to support energy efficiency and renewable energy planning efforts.

- **Policy COS-P14.3:** Support distributed electricity generation, including development of microgrids, renewable energy sources, storage capacity, and associated technologies. Encourage these throughout urban areas, and in nonurban areas when significant environmental impacts can be avoided or successfully mitigated.
- **Policy COS-P14.5:** Support development of energy recovery projects (e.g., methane recovery from landfills and wastewater treatment plants).
- **Policy COS-P14.6:** Support efforts to convert existing buildings to be low-carbon or carbon-neutral.
- **Policy COS-P14.7:** Encourage installation of battery storage systems in new and existing buildings, especially buildings with solar energy systems and buildings that provide essential community services.
- ***Policy COS-P14.8:*** *Design and construct new County facilities to be zero net energy to the extent feasible.*
- **Policy COS-P14.9:** Work with energy service providers and the Bay Area Regional Energy Network to encourage property owners to participate in weatherization, education, rate incentive, and other programs and measures to improve energy efficiency in existing buildings.
- **Policy COS-P14.10:** Require replacement and new water heaters and space heating and cooling to be electric if the building electric panel has sufficient capacity in accordance with Bay Area Air Quality Management District Regulation 9, Rule 4, and Regulation 9, Rule 6.
- **Action COS-A14.2:** Amend County Ordinance Code Division 88, Special Land Uses, to consolidate Chapters 88-3 and 88-30 governing wind energy conversion systems and solar energy facilities, respectively, into a new renewable energy chapter, with added provisions related to microgrids and battery energy storage systems.
- **Action COS-A14.3:** Amend County Ordinance Code Chapter 88-3 – Wind Energy Conversion Systems to require that decommissioned wind farms be returned to a condition consistent with the natural environment in the area at the time of decommissioning, rather than a return to pre-project condition. The following issues must be specifically addressed:
  - Unnecessary and poorly constructed roads that are sources of erosion.
  - Remaining turbine foundations/footings and underground conduit.
  - Abandoned equipment yards, turbine components, and other debris.
- **Action COS-A14.4:** Consider adopting new or modified reach codes that exceed the California Building Standards Code to require the use of lower-carbon intensive energy sources, to achieve higher feasible levels of energy conservation and efficiency, and to achieve lower feasible levels of GHG emissions.
- **Action COS-A14.5:** Maintain, update, publicize, and enforce the County Ordinance Code Title 7 – Building Regulations amendment requiring new residential buildings, hotels, offices, and retail to be all-electric. Evaluate the feasibility of including other building types as appropriate.
- **Action COS-A14.6:** Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy.

- **Action COS-A14.9:** Ensure County-led and supported retrofit programs incentivize and prioritize conversion of buildings built before 1980 and emphasize assistance to owners of properties that are home to very low-, low-, and moderate- income residents or located in Impacted Communities, as permitted by available funding.
- **Action COS-A14.10:** Support legislative efforts to establish a green bank able to equitably finance sustainability projects, including renewable energy, energy efficiency, and green infrastructure, for residential and commercial customers.

Health and Safety Element

- ***Policy HS-P1.8:*** *Require new or expanded commercial and industrial projects exceeding 25,000 square feet of gross floor area to be near zero-emissions (NZE) operations, including the facilities themselves and the associated fleets. Require all necessary measures, such as the following, to achieve NZE:*
  - *a) Reduce on-site energy consumption and increase on-site energy generation and energy storage.*
  - *b) Provide adequate on-site ZE vehicle-capable parking for all anticipated truck traffic to prevent idling and off-site queuing.*
  - *c) Provide electrified loading docks with receptacles allowing plug-in of refrigerated trailers.*
  - *d) Use heavy-duty trucks that are model year 2014 or later and expedite a transition to ZE trucks by establishing a clear timeline for electrification of trucks as they become commercially available. Ensure contracts with motor carriers include air quality incentives or requirements, such as providing incentives to fleets that meet United States Environmental Protection Agency (EPA) SmartWay standards or requiring use of ZE or near NZE trucks.*
  - *e) Use a "clean fleet" of delivery vehicles as they become commercially available, but no later than 2025.*
  - *f) Use ZE yard equipment, such as forklifts, pallet trucks and jacks, and stackers.*
  - *g) Implement practices to control and remove fugitive dust and other contaminants from paved areas.*

  Uses with fewer than five vehicles domiciled on-site are exempt from this policy.
- **Policy HS-P3.2:** Facilitate carbon-neutral development projects and communities that support a circular economy, net-zero-emission modes of transportation, reliable and renewable energy resources, energy-efficient buildings, zero waste, water efficiency and conservation, green infrastructure, soil conservation, and a system of natural and working lands that support carbon sequestration and climate resilience.

5.6.3.2 PROPOSED CLIMATE ACTION STRATEGIES AND ACTIONS

The following proposed Climate Action Plan (CAP) strategies and actions pertain to energy:

Clean and Efficient Built Environment (BE)

Strategy BE-1: Require and incentivize new buildings or additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

Strategy BE-1 Actions:

- Maintain, update, publicize, and enforce the County Ordinance Code Title 7 – Building Regulations amendment requiring new residential buildings, hotels, offices, and retail to be all-electric. Evaluate the feasibility of including other building types as appropriate.
- Design and construct new County facilities to be zero net energy to the extent feasible.
- Study the feasibility of establishing a low-carbon concrete requirement for all new construction and retrofit activities and consider additional strategies to reduce embedded carbon in construction materials. The intent is to determine what the County can and should do to support or exceed State requirements for net-zero emissions for cement use by 2045.
- Promote additional sustainable building strategies and designs, including small and "tiny" homes, to project applicants as site appropriate. Consider requiring additional sustainable features as a condition of approval, including reuse of materials to minimize embedded carbon.

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated county, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-neutral fuels.

Strategy BE-2 Actions:

- Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy.
- Require replacement and new water heaters and space heating and cooling systems to be electric if the building electric panel has sufficient capacity in accordance with BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6
- Create a detailed roadmap to convert existing homes and businesses to use low- or zero-carbon appliances. The roadmap should include steps to support converting buildings to rely on low- or zero-carbon energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants.
- Ensure County-led and supported retrofit programs incentivize and prioritize conversion of buildings built before 1980 and emphasize assistance to owners of properties that are home to very low-, low-, and moderate- income residents and/or located in Impacted Communities, as permitted by available funding.
- In partnership with MCE and BayREN, continue to support voluntary home and business energy efficiency retrofits, including all-electric measures.
- Facilitate participation by homes and businesses in demand response programs.
- Continue to conduct energy and water tracking activities, audits, and upgrades of County facilities, including conversion of feasible County facilities to all-electric space and water heating.
- Implement requirements for cool roofs and light-colored, non-reflective permeable paving materials as part of retrofit, repair, and replacement activities, using recycled materials or other materials with low embedded carbon as feasible and as established by the Building Standards Code.

Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

Strategy BE-3 Actions:

- Require new commercial parking lots with 50 or more spaces to mitigate heat gain through installation of shade trees, solar arrays, or other emerging cooling technologies. Prioritize the use of solar arrays where feasible and appropriate.
- Work with MCE to increase enrollment, especially in the Deep Green tier.
- Continue to enroll all eligible, non-solar-equipped County facility electricity accounts in MCE territory in the Deep Green tier.
- Pursue implementation of recommendations of the 2018 Renewable Resource Potential Study.
- Evaluate the least-conflict feasible locations for stand-alone battery storage systems and modify land use regulations to enable such use in these locations.

No Waste Contra Costa (NW)

Strategy NW-4: Reduce emissions from landfill gas.

Strategy NW-4 Actions:

- Encourage efforts at Acme, Keller Canyon, and West Contra Costa landfills to install or enhance existing methane capture technology and associated monitoring systems with a goal of increasing the methane capture rate to the greatest extent feasible.
- Explore opportunities for partnering with agricultural and industrial operations to generate energy from methane gas generated by their ongoing activities.
- Support landfill operators in efforts to transition away from landfill gas flaring.

Reduce Water Use and Increase Drought Resilience (DR)

Strategy DR-1: Reduce indoor and outdoor water use.

Strategy DR-1 Actions:

- Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and recycled water, where available.
- Require homes and businesses to install water-efficient fixtures at time of retrofit activities, in accordance with the California Building Standards Code.
- Continue to enforce the Water Efficient Landscaping Ordinance and encourage the use of native and drought-tolerant landscaping for exempt residential and commercial landscapes through partnership with local and regional water agencies and other organizations.
- Partner with water and wastewater service providers, Groundwater Sustainability Agencies, irrigation districts, and private well owners to increase participation in water conservation programs countywide.
- Identify opportunities for graywater use in public spaces and implement them as feasible.

- Promote the installation of composting toilets at appropriate County facilities in locations without wastewater service.

Strategy DR-2: Ensure sustainable and diverse water supplies.

Strategy DR-2 Actions:

- Require new development to demonstrate the availability of a safe, sanitary, and environmentally sound water delivery and wastewater treatment systems with adequate capacity.
- Require the use of permeable surfaces for new or reconstructed hardscaped areas.
- Work with water suppliers to expand recycled water systems as feasible, including considering additional treatment to allow for additional recycled water uses.

Clean Transportation Network (TR)

Strategy TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit to travel within, to, and from the county.

Strategy TR-1 Actions:

- Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report and Action Plan; Active Transportation Plan; and equity-focused plans, programs, and policies.
- Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities.
- Work with CCTA to fill in gaps in the countywide Low Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bike facilities.
- Support efforts to expand the service area and frequency of regional transit agencies, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT.
- Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance.
- Maintain in place and enforce a Transportation Demand Management (TDM) Ordinance that reflects best practices, and, at a minimum, conforms to Contra Costa Transportation Authority's adopted model TDM ordinance or resolution.
- Secure additional funding for the maintenance and expansion of bicycle and pedestrian infrastructure improvements. Support efforts to obtain additional funding to maintain and expand public transit operations and infrastructure improvements.
- Support CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions.

- Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.

Strategy TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

Strategy TR-2 Actions:

- Require new County vehicles to be zero emission to the extent a viable vehicle is available on the market, that charging or zero-emission fueling equipment is conveniently located where the vehicle will be stored, and as required by the Advanced Clean Fleet regulations, with the goal that all County vehicles will be zero-emission by 2035.
- Install electric vehicle charging equipment and other infrastructure needed to support the transition to a zero-emission County fleet at County facilities. Consider the appropriate locations, number, and capacity of infrastructure to facilitate the transition of the County fleet to zero-emission vehicles.
- Work with property owners and other potential partners to pursue installation of zero-emission vehicle charging stations in and near multifamily dwelling units.
- Update off-street parking ordinance to include a requirement for zero-emission vehicle charging infrastructure. Consider including incentives for developers to exceed minimum requirements (i.e., density bonus).
- Increase installation of electric vehicle charging stations for all vehicle types, including bicycles and scooters, at public facilities, emphasizing increased installation in Impacted Communities.
- In partnership with regional agencies, explore providing subsidies for households making less than the area median income to purchase or lease zero-emission vehicles and associated infrastructure.
- Pursue fees and regulatory efforts to convert transportation network company (TNC), taxi, and similar car-hire services to zero-emission vehicles.
- Work with BAAQMD and other regional agencies to convert off-road equipment to zero-emission clean fuels.
- Work with contractors, fleet operations, logistics companies, and other operators of heavy-duty vehicles to accelerate the transition to zero-emission heavy-duty vehicles.
- Work with Public Works to pursue the use of renewable natural gas (sourced from recovered organic waste) for transportation fuel, electricity, or heating applications in cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available.
- Support implementation of the Contra Costa County Electric Vehicle Readiness Blueprint.

5.6.4 Environmental Impacts

5.6.4.1 METHODOLOGY

To determine whether the proposed project would result in wasteful, inefficient, or unnecessary consumption of energy resources, this analysis uses the guidance provided in Appendix F of the CEQA Guidelines as well as the analytical precedent set by *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168).

According to Appendix F of the CEQA Guidelines, the goal of conserving energy is translated to include decreasing overall per capita energy consumption; decreasing reliance on fossil fuels such as coal, natural gas, and oil; and increasing reliance on renewable energy sources. In *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168), the Appellate Court concluded that the analysis of wasteful, inefficient, and unnecessary energy consumption was not adequate because it did not consider whether additional renewable energy features could be added to the project.

The proposed project would be considered to result in a potentially significant impact if it would result in wasteful, inefficient, or unnecessary consumption of energy resources. Considering the guidance provided by Appendix F of the CEQA Guidelines and the Appellate Court decision in *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168), the proposed project would be considered to result in wasteful, inefficient, or unnecessary consumption of energy resources if it would conflict with the following energy conservation goals:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas, or oil; and
- Increasing reliance on renewable energy sources.

The following is a summary of the assumptions used for this energy analysis:

- **On-Road Transportation.** Fuel use was based on Origin-Destination Method VMT provided by Fehr and Peers in the unincorporated county (see Section 5.16, *Transportation*). The VMT provided includes the full trip length for land uses in the county (origin-destination approach) and 50 percent of the trip length for external-internal/internal-external trips, consistent with the recommendations of CARB's Regional Targets Advisory Committee.
- **Energy (Natural Gas and Electricity).** Emissions associated with natural gas and electricity use for residential land uses in the county were modeled based on data provided by PG&E and MCE as part of the CAP Update (Appendix 5.3-1 to this Draft EIR). Propane use was approximated for residential use only as part of CAP Update. Forecasts are adjusted for increases in population in the county based on the energy forecast with State actions conducted for the CAP Update.

Impact 5.6-1: Implementation of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

Proposed General Plan

Short-Term Construction Impacts

Development projects constructed under the proposed General Plan would create temporary demands for electricity. Natural gas is not generally required to power construction equipment, and therefore is not anticipated during construction phases. Electricity use would fluctuate according to the phase of construction. Additionally, it is anticipated that most electric-powered construction equipment would be hand tools (e.g., power drills, table saws, compressors) and lighting, which would result in minimal electricity usage during construction activities.

Construction of development projects facilitated by the proposed General Plan would also temporarily increase demands for energy associated with transportation. Transportation energy use depends on the type and number of trips, VMT, fuel efficiency of vehicles, and travel mode. Energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that would use diesel fuel or gasoline. The use of energy resources by these vehicles would fluctuate according to the phase of construction and would be temporary. It is anticipated that most off-road construction equipment, such as those used during demolition and grading, would be gas or diesel powered. In addition, all operation of construction equipment would cease on completion of project construction.

Furthermore, the construction contractors would be required to minimize nonessential idling of construction equipment during construction in accordance with the CCR Title 13, Chapter 9, Article 4.8, Section 2449. Such required practices would limit wasteful and unnecessary energy consumption. Also, future projects within the EIR Study Area would be similar to projects currently in development within Contra Costa County. Overall, there would be no unusual project characteristics anticipated that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in other parts of California. Therefore, short-term construction activities that occur as a result of implementation of the proposed General Plan would not result in inefficient, wasteful, or unnecessary fuel consumption.

Long-Term Impacts During Operation

Operation of potential future development accommodated under the proposed General Plan would create additional demands for electricity and natural gas compared to existing conditions. Operational use of electricity and natural gas would include heating, cooling, and ventilation of buildings; water heating; operation of electrical systems; use of on-site equipment and appliances; lighting; and charging electric vehicles. Land uses accommodated under the proposed General Plan would also result in additional demands for transportation fuels (e.g., gasoline, diesel, compressed natural gas, and electricity) associated with on-road vehicles.

Decreasing Overall per Capita Energy Consumption

Building Electricity

Electrical service to the county is provided by PG&E and MCE through connections to existing off-site electrical lines and new on-site infrastructure. As shown in Table 5.6-4, *Year 2045 Forecast Electricity Consumption*, by horizon year 2045, electricity use in the EIR Study Area is estimated to increase by 47,697,580 kWh/year, or approximately 5 percent, from existing conditions. As a result, the per service population electricity consumption is estimated to decrease from 4,319 kWh per person per year in existing baseline to 3,360 kWh per person per year in 2045, or a reduction of approximately 959 kWh per person annually.

Table 5.6-4 Year 2045 Forecast Electricity Consumption

Area	Electricity Usage, kWh per year (Subtotal)		
	Existing Baseline[1]	Year 2045 Forecast[2]	Net Change
Residential	293,561,300	328,353,050	34,791,750
Nonresidential	626,049,910	638,955,740	12,905,830
Total	**919,611,210**	**967,308,790**	**47,697,580**
Service Population	212,910	287,870	74,960
Per Service Population Annual Consumption	**4,319**	**3,360**	**-959**

1 Electricity usage is provided by PG&E and MCE.
2 Residential and nonresidential energy forecasts are adjusted for increases in housing in the EIR Study Area and account for reductions due to increases in energy efficiency from compliance with the Building Energy Efficiency Standards and CALGreen.

As previously discussed, all new development facilitated by the proposed General Plan would be required to demonstrate compliance with the current Energy Code and CALGreen standards in effect at the time the individual development applications are submitted and can therefore be expected to be more energy-efficient than the use being replaced, resulting in reductions in electricity consumption on a per dwelling unit and per square foot basis when compared to existing development. It should be noted that it is unknown how much more energy-efficient future iterations of the Energy Code and CALGreen standards would be in 2045 compared to existing conditions as those code updates are released on a 3-year cycle.

Moreover, the proposed General Plan Policies COS-P7.1, COS-P14.7, COS-P14.8, HS-P1.8, and HS-P3.2 would serve to improve energy efficiency and reduce energy consumption in new development facilitated by the proposed General Plan. As a result of compliance with Title 24 energy efficiency standards and implementation of the above proposed General Plan policies and actions, per service population building electricity consumption is expected to decrease in 2045 compared to existing conditions.

Building Natural Gas and Propane

As shown in Table 5.6-5, *Year 2045 Forecast Natural Gas and Propane Consumption*, existing natural gas use and propane use in the EIR Study Area totals 43,885,050 therms and 92,942 million British thermal units (MMBTU) annually. By 2045, natural gas use in the EIR Study Area would increase by 6,972,060 therms annually, or approximately 16 percent, from existing conditions to a total of 50,857,110 therms per year. Future development is unlikely to require propane in more rural areas of the county, especially due to the County's all-

electric requirements for new construction. Therefore propane use in the EIR Study Area is anticipated to remain the same, for a total of 92,942 MMBTU per year.

As a result, the per service population natural gas consumption is estimated to decrease from 206 therms per person per year in existing baseline to 177 therms per person per year in 2045. Propane is also estimated to decrease from 0.44 MMBTU per person per year to 0.32 MMBTU per person per year in 2045.

Table 5.6-5 Year 2045 Forecast Natural Gas and Propane Consumption

Area	Natural Gas Usage, therms per year		
	Existing Baseline[1]	Year 2045 Forecast[2]	Net Change
Residential	30,100,640	35,500,210	5,399,570
Nonresidential	13,784,410	15,356,900	1,572,490
Total	**43,885,050**	**50,857,110**	**6,972,060**
Service Population	212,910	287,870	74,960
Per Service Population Annual Consumption	**206**	**177**	**-29**
	Propane Usage, MMBTU per year[3]		
Residential	92,942	92,942	0
Service Population	212,910	287,870	74,960
Per Service Population Annual Consumption	0.44	0.32	-0.12

1 Natural gas usage data provided by PG&E.
2 Residential and nonresidential energy forecasts are adjusted for increases in housing and employment, respectively, in the EIR Study Area and account for reductions due to increases in energy efficiency from compliance with the Building Energy Efficiency Standards and CALGreen.
3 Propane use is approximated for residential uses only.

Similar to electricity consumption, all new development facilitated by the proposed General Plan would be required to demonstrate compliance with the current CBSC and CALGreen and would result in reductions in heating fuel (i.e., natural gas or propane) consumption on a per dwelling unit and per square foot basis when compared to existing development in the county. As stated previously, the proposed General Plan Policies COS-P7.1, COS-P14.7, COS-P14.8, HS-P1.8, and HS-P3.2 would serve to improve energy efficiency and reduce energy consumption in new development facilitated by the proposed General Plan. As a result, per service population heating fuel consumption is expected to decrease in 2045 compared to existing baseline conditions.

Transportation Energy

The growth accommodated under the proposed General Plan would consume transportation energy from the use of motor vehicles (e.g., gasoline, diesel, compressed natural gas, and electricity). Table 5.6-6, *Operation-Related Annual Fuel Usage: Net Change from Existing,* shows the net change in VMT, fuel usage, and fuel efficiency under forecast year 2045 proposed General Plan conditions from existing baseline year conditions.

As shown in Table 5.6-6, when compared to existing baseline year conditions, the proposed General Plan would result in a decrease in VMT for gasoline-, compressed natural gas-, and diesel-powered vehicles, but not for electric-powered vehicles. The decrease in fuel usage for gasoline-powered vehicles and large increase in VMT and fuel usage for electric-powered vehicles are primarily based on the assumption in EMFAC that a greater mix of light-duty automobiles would be electric-powered in future years based on regulatory (e.g., Advanced

Clean Cars) and consumer trends. Furthermore, per service population VMT generation would decrease by an estimated 722 VMT/SP from baseline conditions.

Table 5.6-6 Operation-Related Annual Fuel Usage: Net Change from Existing

Fuel Type	Existing Baseline Year	Forecast Year 2045	Net Change from Existing Baseline
Gasoline			
VMT[1]	1,055,664,330	198,793,298	-856,871,032
Gallons	49,151,714	6,219,583	-39,932,132
Miles Per Gallon	22.89	31.96	9.09
Diesel			
VMT[1]	67,129,682	19,693,685	-42,435,997
Gallons	7,412,023	2,129,844	-5,282,178
Miles Per Gallon	8.38	9.25	0.86
Compressed Natural Gas			
VMT[1]	1,070,505	551,190	-519,316
Gallons	213,066	95,605	-117,461
Miles Per Gallon	5.02	5.77	0.74
Electricity			
VMT[1]	18,046,572	1,110,350,001	1,092,303,429
kWh	6,503,224	539,203,303	532,700,078
Miles Per kWh	2.78	2.06	-0.72
Total VMT	1,136,911,090	1,329,388,174	192,477,084
Service Population (SP)	212,910	287,870	74,960
VMT/SP	5,340	4,618	-722

Source: EMFAC2021 Version 1.0.2.
Notes:
[1] Based on daily VMT provided by Fehr and Peers. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008).

The overall VMT as shown in the table would be primarily attributable to the overall growth associated with the proposed General Plan compared to existing conditions. As discussed in Section 5.14, *Population and Housing*, implementation of the proposed General Plan would exceed current regional projections for housing by 26 percent and population by 18 percent. However, it is important to note that regional projections used were from *Plan Bay Area 2040* and not the updated *Plan Bay Area 2050*, which does not differentiate between Contra Costa County as a whole and only the unincorporated portion of the county.

As identified in Section 5.16, *Transportation*, the proposed General Plan Land Use Element includes goals, policies, and actions to minimize VMT and therefore reduce emissions from automobiles. Please see the impact discussion in Section 5.16 for a complete list of these goals, policies, and actions. Additionally, fuel efficiency of vehicles under year 2045 conditions would improve compared to existing baseline year conditions. The improvement in fuel efficiency would be attributable to regulatory compliance (e.g., CAFE standards), resulting in new cars that are more fuel efficient and the attrition of older, less fuel-efficient vehicles. The CAFE standards are not directly applicable to residents or land use development projects, but to car manufacturers. Thus, Contra Costa County and its residents do not have direct control in determining the fuel efficiency of vehicles manufactured and that are made available. However, compliance with the CAFE standards by car manufacturers would ensure that vehicles produced in future years have greater fuel efficiency and would generally result in an overall benefit of reducing fuel usage by providing the population of the county more fuel-efficient vehicle options.

While the demand in electricity would increase under the proposed General Plan, in conjunction with the regulatory (i.e., Renewables Portfolio Standard, SB 350, and SB 100) and general trend toward increasing the supply and production of energy from renewable sources, it is anticipated that a greater share of electricity used to power electric vehicles would be from renewable sources in future years (e.g., individual photovoltaic systems, purchased electricity from PG&E, and/or purchased electricity from MCE that is generated from renewable sources). In addition to regulatory compliance that would contribute to more fuel-efficient vehicles and less demand in fuels, the proposed General Plan includes policies that will contribute to minimizing overall VMT, and thus associated fuel usage (see Section 5.16, *Transportation*). In combination with improvements in fuel economy standards through 2045, the proposed General Plan would result in a decrease in transportation energy consumption. As a result, the proposed General Plan would result in an overall decrease in energy consumption through 2045.

Decreasing Reliance on Fossil Fuels

The proposed General Plan would be considered to conflict with this criterion if it did not take steps to decrease the reliance on fossil fuels. As discussed in Section 5.8, *Greenhouse Gas Emissions*, individual development projects accommodated by the proposed General Plan would be required to comply with the CBSC that is current at the time of their building application submittal. As the current CBSC is the 2022 CBSC, individual development projects going through the application process today would result in greater energy efficiency than the current performance of existing structures in the EIR Study Area. In addition, the 2022 CBSC currently includes provisions for development projects to include rooftop photovoltaic systems and BES infrastructure or demonstrate energy efficiency performance equivalent to including photovoltaic and BES features.

In addition to improvements in energy efficiency and on-site renewable energy generation and energy storage requirements, SB 100 requires that LSEs incrementally increase their energy procurement sources to include eligible renewable and carbon-free sources. By January 1, 2046, all LSEs in California are required to source 100 percent of their in-state electricity sales from renewable and carbon-free sources. As a result, individual development projects accommodated by the proposed General Plan would improve their energy efficiency through compliance with the CBSC current at the time of their building application submittal and LSEs would supply electricity that is increasingly sourced from carbon-free sources.

Moreover, consistent with Executive Order N-79-20 and CARB's Advanced Clean Cars II Regulation, which require that 100 percent of new passenger vehicles sold in-state are ZE (i.e., battery electric, hybrid plug-in electric, and fuel cell electric vehicles) by 2035, vehicles utilized by future residents and employees accommodated by the proposed General Plan are expected to consist more of EVs than what is experienced under existing conditions. In addition, the proposed General Plan includes policies that are intended to reduce the use of nonrenewable energy. Specifically, Policies COS-P14.7, COS-P14.8, HS-P1.8, and HS-P3.2 encourage the reduction of nonrenewable energy use and the utilization of new energy sources and building electrification. As a result, the proposed General Plan would incrementally decrease reliance on fossil fuel energy resources through 2045.

Increasing Reliance on Renewable Energy

As previously discussed, the 2022 CBSC currently requires a variety of development projects that don't meet specific exceptions or exemptions to include rooftop photovoltaic systems and BES infrastructure or otherwise match or exceed the energy efficiency performance experienced by including photovoltaic and BES systems, as applicable. In addition, it is anticipated that each new Code cycle for the CBSC will improve on the last one by requiring higher performance for energy efficiency and incorporating additional requirements for on-site renewable energy and EV charging infrastructure. Future development projects accommodated by the proposed General Plan would therefore result in a net increase from existing conditions in on-site photovoltaic electricity generation and EV charging stations and associated infrastructure, further supporting and accelerating the adoption of EVs and the use of renewable energy in future years.

Similarly, LSEs that serve future development projects accommodated by the proposed General Plan, such as PG&E and MCE, would be required to incrementally increase their energy procurement sources to include eligible renewable and carbon-free sources through 2045 under SB 100. As a result, electricity consumed by individual development projects under the proposed General Plan, as well as existing structures in the county, would rely more on renewable and carbon-free sources for electricity in future years than is experienced under existing conditions.

Moreover, the proposed General Plan includes various policies that are intended to support the use of renewable energy beyond compliance with the CBSC, including creating a walkable urban environment to encourage future residents and employees in the county to use active modes of transportation instead of motorized vehicles.

The following proposed General Plan policies focus on minimizing VMT through land use and transportation planning efforts that work in conjunction, including:

- **Policy TR-P1.4:** Reduce single-occupant vehicle usage, at a minimum using strategies defined in the TDM Ordinance.
- **Policy TR-P4.7:** Encourage walkability and safety by streamlining implementation of traffic-calming measures through the Neighborhood Traffic Management Program.
- **Policy TR-P5.2:** Coordinate with Caltrans to provide safe and comfortable highway interchange crossings for people of all ages and abilities who walk, bike, or use micromobility.
- **Policy TR-P5.7:** Encourage walking, bicycling, and micromobility as the travel modes of choice for short to medium-length trips, such as trips to schools, parks, transit stops, local shopping areas, and neighborhood services.
- **Policy TR-P5.10:** Require generous parking for bicycles and other mobility devices at key destinations, such as shopping centers, schools, workplaces, transit stations, and multiple-family housing.

Summary

Compliance with federal, State, and local regulations (e.g., Energy Code, CALGreen, Renewables Portfolio Standard, and CAFE standards) would increase building energy efficiency and vehicle fuel efficiency. Compliance would also reduce building energy demand and transportation-related fuel usage in the future. Additionally, the proposed General Plan includes policies related to land use and transportation planning, energy efficiency, promotion of housing near public and active transit, and renewable energy generation that will contribute to minimizing building and transportation-related energy demands overall. As stated, development that could occur under the proposed General Plan would reduce the per capita transportation energy consumption, decrease reliance on fossil fuels, and increase reliance on renewable energy sources.

Implementation of policies under the proposed General Plan, in conjunction with and complementary to regulatory requirements, would ensure that energy demand associated with growth under the proposed General Plan would decrease overall energy consumption, decrease reliance on fossil fuels, and increase reliance on renewable energy. As such, the energy consumption under the proposed General Plan would not be considered inefficient, wasteful, or unnecessary. Therefore, energy impacts associated with implementation and operation of land uses accommodated under the proposed General Plan would be less than significant.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. Because there is no specific land use component associated with the proposed CAP, its implementation would not directly result in energy impacts.

Furthermore, the proposed CAP would help reduce GHG emissions and energy demand generated by existing and proposed land uses in the EIR Study Area. For example, proposed CAP transportation strategies that reduce VMT (e.g., Strategy TR-1) would result in a reduction in transportation-related fuel usage. Likewise, the proposed CAP also promotes building energy-efficiency improvements (e.g., Strategies BE-1 and BE-2), increasing water efficiency (e.g., Strategy DR-1 and DR-2), and reducing energy demand through renewable energy sources (e.g., Strategy BE-3) to minimize energy sector emissions. In addition, the proposed CAP supports the East Bay Energy Watch, which is a partnership between PG&E and local governments in the East Bay region to conduct energy efficiency outreach to residents and businesses, retrofit existing government facilities to improve energy efficiency, and provide training to agency staff. Thus, implementation of the proposed CAP would result in beneficial impacts to energy consumption. Overall, implementation of the proposed CAP would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.6-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.6-1 would be less than significant.

Impact 5.6-2: Implementation of the proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Proposed General Plan

The state's electricity grid is transitioning to renewable energy under California's RPS Program. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. In general, California has RPS requirements of 33 percent renewable energy by 2020 (SB X1-2), 40 percent by 2024 (SB 350), 50 percent by 2026 (SB 100), 60 percent by 2030 (SB 100), and 100 percent by 2045 (SB 100). SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. Additionally, SB 1020 requires all State agencies to procure 100 percent of electricity from renewable energy and zero-carbon resources by 2035.

The statewide RPS requirements do not directly apply to individual development projects, but to utilities and energy providers such as PG&E and MCE, whose compliance with RPS requirements would contribute to the State's objective of transitioning to renewable energy. In addition, the County Board of Supervisors voted to go Deep Green 100 percent renewable (i.e., all power which customers buy comes from 100 percent non-polluting wind and solar power) with MCE for the majority of the County's accounts. Even if customers in the county were to opt-out of the Deep Green program, and therefore receive all their electricity from PG&E, 33 percent of PG&E's electricity has been generated from renewable energy since 2017 (PG&E 2023b). By 2030, PG&E is set to meet the State's new 60 percent renewable energy mandate set forth in SB 100.

The land uses accommodated under the proposed General Plan would be required to comply with the current and future iterations of the Building Energy Efficiency Standards and CALGreen. Furthermore, as described for Impact Discussion 5.6-1, the proposed General Plan includes policies that would support the statewide goal of transitioning the electricity grid to renewable sources. The net increase in energy demand associated with implementation of the proposed General Plan would be within the service capabilities of MCE and PG&E and would not impede their ability to implement California's renewable energy goals. Therefore, implementation of the proposed General Plan would not conflict with or obstruct implementation of California's Renewables Portfolio Standard program, and the impact would be less than significant.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. As discussed under Impact Discussion 5.6-1, the proposed CAP transportation strategies would reduce VMT (e.g., Strategy TR-1) to aid in the reduction in transportation-related fuel usage. Likewise, the proposed CAP also promotes building energy-efficiency improvements (e.g., Strategies BE-1 and BE-2), increasing water efficiency (e.g., Strategy DR-1 and DR-2), and reducing energy demand through renewable energy sources (e.g., Strategy BE-3) to minimize energy sector emissions. Furthermore, the proposed CAP supports the East Bay Energy Watch, which is a partnership between PG&E and local governments in the East Bay region to conduct energy efficiency outreach to residents and businesses,

retrofit existing government facilities to improve energy efficiency, and provide training to agency staff. Therefore, the proposed CAP would complement the statewide goal of transitioning the electricity grid to renewable sources. Implementation of the proposed CAP would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.6-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.6-2 would be less than significant.

Impact 5.6-3: Implementation of the proposed project would not require or result in the relocation or construction of new or expanded energy facilities, the construction or relocation of which could cause significant environmental effects.

Proposed General Plan

The proposed General Plan would accommodate future growth in the EIR Study Area that would require new or expanded energy facilities; however, the proposed General Plan would not directly result in the construction of new or expanded energy facilities that would not otherwise be reviewed and mitigated to reduce potentially significant environmental effects. As discussed in Section 5.6.1.1, *Regulatory Background*, the IRP is the principal planning document that identifies CAISO's forecasts for electricity demand, supply, and transmission needs over a 20-year planning horizon, as well as its strategies for integrating renewable energy resources and other grid services to meet those needs. These forecasts account for the expected growth in population and development in corresponding LSE's service areas, such as the population and development envisioned under the proposed General Plan within PG&E and MCE's service area.

The IRP is developed in collaboration with LSEs, regulators, and other stakeholders, and is updated periodically to reflect changes in the energy landscape and evolving policy goals (CEC 2020). Overall, the IRP plays a critical role in ensuring the reliability and resilience of California's electricity grid as the state continues to transition to a cleaner and more sustainable energy system. When an LSE identifies that new or expanded energy facilities are needed to accommodate the population and development growth in its service area, those proposed improvements are reviewed to identify consistency with local, State, and federal regulatory compliance as well as potential environmental effects that may result. For on-site systems, such as rooftop solar, the review would be conducted by the applicable lead agency as part of that individual development project. For energy infrastructure improvements that involve the construction of new or expansion of existing transmission lines, generation systems, or BES facilities separate from an individual development project, the review would be conducted by the CPUC and/or CEC depending on the type of facility. The CEC typically acts as a CEQA lead or responsible agency for energy infrastructure improvements involving generation or BES systems, whereas the CPUC typically acts as a CEQA lead or responsible agency for improvements involving transmission lines or other distribution infrastructure.

Once the new or expanded energy facility is reviewed and approved, incorporating any necessary and appropriate mitigation, it is assigned a point of interconnection on the grid, and its output is added to the IRP as a resource that can provide electricity and other grid services, such as frequency regulation or ramping support. The facility is then dispatched by CAISO based on its bids into the day-ahead and real-time electricity markets, and its output is used to help balance supply and demand on the grid in real-time. CAISO operates a wholesale electricity market in which LSEs can participate by offering to buy or sell electricity and other grid services, such as demand response or energy storage. This market helps to ensure that the electricity system operates efficiently and reliably by providing economic incentives for electricity providers to use their resources effectively.

In addition to the IRP, which principally governs the planning efforts for new and expanded electricity and natural gas facilities, the CPUC in December 2022 adopted a new framework to comprehensively review utility natural gas infrastructure investments in order to help the State transition away from natural-gas-fueled technologies and avoid stranded assets in the gas system. The new framework requires utilities to seek CPUC approval of natural gas infrastructure projects of $75 million or more or those with significant air quality impacts. The new framework is intended to capture natural gas projects likely to have the most substantial community and environmental impacts and to require demonstrate project compliance with CEQA (CPUC 2022). Therefore, while the proposed General Plan may result in increased energy resource demand by facilitating population and development growth in the EIR Study Area, and subsequently in PG&E and MCE's service area, any new or expanded facilities needed as a result of meeting that increased demand would undergo its own review to mitigate potentially significant environmental effects and demonstrate compliance with regulatory requirements. As such, the proposed General Plan would not result in new or expanded energy facilities which may cause significant environmental effects. This impact would be less than significant.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. Because there is no specific land use component associated with the proposed CAP, its implementation would not directly result in relocation or construction of new or expanded energy facilities.

As discussed under Impact Discussion 5.6-1, the proposed CAP promotes building energy-efficiency improvements (e.g., Strategies BE-1 through BE-2) and reducing energy demand through renewable energy sources (e.g., Strategy BE-3) to minimize energy sector emissions. Furthermore, the proposed CAP supports the East Bay Energy Watch, which is a partnership between PG&E and local governments in the East Bay region to conduct energy efficiency outreach to residents and businesses, retrofit existing government facilities to improve energy efficiency, and provide training to agency staff. Therefore, implementation of the proposed CAP would not directly result in new or expanded energy facilities which may cause significant environmental effects and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.6-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.6-3 would be less than significant.

5.6.5 Cumulative Impacts

All development projects within the vicinity of the EIR Study Area are within the service areas of MCE and PG&E. These projects would result in a long-term increase in operational energy demand for electricity and natural gas use associated with population and housing growth. In addition, construction activities would require the use of energy for purposes such as the operation of construction equipment and tools, and construction of development projects may overlap. However, all projects developed within the MCE and PG&E service area would implement the requirements of the Energy Code (CCR, Title 24, Part 6) and the California Green Building Code (CCR, Title 24, Part 11). Furthermore, new buildings would use new energy-efficient appliances and equipment, pursuant to the Appliance Efficiency Regulations.

Future housing development would also increase annual fuel consumption and VMT within the county. However, vehicles would be subject to the CAFE standards for vehicular fuel efficiency, and average corporate fuel economy continues to increase as a result of State and federal laws, including the Advanced Clean Cars II standards. Furthermore, as described in Impact Discussion 5.6-2, the proposed General Plan includes policies that would contribute toward minimizing inefficient, wasteful, or unnecessary transportation energy consumption. These policies, as well as the other proposed General Plan policies listed in Impact Discussion 5.6-1, would ensure compliance with State, regional, and local plans for renewable energy. Therefore, the proposed project would not result in a cumulatively considerable impact on energy consumption.

5.6.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.6.7 Mitigation Measures

No mitigation measures are required.

5.6.8 Level of Significance After Mitigation

Impacts would be less than significant.

5.6.9 References

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5.7 GEOLOGY AND SOILS

This section describes the regulatory framework and existing geologic and soil conditions of the Environmental Impact Report (EIR) Study Area and evaluates the potential impacts on geologic and soil resources from future development that could occur by adopting and implementing the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project.

5.7.1 Environmental Setting

5.7.1.1 REGULATORY BACKGROUND

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to protect structures for human occupancy from the hazard of surface faulting. In accordance with the Act, the State Geologist has established regulatory zones—called earthquake fault zones—around the surface traces of active faults and has published maps showing these zones. Buildings for human occupancy cannot be constructed across surface traces of faults that are determined to be active. Because many active faults are complex and consist of more than one branch that may experience ground surface rupture, earthquake fault zones extend approximately 200 to 500 feet on either side of the mapped fault trace.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. This Act requires the State Geologist to delineate various seismic hazard zones, and cities, counties, and other local permitting agencies to regulate certain development projects within these zones. For projects that would locate structures for human occupancy within designated Zones of Required Investigation, the Seismic Hazards Mapping Act requires project applicants to perform a site-specific geotechnical investigation to identify the potential site-specific seismic hazards and corrective measures, as appropriate, prior to receiving building permits. The CGS Guidelines for Evaluating and Mitigating Seismic Hazards (Special Publication 117A) provides guidance for evaluating and mitigating seismic hazards (CGS 2008). Contra Costa County is intersected by multiple faults which are discussed in detail in Section 5.7.1.2, *Existing Conditions*. Additionally, the eastern portion of Contra Costa County contains land mapped in liquefaction hazard and landslide hazard zones.

California Building Code

The State of California provides minimum standards for building design through the California Building Code (CBC [California Code of Regulations, Title 24]). The CBC is based on the Uniform Building Code (UBC), which is used widely throughout the United States (generally adopted on a state-by-state or district-by-district basis) and has been modified for conditions in California. State regulations and engineering standards related to geology, soils, and seismic activity in the UBC are reflected in the CBC requirements. Through the CBC, the

State of California provides a minimum standard for building design and construction. The 2022 CBC became effective on January 1, 2023.

The CBC contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition. It also regulates grading activities, including drainage and erosion control. Contra Costa County enforces the CBC through its Ordinance Code. The County Building Code (Contra Costa County Ordinance Code, Division 72) incorporates the CBC, including recent changes.

California General Plan Law

State law (Government Code Section 65302) requires cities and counties to adopt a comprehensive long-term general plan that includes a safety element. The safety element is intended to provide guidance for protecting the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; other seismic hazards identified by Public Resources Code Sections 2691 et. Seq.; and other geologic hazards known to the legislative body. The safety element must also include mapping of known seismic and geologic hazards from the California Geological Survey and a series of responsive goals, policies, and implementation programs to improve public safety.

Public Resources Code Section 5097.5 and Section 30244

State requirements for management of paleontological resources are included in Public Resources Code (PRC) Section 5097.5 and Section 30244. These statutes prohibit the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts on paleontological resources from developments on public (e.g., State, county, city, or district) lands.

Paleontological Assessment Standards

The California Environmental Quality Act (CEQA) also directs agencies to assess whether a project would have an adverse effect on unique paleontological resources. The Society of Vertebrate Paleontology (SVP) has established guidelines for the identification, assessment, and mitigation of adverse impacts on nonrenewable paleontological resources. Most practicing paleontologists in the United States adhere closely to the SVP's assessment, mitigation, and monitoring requirements as outlined in these guidelines, which were approved through a consensus of professional paleontologists. The SVP has helped define the value of paleontological resources and, in particular, indicates that geologic units of high paleontological potential are those from which vertebrate or significant invertebrate or plant fossils have been recovered in the past (i.e., are represented in institutional collections). Only invertebrate fossils that provide new information on existing flora or fauna or on the age of a rock unit would be considered significant. Geologic units of low paleontological potential are those that are not known to have produced a substantial body of significant paleontological material. As such, the sensitivity of an area with respect to paleontological resources hinges on its geologic setting and whether significant fossils have been discovered in the area or in similar geologic units.

Local

Contra Costa County Local Hazard Mitigation Plan

The Local Hazard Mitigation Plan (LHMP) serves to reduce injury, loss of life, property damage, and loss of services from natural disasters. This LHMP provides a comprehensive analysis of the natural and human-caused hazards that threaten the county, with a focus on mitigation, allowing the County to remain eligible to receive additional federal and State funding to assist with emergency response and recovery, as permitted by the federal Disaster Mitigation Act of 2000 and California Government Code Sections 8685.9 and 65302.6; it also complements the efforts undertaken by the existing General Plan Safety Element. The LHMP complies with all requirements set forth under the federal Disaster Mitigation Act of 2000 and received approval from the Federal Emergency Management Agency (FEMA) in 2021. Contra Costa County updated its LHMP in 2018.

Contra Costa County Ordinance Code

Division 74- Building Code

Chapter 74-2.002 of the Contra Costa County Ordinance Code adopts the 2022 CBC, with amendments, as the County's Building Code (Ordinance No. 2022-35). As such, all new construction within the county is required to adhere to its seismic safety standards. The Contra Costa County Department of Conservation and Development is responsible for the administration and enforcement of the CBC.

Division 716- Grading

Division 716 of the County Ordinance Code contains the County's grading ordinance, which sets forth regulations for control of excavation, grading, and earthwork construction, including fills or embankments and related work. Section 716-4.202 requires that a grading permit be obtained for property on which a subdivision is proposed and that such a permit may not be issued until reviewed by the Public Works Department for compliance with the requirements of Title 9, *Subdivisions*. Section 716-2.418, *Critically Expansive Soil or Other Soil Problems*, states that critically expansive soil or other soil problems must be tested by acceptable procedures to provide data suitable for making adequate designs for the improvements. Article 716-8.8, *Erosion Control Planting*, additionally requires that the surface of all erodible cut slopes more than five feet in height and fill slopes more than three feet in height are protected against erosion by planting with grass or ground cover plants.

Section 94-4.420- Soil Report

As indicated in Section 94-4.420, *Soil Report*, of Title 9, *Subdivisions*, a preliminary soil investigation report is required for subdivisions and must be reviewed by a building inspector or designated representative. The report must indicate the presence of any critically expansive soils or any other soil problems which, if not corrected, could lead to defects in structures, buildings, or other improvements. If the report indicates such soil problems, it must further report on an investigation of each lot of the subdivision, including recommended corrective action that is likely to prevent structural damage to each building, structure, or improvement to be constructed. The recommended actions and procedures contained in the report must also become a condition of approval and must be incorporated in the development of the subdivision.

Section 82-1.016 – Hillside Protection

Pursuant to Section 82-1.016, *Hillside Protection*, development on open hillsides and significant ridgelines throughout the county is restricted, and hillsides with a grade of 26 percent or greater are required to be protected through implementing zoning measures and other appropriate actions.

5.7.1.2 EXISTING CONDITIONS

Regional Geology

The primary bedrock in Contra Costa County includes sedimentary rocks, volcanic rock intrusions, and alluvial deposits. Regional basement rocks consist of the highly deformed Great Valley Sequence, which include massive beds of marine sandstone intermixed with siltstone and shale, and marine sandstone and shale overlain by soft non-marine units. Unconsolidated alluvial deposits, artificial fill, and estuarine deposits underlie the coastal areas along San Pablo Bay, the Carquinez Straight, and Suisun Bay. Landslides in the region typically occur in weak, easily weathered bedrock on relatively steep slopes. Bedrock geology for the area is not entirely mapped. Lack of detailed mapping in most cases precludes determining specific site stability without a site investigation. However, it may be valid to conclude varying degrees of relative risk based on general mapping of rock units when averaged over time (Contra Costa 2018a).

Two distinct depositional environments exist in Contra Costa County. Since much of the county is mountainous with steep, rugged topography, a sequence of alluvial fan and fan-delta deposits have developed in most of the western part of the county. The second environment is a combination of eolian dune and river delta deposits in the San Joaquin Valley in eastern Contra Costa County (Contra Costa 2018a).

Soils

Contra Costa County is in California's Central Coast Range, with northwest trending mountain ranges and valleys. Alluvium, terrace deposits, and bay mud, primarily composed of sand, silt, clay, and gravel, are prevalent in the lowlands. The intermountain valleys and foothills contain alluvial soils and terrace deposits. In the east, north, and northwest parts of the county, the soils generally consist of bay muds. Mapping units and maps presented in the Natural Resources Conservation Service's soil survey for this region describe the prevailing soils and include information about parent rock materials, soil depth, erosion, and slope. Contra Costa County's soils may be classified into three general categories:

- Lowland Soil Associations—Six characteristic Lowland Soil associations range from nearly level to strongly sloping landscapes. They also range from somewhat excessively drained to poorly drained soils typically found in valley fill, low terraces, basins, floodplains and on alluvial fans. Lowland soils are also slowly permeable, highly expansive and corrosive, with slight erosion hazards. They make up 25 percent of the soils in Contra Costa County.
- Tidal Flat-Delta-Marsh Lowland Associations—Three Tidal Flat-Delta-Marsh Lowland soil associations are described as being poorly drained on level land within deltas, floodplains, saltwater marshes and tidal flats. Formed in mineral alluvium and from the remains of hydrophytic plants, these soils are clay loam, muck, silty clay and clay. Tidal Flat-Delta-Marsh Lowland soils make up 10 percent of the county's soils. Soils of these associations are highly expansive due to the clay content and are highly corrosive.

- Upland Soil Associations—Five Upland Soil groups make up 64 percent of Contra Costa County's soils. Upland soils are on level terraces or steep mountain uplands and range from being moderately well drained to excessively drained. These soils range from loams to clays and form in weakly consolidated alluvial sediments, weathered sedimentary rock interbeds and some igneous rock. Upland soils are typically highly expansive and corrosive, with slow to moderate permeability.

Soils have varying levels of susceptibility to erosion, but each soil type benefits from conservation management techniques to prevent erosion. Soil erosion in Contra Costa County occurs as a result of intensive land use, wind, and water erosion. Erosion may be most severe where urbanization, development, recreational activities, logging, and agricultural practices take place. Extreme rainfall events, lack of vegetative cover, fragile soils, and steep slopes combine to accelerate erosion. Wind erosion is the primary factor for soil losses in the Delta areas. Agricultural crops are subject to the erosive forces of water and hillside grazing pastures have been strained by reduced root structure due to years of drought conditions. The conversion of agricultural lands to housing and other development may cause exposed soils to become susceptible to erosion. With proper drainage and landscaping techniques, these altered soils may return to pre-construction stability.

Expansive soils contain clay and silt that expand in volume in response to increased water content and shrink in volume after drying. Expansive soils are a geologic hazard because an increase in soil volume can exert forces on structures and, thus, damage building foundations, walls, and floors. Much of the soil in the county is considered expansive (Contra Costa 2018a). Section 94-4.420 of the County Ordinance Code requires that a preliminary soil investigation report be prepared for a subdivision project. If soil instability issues arise, a report including the recommended corrective actions taken to prevent structural damage to buildings, structures, or improvements must also be submitted.

Faults

Contra Costa County is in a region of high seismicity with numerous local faults. The primary seismic hazard for the county is potential ground shaking from these faults, especially the Hayward, Calaveras North, Concord-Green Valley, Mount Diablo, and Greenville faults, which are further described below. The location of these faults can be seen in Figure 5.7-1 - *Regional Fault Map*. The following information was compiled by the County in its LHMP 2018 update.

Calaveras (North Central) Fault

The Calaveras (North Central) Fault is a major branch of the San Andreas Fault, east of the Hayward Fault. It extends 76 miles from the San Andreas Fault near Hollister to Danville at its northern end. The Calaveras Fault is one of the most geologically active and complex faults in the Bay Area (Contra Costa 2018a). The probability of experiencing a Magnitude 6.7 or greater earthquake along the Calaveras Fault in the next 30 years is 26 percent.

Concord-Green Valley Fault

The Concord-Green Valley Fault, named for being located under the City of Concord, is connected to the main Green Valley Fault. The fault extends approximately 11 miles east of the West Napa Fault, from Mount Diablo to the Carquinez Strait. It is considered to be under high stress and has a 16 percent probability of experiencing a Magnitude 6.7 or greater earthquake in the next 30 years.

Greenville Fault

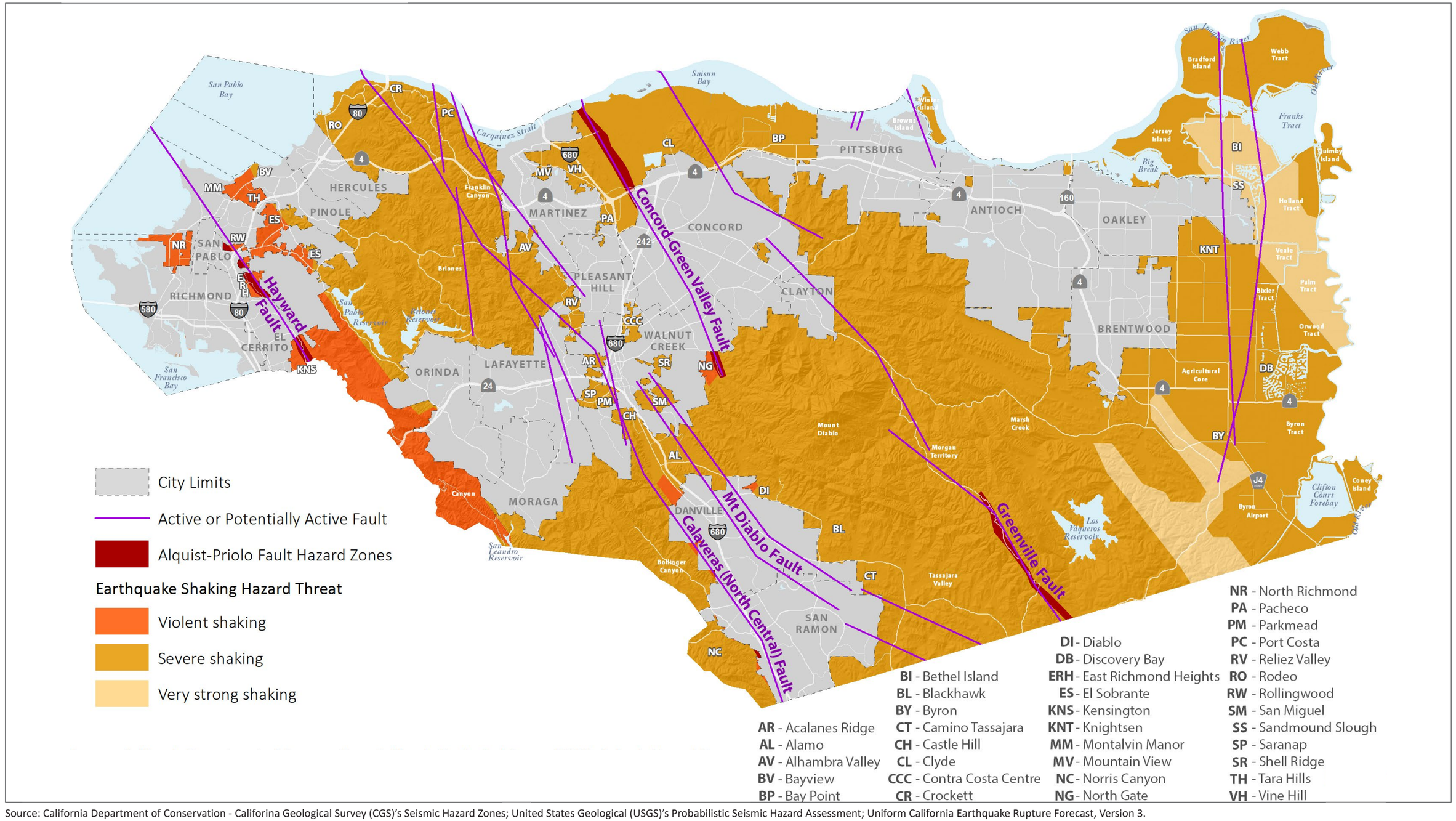
The Greenville Fault is in the eastern Bay Area in Contra Costa and Alameda Counties. This dextral strike-slip fault zone borders the eastern side of Livermore Valley and is considered to be part of the larger San Andreas fault system in the central Coast Ranges. The fault zone extends from northwest of Livermore Valley along the Marsh Creek and Clayton faults toward Clayton Valley.

Hayward Fault

The Hayward Fault is an approximately 45-mile-long fault that runs through densely populated areas in the East Bay, parallel to the San Andreas Fault. The Hayward Fault extends through some of the Bay Area's most populated areas, including San Jose, Oakland, and Berkeley. The Hayward Fault is a right-lateral slip fault. The Hayward Fault is increasingly becoming a hazard priority throughout the Bay Area because of its increased chance for activity and its intersection with highly populated areas and critical infrastructure. The probability of experiencing a Magnitude 6.7 or greater earthquake along the Hayward Fault in the next 30 years is 33 percent. An earthquake of this magnitude has regional implications for the entire Bay Area, as the Hayward Fault crosses transportation and resource infrastructure, such as multiple highways and the Hetch-Hetchy Aqueduct.

Mount Diablo Fault

The Mount Diablo Fault is a thrust fault in the vicinity of Mount Diablo. The fault lies between the Calaveras Fault, Greenville Fault, and Concord Fault, all right-lateral strike slip faults, and appears to transfer movement from the Calaveras and Greenville Faults to the Concord Fault, while continuing to uplift Mount Diablo.



City Limits

Active or Potentially Active Fault

Alquist-Priolo Fault Hazard Zones

Earthquake Shaking Hazard Threat

Violent shaking

Severe shaking

Very strong shaking

AR - Acalanes Ridge
AL - Alamo
AV - Alhambra Valley
BV - Bayview
BP - Bay Point
BI - Bethel Island
BL - Blackhawk
BY - Byron
CT - Camino Tassajara
CH - Castle Hill
CL - Clyde
CCC - Contra Costa Centre
CR - Crockett
DI - Diablo
DB - Discovery Bay
ERH - East Richmond Heights
ES - El Sobrante
KNS - Kensington
KNT - Knightsen
MM - Montalvin Manor
MV - Mountain View
NC - Norris Canyon
NG - North Gate
NR - North Richmond
PA - Pacheco
PM - Parkmead
PC - Port Costa
RV - Reliez Valley
RO - Rodeo
RW - Rollingwood
SM - San Miguel
SS - Sandmound Slough
SP - Saranap
SR - Shell Ridge
TH - Tara Hills
VH - Vine Hill

Source: California Department of Conservation - Californa Geological Survey (CGS)'s Seismic Hazard Zones; United States Geological (USGS)'s Probabilistic Seismic Hazard Assessment; Uniform California Earthquake Rupture Forecast, Version 3.

0 3.5
Scale (Miles)

Figure 5.7-1
Regional Fault Map

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Earthquakes

The Bay Area region lies within the active boundary between the Pacific and the North American tectonic plates. The Pacific Plate is constantly moving northwest past the North American Plate at a rate of about 2 inches per year (Contra Costa 2018a). Earthquakes in the San Francisco Bay region result from strain energy constantly accumulating across the region because of the motion of the Pacific Plate relative to the North American Plate. The San Andreas Fault, on which earthquakes of magnitude 7.8 and 7.9 have occurred in the past, including the 1906 San Francisco earthquake, is the fastest slipping fault along the plate boundary.

The county has been subjected to numerous seismic events, originating both on faults within the county and in other parts of the region. Six major Bay Area earthquakes have occurred since 1800 that impacted the county, and at least two of the faults that produced them run through or into the county. Contra Costa County was included in one FEMA major disaster/emergency declaration for the Loma Prieta Earthquake, which occurred in October 1989 (Contra Costa 2018a).

Secondary Hazards

Landslides are often caused by earthquakes. River valleys are vulnerable to slope failure, often as a result of loss of cohesion in clay-rich soils. A secondary effect of seismic activity is liquefaction, which occurs when sandy or silty soil materials become saturated during ground shaking, losing strength, causing the ground to liquefy. This can damage pipelines, cause roadways and airport runways to buckle, and damage or destroy building foundations.

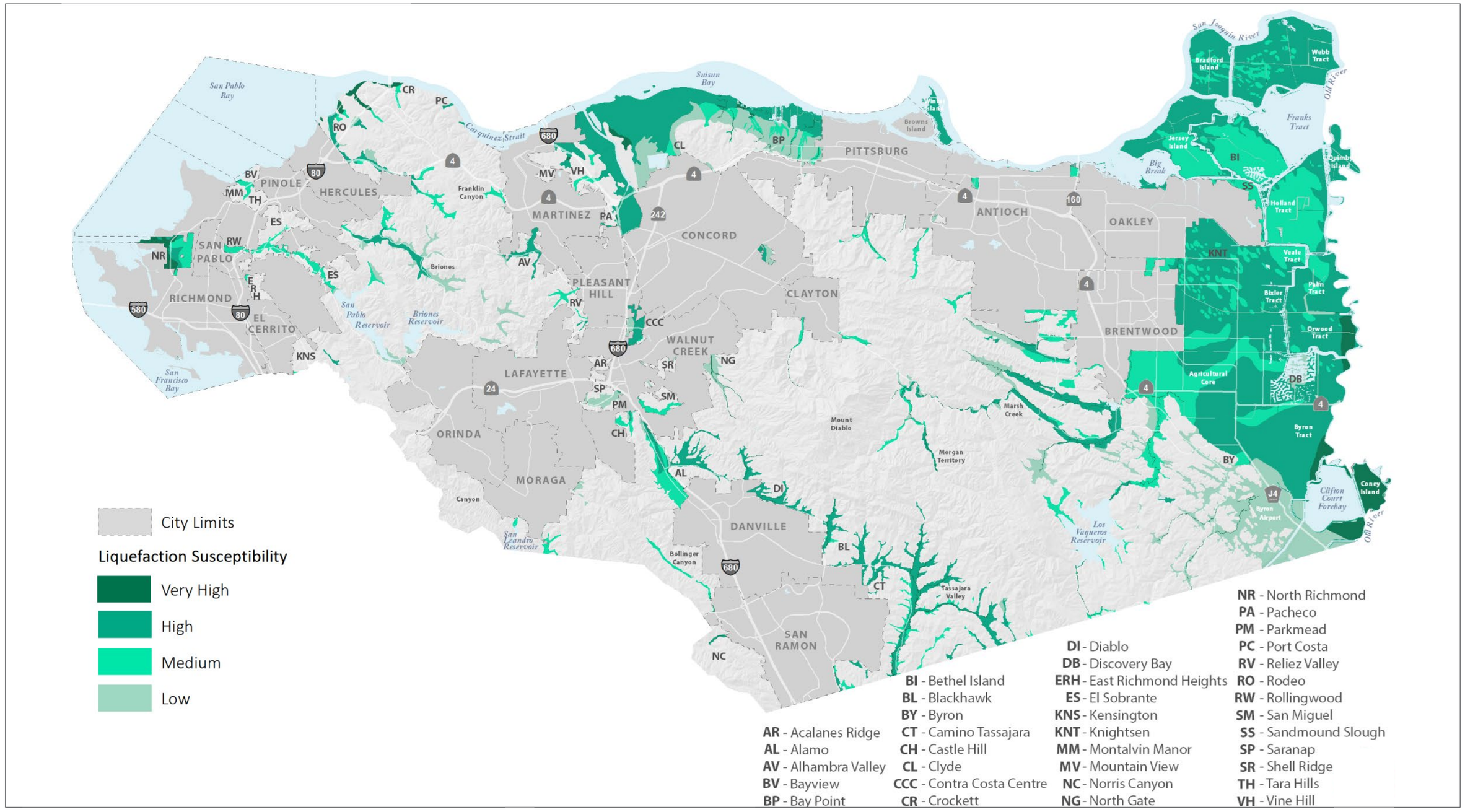
There are estimated to be 369,779 people living on soils with moderate to very high liquefaction potential in the county. This is about 32 percent of the total population (Contra Costa 2018). Figure 5.7-2, *Liquefaction Hazard Zones,* uses USGS to map the susceptibility of land to liquefaction in the county. As shown in the figure, areas along the Bay coastline and in the Delta are most susceptible to liquefaction. Additionally, according to the LHMP, there are approximately 1,851 acres of developable land in high and very high liquefaction susceptibility areas. Of the total acres, 72.9 percent is residential, 20.4 percent is commercial-industrial, and 6,7 percent is mixed use.

In Contra Costa County, landslides are often triggered by heavy rain, so the potential for landslides largely coincides with severe storms that saturate steep, loose soils. Earthquakes can also trigger landslides, and upland areas in Contra Costa County are highly susceptible to landslides, as shown in Figure 5.7-3, *Landslide Hazards.* The LHMP estimates that 166,205 people currently live in areas of "moderate landslide risk" of landslides, 221,672 people live in "high landslide risk" areas, and 1,900 people live in areas of "very high landslide" risk.

Paleontological Sensitivity

In the Bay Area, fossilized plants, animals, and microorganisms occur primarily in marine and non-marine (fluvial) sedimentary rock. The potential to preserve fossils in a particular rock formation depends on the depositional environment in which it was formed. For example, fast moving currents that form deposits of gravel and cobbles are less likely to preserve the remains of organisms than gently flowing currents that deposit mud and silt. Thus, the most fossil-bearing geologic units in the county occur in rocks that formed in relic

marine environments such as inland embayment, coastal areas, and extensive inland bays. There are a total of 2,577 fossil localities in Contra Costa County according to the UC Museum of Paleontology Localities database. Most of these are invertebrate; 261 are vertebrates (UCMP 2022).

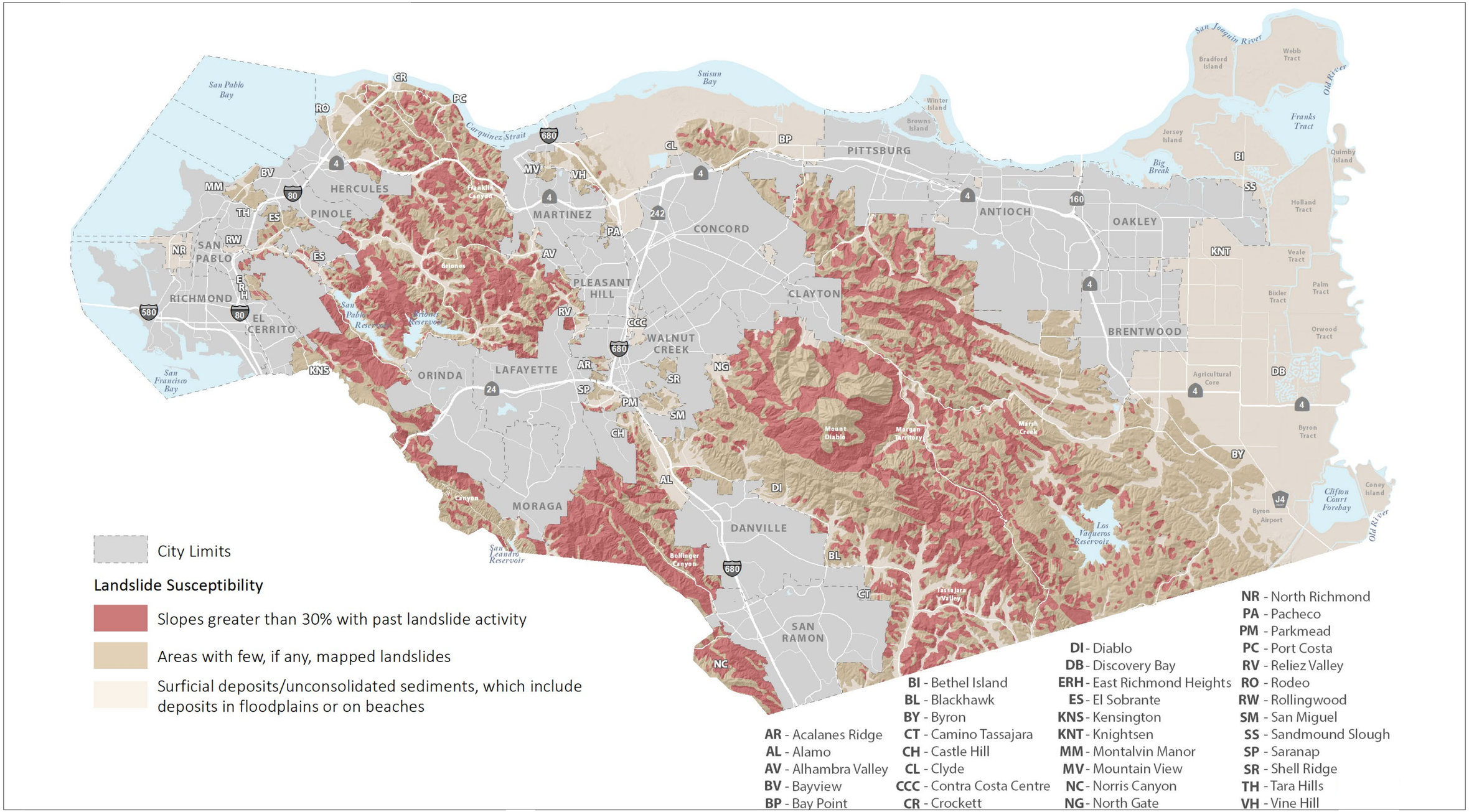


Source: United States Geological Survey (USGS).

0 3.5
Scale (Miles)

Figure 5.7-2
Liquefaction Hazard Zones

GEOLOGY AND SOILS



Source: United States Geological Survey (USGS).

0 3.5
Scale (Miles)

Figure 5.7-3
Landslide Hazards

Additionally, approximately 600 archaeological sites have been identified within the county according to the Northwest Information Center at Sonoma State University (Contra Costa 2005). According to the County, identification of these archaeological sites is largely the result of sporadic surveys conducted in association with development proposals. Large areas of the county that have been retained in agriculture have never been surveyed and may yield prehistoric settlement patterns.

5.7.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

G-1 Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. (Refer to Division of Mines and Geology Special Publication 42.)

ii) Strong seismic ground shaking.

iii) Seismic-related ground failure, including liquefaction.

iv) Landslides.

G-2 Result in substantial soil erosion or the loss of topsoil.

G-3 Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

G-4 Be located on expansive soil, as defined in Table 18-1B of the Uniform building Code (1994), creating substantial direct or indirect risks to life or property.

G-5 Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

G-6 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

5.7.3 Programs, Plans, and Policies

5.7.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to geology and soils. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Conservation, Open Space, and Working Lands Element

- **Policy COS-P2.10:** Support soil conservation and restoration programs. Encourage agricultural landowners to work with agencies such as the USDA's NRCS and Contra Costa RCD to reduce erosion and soil loss.
- **Policy COS-P8.4:** Require new development to retain natural vegetation and topography whenever feasible and require projects involving erosion-inducing activities to use best management practices to minimize erosion.
- **Policy COS-P10.6:** Upon discovery of significant historic or prehistoric archaeological artifacts or fossils during project construction, require ground-disturbing activities to halt within a 50-foot radius of the find until its significance can be determined by a qualified historian, archaeologist, or paleontologist and appropriate protection and preservation measures developed.
- **Policy COS-P10.7:** Require significant historic, archaeological, and paleontological resources to be either preserved onsite or adequately documented as a condition of removal.

Public Facilities and Services Element

- ***Policy PFS-P7.10****: Require that new landfills provide the following:*
  - *a) An appropriate leachate collection and recovery system.*
  - *b) An approved erosion-control and drainage plan.*
  - *c) Geotechnical studies, including stability analysis, to determine the most appropriate engineering design.*
  - *d) A habitat enhancement plan that provides for at least a 3:1 replacement for lost significant habitat.*

Health and Safety Element

- **Policy HS-P4.1**: When considering development proposals and land use changes, treat susceptibility to hazards and threats to health and human life as primary considerations.
- ***Policy HS-P4.3****: Discourage new below-market-rate housing in High and Very High Fire Hazard Severity Zones, the Wildland-Urban Interface, and Alquist-Priolo Fault Zones. If below-market-rate housing must be constructed within these zones, require it to be hardened or make use of nature-based solutions to remain habitable to the greatest extent possible.*
- ***Policy HS-P4.6****: In hazard-prone areas, such as slopes exceeding 15 percent, mapped floodplains, High and Very High Fire Hazard Severity Zones, and Alquist-Priolo Earthquake Fault Zones allow for decreased residential density, including below the minimum density requirement for the applicable land use designation, as the severity of risk increases.*

- **Goal HS-11**: Communities and infrastructure that are protected from seismic and geologic hazards, including severe ground shaking, fault rupture, liquefaction, landslides, and unstable slopes.
  - ***Policy HS-P11.1****: For projects in areas of known or suspected seismic or other geologic hazards, such as Alquist-Priolo Fault Zones, liquefiable soils, landslides, and steep slopes, require submittal of a geotechnical report and ensure effective mitigation measures are incorporated into the project design.*

- ***Policy HS-P11.2****: Prohibit construction of buildings intended for human occupancy in areas where seismic and other geologic hazards (e.g., landslides, liquefaction, and fault lines) cannot be adequately mitigated.*
- ***Policy HS-P11.3****: Discourage construction of critical facilities and buildings intended for human occupancy in Alquist-Priolo Fault Zones. Where such development already exists, encourage earthquake retrofitting. If there is no feasible alternative to developing inside the Fault Zone, buildings must be sited, designed, and constructed to withstand the anticipated seismic stresses.*
- **Policy HS-P11.4**: Refer geotechnical and soils reports to the County Geologist for review and approval whenever necessary.
- **Policy HS-P11.5**: Discourage development on slopes exceeding 15 percent, and prohibit development on slopes exceeding 25 percent, to avoid slope instability, extensive grading, and unnecessary land disturbance. Exceptions may be considered for infrastructure projects and development on existing legal lots where no other feasible building sites exist.
- ***Policy HS-P11.6****: Do not accept public road dedications or allow construction of private roads in unstable hillside or in landslide hazard areas unless potential hazards have been mitigated to the County's satisfaction.*
- **Policy HS-P12.1:** Continue implementing the Contra Costa County Local Hazard Mitigation Plan, which was adopted by the Board of Supervisors and certified by FEMA and is incorporated into this Health and Safety Element.
- **Policy HS-P12.2:** Locate facilities and uses on the County's designated critical facilities list outside of identified hazard areas whenever possible, accounting for how climate change may increase frequency and intensity of hazards. If critical facilities must be in hazard areas, ensure these facilities and their access routes are protected from the hazard risks inherent to each location.

5.7.3.2 PROPOSED CAP UPDATE STRATEGIES AND ACTIONS

The following strategies and actions in the proposed Climate Action Plan (CAP) are applicable to geology and soils.

Strategy NI-6: Protect the community against additional hazards created or exacerbated by climate change.

Strategy NI-6 Actions:

- Treat susceptibility to hazards and threats to human health and life as primary considerations when reviewing all development proposals and changes to land uses.
- Promote, and develop as necessary, available funding sources to create incentives for residents and businesses to prepare for natural disasters, particularly members of Impacted Communities.

5.7.4 Environmental Impacts

Impact 5.7-1: The proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: (i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; (ii) Strong seismic ground shaking; (iii) Seismic-related ground failure, including liquefaction; or (iv) Landslides, mudslides, or other similar hazards. [Thresholds G-1i, G-1ii, G-1iii, and G-1iv])

Proposed General Plan

Surface Rupture of a Fault

As shown in Figure 5.7-1, there are five major faults that run through Contra Costa County including the Calaveras (North Central), Concord-Green Valley, Greenville, Hayward, and Mount Diablo Faults. The EIR Study Area also includes Alquist-Priolo Fault Zones. Future development within the EIR Study Area could have potential impacts in regard to seismic activities at or from nearby faults. However as required by the Alquist-Priolo Act Fault Zoning Act, the approval of projects within Earthquake Fault Zones must be in accordance with the policies and criteria established by the Surface Mining and Geology Board (SMGB) (CPRC, Division 2, Chapter 7.5, Section 2623 (a)). SMGB regulations require that fault investigation reports be prepared by a professional geologist registered in the State of California (CCR, Title 14, Division 2, Chapter 8.1.3, Section 3603 (d)). Additionally, the Seismic Hazards Mapping Act requires projects for human-occupancy that are within mapped fault zones to obtain a site-specific geotechnical report prior to the issuance of individual grading permits, and each new development would be required to retain a licensed geotechnical engineer to design new structures to withstand probable seismically induced ground shaking.

The proposed General Plan Health and Safety Element includes policies aimed at reducing potential impacts from development in and near areas with known faults. In particular, Policy HS-P4.3 discourages new below-market-rate housing in Alquist-Priolo Fault Zones; Policy HS-P11.1 requires geotechnical reports for all sites in areas of known or suspected seismic or other geologic hazards with effective mitigation measures incorporated into the project design; Policy HS-P11.2 prohibits the construction of buildings for human occupancy in areas where seismic and other geologic hazards cannot be adequately mitigated; and Policy HS-P11.3 discourages construction of critical facilities and buildings in Alquist-Priolo Fault Zones, encourages earthquake retrofitting, and requires critical facilities and buildings to be sited, designed, and constructed to withstand seismic stresses.

Furthermore, all new development in California is subject to the seismic design criteria of the CBC, which requires that all improvements be constructed to withstand anticipated ground shaking from regional fault sources. The CBC standards require all new developments to be designed consistent with a site specific, design-level geotechnical report, which would be fully compliant with the seismic recommendations of a California-registered professional geotechnical engineer. Adherence to the applicable CBC requirements, Alquist-Priolo Fault Zoning Act, Seismic Hazards Mapping Act, and proposed General Plan policies would ensure that implementation of the proposed General Plan would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Compliance with State and

local regulations would therefore mitigate impacts due to rupture of a known fault to a less than significant level.

Ground Shaking

Due to the location and underlying geology of Contra Costa County, all future development in the EIR Study Area would likely be subject to strong seismic ground shaking. Several policies in the proposed Health and Safety Element help to mitigate impacts from ground shaking. Policy HS-P11.2 prohibits construction of buildings for human occupancy in areas where seismic and geologic hazards cannot be mitigated. Policy HS-P11.3 discourages construction of critical facilities and buildings in Alquist-Priolo Fault Zones, encourages earthquake retrofitting, and requires critical facilities and buildings to be sited, designed, and constructed to withstand seismic stresses. Additionally, all future residential development would be required to conform to CBC requirements and standards established to prevent significant damage due to ground shaking during seismic events. Adhering to these requirements would make impacts associated with ground shaking less than significant.

Liquefaction

As shown in Figure 5.7-2, several areas of the county are susceptible to liquefaction hazards. Therefore, future development under the proposed General Plan has the potential to be subject to liquefaction hazards. However, the proposed General Plan Health and Safety Element includes policies that address development in areas prone to liquefaction hazards and help to mitigate the risks posed by liquefaction. Policy HS-P11.1 requires geotechnical reports for all sites in areas of known or suspected seismic or other geologic hazards, including liquefiable soils, and requires effective mitigation measures incorporated into the project design. In addition, Policy HS-P11.2 prohibits construction of buildings intended for human occupancy in areas where geologic hazards, such as liquefaction, cannot be adequately mitigated.

Additionally, all future development would be required to conform to CBC requirements and standards established to prevent significant damage due to ground shaking during seismic events. Therefore, impacts associated with liquefaction would be considered less than significant.

Landslides

As shown on Figure 5.7-3, large areas of the EIR Study Area with hill terrain are susceptible to landslides. The County restricts development on open hillsides and ridgelines and generally prohibits development on hillsides with slopes exceeding 25 percent, as referenced in Section 82-1.016, *Hillside Protection.* of the County Ordinance Code. Compliance with CBC requirements, including implementation of recommendations provided in site-specific geotechnical reports would reduce or avoid impacts related to landslides. In addition, the proposed General Plan Health and Safety Element includes policies that help to mitigate impacts related to landslides and unstable geologic conditions. For example, Policy HS-P11.5 discourages development on slopes exceeding 15 percent and prohibits development on slopes exceeding 25 percent to avoid instability, extensive grading, and unnecessary land disturbance, and Policy HS-P11.6 prohibits road dedications or private road construction in unstable hillside and landslide hazard areas without adequate mitigation.

Based on the existing and proposed County regulations, policies, and actions, combined with CBC requirements, implementation of the proposed General Plan would not directly or indirectly result in adverse effects related to landslides, and the impact would be less than significant.

Summary

Overall, implementation of the above proposed policies and actions, as well as compliance with State, regional, and local regulations pertaining to structural safety regarding fault rupture, ground shaking, liquefaction, and landslides, would ensure that potential future development that results from implementation of the proposed project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death. Therefore, impacts would be less than significant.

Proposed CAP

The proposed CAP aims to reduce GHG emissions from activities in the county. The proposed CAP is a policy document that does not include specific projects that could cause potential substantial adverse impacts, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known active fault trace, or involving seismic ground shaking, liquefaction, or landslides. In addition, the proposed CAP includes actions under Strategy CE-1 and Strategy NI-6 that require new housing for low-income households to be outside of hazard-prone areas, including for landslides. Therefore, the impact is less than significant.

Level of Significance Before Mitigation: Impact 5.7-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.7-1 would be less than significant.

Impact 5.7-2: Development under the proposed project would not result in substantial soil erosion or the loss of topsoil. [Threshold G-2]

Proposed General Plan

Future development facilitated by the proposed General Plan would involve soil disturbance, construction, and operation of developed land uses that could be subject to unstable soils conditions. However, the proposed General Plan is a policy-level document and does not include any development proposals or development entitlements that would directly result in the construction or expansion of any new development.

As described further in Section 5.10, *Hydrology and Water Quality*, of this Draft EIR, any new development that would require the disturbance of one or more acres during construction would be subject to the requirements of the National Pollutant Discharge and Elimination System (NPDES) General Permit for Stormwater Discharge Associated with Construction and Land Disturbance Activities (Construction General Permit). The

NPDES permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which would include Best Management Practices (BMPs) designed to control and reduce soil erosion. The BMPs may include dewatering procedures, storm water runoff quality control measures, watering for dust control, and the construction of silt fences, as needed. In addition, County Ordinance Code Section 716-4.202 requires standard erosion control practices to be implemented for all construction. These State and local regulations would effectively mitigate construction stormwater runoff impacts from development under the proposed General Plan.

Furthermore, the proposed General Plan also includes policies aimed at mitigating soil erosion. The Health and Safety Element includes Policy HS-P11.5, which discourages development on slopes exceeding 15 percent to avoid excessive grading. The Conservation, Open Space, and Working Lands Element includes Policy COS-P8.4, which requires new development to retain vegetation and topography and use BMPs to minimize erosion. The Public Facilities and Services Element includes Policy PFS-P7.10, which requires that new landfills provide an approved erosion control and drainage plan.

Implementation of these State and local requirements, as well as policies in the proposed General Plan would effectively ensure that future projects would not result in substantial soil erosion or the loss of topsoil from construction activities, and impacts would be less than significant.

Proposed CAP

The proposed CAP aims to reduce GHG emissions from activities in the county. Although the proposed CAP is a policy document that does not include specific projects, projects could be facilitated by proposed CAP actions that involve construction activity and soil disturbance, creating the potential for soil erosion. However, such projects would be subject to the same State and local requirements and proposed General Plan policies described above for the discussion of proposed General Plan impacts. Therefore, the impact is less than significant.

Level of Significance Before Mitigation: Impact 5.7-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.7-2 would be less than significant.

Impact 5.7-3: Development under the proposed project would not subject people or structures to hazards from unstable soil or expansive soil conditions. [Thresholds G-3 and G-4]

Proposed General Plan

Development on unstable or expansive soils could create substantial risks to life or property and result in adverse impacts such as on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. As shown in Figures 5.7-1, 5.7-2, and 5.7-3, there are seismic and geologic hazards throughout the EIR Study Area. In addition, as mentioned in Section 5.7.1.2, *Existing Conditions*, the three classified soils in the county have

expansive capabilities; therefore, future development within the EIR Study could have potentially significant impacts if located in these hazardous areas.

However, the proposed General Plan policies listed in Impact Discussion 5.7-1 would ensure geologic hazards such as unstable soils, liquefaction, subsidence, and other potential geologic or soil stability issues be addressed and mitigated. In addition, the County Ordinance Code Section 94-4.420 requires the preparation of a preliminary soil report to accompany a tentative parcel for a subdivision, and Section 716-2.418 requires a soil investigation for all development identified to have the potential for hazards related to soil conditions such as expansive soils, so the project can mitigate impacts through site-specific design. In addition, all new projects within the EIR Study Area must comply with the CBC, which contains provisions for soil preparation and conditioning to minimize geologic hazards such as unstable soils, liquefaction, subsidence, and other potential geologic or soil stability issues. Therefore, impacts will be less than significant.

Proposed CAP

The proposed CAP aims to reduce GHG emissions from activities within the county. Although the proposed CAP is a policy document that does not include specific projects, projects could be facilitated by proposed CAP actions that would place structures on a geologic unit or soil that is unstable. However, such projects would be subject to the same State and local requirements and proposed General Plan policies described above for the discussion of proposed General Plan impacts. Therefore, the impact is less than significant.

Level of Significance Before Mitigation: Impact 5.7-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.7-3 would be less than significant.

Impact 5.7-4: Development under the proposed project would connect to existing sewer lines or comply with State and local regulations for on-site septic tanks or alternative wastewater disposal systems. [Threshold G-5].

Proposed General Plan

Most new development would connect to existing sewer lines, and on-site septic systems and alternative wastewater disposal systems would be limited to rural areas. Any new development within the EIR Study Area that would include the utilization of a septic systems or alternative wastewater disposal system would be regulated by the Contra Costa Health Services Environmental Health Division. Obtaining a permit would be required prior to the construction of any septic systems or alternative wastewater disposal system, and each system would be constructed within the parameters of the State Water Resources Control Board (SWRCB) Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (SWRCB 2012), as well as the Contra Costa County Health Officer Regulations for Sewage Collection and Disposal (Contra Costa 2018b). As this procedure would be required prior to construction of any and all septic systems and alternative wastewater disposal systems, all new development under the proposed General Plan would be subject to these State and local requirements. Proper soils are essential for installation and

maintenance of septic systems and alternative wastewater disposal systems; compliance with these State and local requirements would ensure that impacts related to adequate soils for supporting such systems are less than significant.

Proposed CAP

The proposed CAP aims to reduce GHG emissions from activities within the county. Although the proposed CAP is a policy document that does not include specific projects, projects could be facilitated by proposed CAP actions that include structures that connect to existing sewer lines, on-site septic systems, and/or alternative wastewater disposal systems. If a septic system or alternative wastewater disposal system installation is proposed, a testing and permitting process would be completed before installation based on individual project-level review, as described above for the discussion of proposed General Plan impacts.

Level of Significance Before Mitigation: Impact 5.7-4 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.7-4 would be less than significant.

Impact 5.7-5: Development under the proposed project could directly or indirectly destroy a unique paleontological resource or unique geologic feature. [Threshold G-6]

Proposed General Plan

Unique Geologic Features

The most notable geological feature in the county is Mount Diablo, located between Clayton and Danville. At almost 4,000 feet tall, the mountain dominates the landscape in Contra Costa County and is a popular attraction for hiking in the region. Mount Diablo is also a State Park and there are varied types of protected lands on and around Mount Diablo that total more than 90,000 acres. The mountain has historically been an important landmark for navigation because of its presence and visibility throughout the Bay Area and beyond (California State Parks 2023). While this geologic resource is already protected as a State Park, the proposed General Plan supports this protection by designating it Parks and Recreation and including Policy COS-P13.4, which requires applications for new or expanded quarrying operations adjacent to Mount Diablo State Park to include an analysis of potential impacts to the park's natural features.

Furthermore, any future development under the proposed project would need to follow the County's Ordinance Code. Section 814-2.1004, Environmental Design, of the County Code mandates that grading must consider the land's environmental characteristics, such as geological features, stream beds, and tree cover, and employ the best engineering practices to minimize erosion, slides, or flooding, ensuring minimal impact on the environment. Therefore, impacts would be less than significant.

Paleontological Resources

Contra Costa County is underlain by a number of distinct geologic rock units (i.e., formations) with varying paleontological sensitivities. According to the U.S. Geological Survey (USGS), 24 percent of the county is underlain by quaternary alluvium and marine deposits of the Pleistocene to Holocene eras, which generally have lower paleontological sensitivity due to their young age (USGS 2022). Additionally, 18 percent of the county is underlain by Pleo-Pleistocene and Pliocene loosely consolidated deposits, 15 percent by Miocene marine rocks, and 14 percent by upper cretaceous marine rocks (USGS 2022). These geologic units typically have higher paleontological sensitivity based on their rock type, which is primarily sandstone and shale.

Development under the proposed General Plan would occur in areas of varying levels of paleontological sensitivity and would require site-specific investigations by a professional archaeologist/paleontologist to determine the potential of such resources to be present on site. Excavations could occur in association with development of these sites that could affect paleontological resources buried at greater depths. Therefore, it is possible that project-related ground-disturbing activities associated with development allowed under the proposed General Plan could uncover previously unknown paleontological resources. Unanticipated discoveries during project implementation have the potential to affect significant paleontological resources. The proposed General Plan includes Policy COS-P10.7, which requires that significant paleontological resources be either preserved on-site or adequately documented as a condition of removal. In addition, Policy COS-P10.6 states that upon discovery of any significant fossils during project construction, ground-disturbing activities must halt within a 50-foot radius of the find until its significance can be determined by a qualified paleontologist and appropriate protection and preservation measures are developed. While adherence to these proposed policies would preserve or document a resource in the event of its discovery, it does not prevent ground-disturbing activities from occurring that could potentially impact paleontological resources. Therefore, this paleontological resource impact is potentially significant.

Proposed CAP

The proposed CAP aims to reduce GHG emissions from activities within the county. Although the proposed CAP is a policy document that does not include specific projects, projects could be facilitated by proposed CAP actions that include construction activity and ground disturbance, which could uncover and impact previously unknown paleontological resources, resulting in a potentially significant impact.

Level of Significance Before Mitigation: Impact 5.7-5 would be potentially significant.

Mitigation Measures

GEO-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County, the project applicant shall be required to retain a Qualified Professional Paleontologist to determine the project's potential to significantly impact paleontological resources according to Society of Vertebrate Paleontology standards. If necessary, the Qualified Professional Paleontologist shall recommend mitigation measures to reduce potential impacts to paleontological resources to a less-than-significant level.

Level of Significance After Mitigation: Impact 5.7-5 would be less than significant.

5.7.5 Cumulative Impacts

Geology and Soils

Geological impacts tend to be site-specific rather than cumulative in nature. For example, seismic events may damage or destroy a building on a project site, but the construction of a development project on one site would not cause any adjacent parcels to become more susceptible to seismic events, nor can a project affect local geology in such a manner as to increase risks regionally.

The cumulative setting includes growth within the EIR Study Area in combination with projected growth in the rest of Contra Costa County. All new development in the county would have to comply with the CBC, which requires stringent earthquake-resistant design parameters and common engineering practices requiring special design and construction methods that reduce or eliminate potential expansive soil-related impacts. Furthermore, any development involving clearing, grading, or excavation that causes soil disturbance of one or more acres, or any project involving less than one acre that is part of a larger development plan and includes clearing, grading, or excavation, is subject to NPDES Storm Water Construction General Permit provisions. These requirements would significantly reduce the potential for substantial erosion or topsoil loss to occur in association with new development by requiring an approved stormwater pollution prevention plan that provides a schedule for the implementation and maintenance of erosion control measures and a description of erosion control practices, including appropriate design details and a time schedule.

Implementation of NPDES requirements and CBC standards as discussed under Impacts 5.7-1 through 5.7-3 above would reduce cumulative impacts associated with geology and soils throughout the region. Furthermore, site-specific review, including geotechnical reports, required by Contra Costa County and compliance with the proposed General Plan policies would reduce the proposed project's contribution to cumulative impacts to less than cumulatively considerable.

Unique Geologic Features and Paleontological Resources

The geographic scope of cumulative impacts to unique geologic features and paleontological resources includes the EIR Study Area and adjacent areas with unique geologic features or where deposits with a high potential to contain paleontological resources could be disturbed. If there are unique geologic features or potential paleontological resources that extend across areas of ground disturbance of the potential development under the proposed General Plan and cumulative projects, the projects could result in the loss of unique geologic features or paleontological resources, which is a potentially significant impact. However, with implementation of Mitigation Measure GEO-1 and proposed General Plan policies discussed under Impact 5.7-5, implementation of the proposed project would effectively avoid the potential loss of unique geologic features or paleontological resources in the event of inadvertent discovery during construction. Therefore, while implementation of cumulative projects could have a significant effect related to unique geologic features and paleontological resources, the project's contribution to such effect would be less than cumulatively considerable.

5.7.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, some impacts would be less than significant: 5.7-1, 5.7-2, 5.7-3 and 5.7-4.

Without mitigation, this impact would be **potentially significant**:

- **Impact 5.7-5:** Development under the proposed project could directly or indirectly destroy a unique paleontological resource or unique geologic feature.

5.7.7 Mitigation Measures

Impact 5.7-5

GEO-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites, or as otherwise directed by the County, the project applicant shall be required to retain a Qualified Professional Paleontologist to determine the project's potential to significantly impact paleontological resources according to Society of Vertebrate Paleontology standards. If necessary, the Qualified Professional Paleontologist shall recommend mitigation measures to reduce potential impacts to paleontological resources to a less-than-significant level.

5.7.8 Level of Significance After Mitigation

Impact 5.7-5

Mitigation Measure GEO-1 would require non-ministerial projects not exempt from CEQA that involve ground-disturbing activities on previously undisturbed sites to consult with a Qualified Professional Paleontologist to assess potential impacts on paleontological resources, and if necessary, recommend mitigation measures to minimize these impacts to a less-than-significant level. Impact 5.7-5 would be *less than significant* with mitigation incorporated.

5.7.9 References

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5. Environmental Analysis
GEOLOGY AND SOILS

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5.8 GREENHOUSE GAS EMISSIONS

This section evaluates the potential for the adoption and implementation of the proposed project to impact greenhouse gas (GHG) emissions in a local and regional context. Because no single project is large enough to result in a measurable increase in global concentrations of GHG, climate change impacts of a project are considered on a cumulative basis based on the GHG emissions reduction goals identified in the California Air Resources Board's (CARB) 2022 Scoping Plan. GHG emissions modeling is based on emissions inventory, targets, and forecast in the Climate Action Plan (CAP) included in Appendix 5.8-1, *Climate Action Plan*, of this Draft Environmental Impact Report (EIR).

5.8.1 Environmental Setting

5.8.1.1 TERMINOLOGY

The following are definitions for terms used throughout this section.

- **Greenhouse gases (GHG).** Gases in the atmosphere that absorb infrared light, thereby retaining heat in the atmosphere and contributing to a greenhouse effect.
- **Global warming potential (GWP).** Metric used to describe how much heat a molecule of a GHG absorbs relative to a molecule of carbon dioxide (CO_2) over a given period of time (20, 100, and 500 years). CO_2 has a GWP of 1.
- **Carbon dioxide-equivalent (CO_2e).** The standard unit to measure the amount of GHGs in terms of the amount of CO_2 that would cause the same amount of warming. CO_2e is based on the GWP ratios between the various GHGs relative to CO_2.
- **$MTCO_2e$.** Metric ton of CO_2e.
- **$MMTCO_2e$.** Million metric tons of CO_2e.

5.8.1.2 GREENHOUSE GASES AND CLIMATE CHANGE

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHGs, to the atmosphere. The primary source of these GHGs is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs—water vapor, carbon dioxide (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed in the 20th and 21st centuries. Other GHGs identified by the IPCC that contributes to global warming to a lesser extent are nitrous oxide (N_2O), sulfur hexafluoride (SF_6),

hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons (IPCC 2001).[1,2] The major GHGs applicable to the proposed project are briefly described.

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (i.e., oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (i.e., sequestered) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH_4)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in landfills and water treatment facilities.
- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during the combustion of fossil fuels and solid waste.

GHGs are dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Some GHGs have stronger greenhouse effects than others. These are referred to as high GWP gases. The GWP of GHG emissions are shown in Table 5.8-1, *GHG Emissions and Their Relative Global Warming Potential Compared to CO_2*. The GWP is used to convert GHGs to CO_2-equivalence (CO_2e) to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. For example, under the IPCC Fifth Assessment Report (AR5) GWP values for CH_4, 10 MT of CH_4 would be equivalent to 280 MT of CO_2.

Table 5.8-1 GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Fourth Assessment Report Global Warming Potential Relative to CO_2[1]	Fifth Assessment Report Global Warming Potential Relative to CO_2[1]	Sixth Assessment Report Global Warming Potential Relative to CO_2[1]
Carbon Dioxide (CO_2)	1	1	1
Methane (CH_4)[2]	25	28	30
Nitrous Oxide (N_2O)	298	265	273

Source: IPCC 2007, 2013, and 2022.
Notes: The IPCC published updated GWP values in its Sixth Assessment Report (AR6) that reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO_2. However, GWP values identified in AR5 are used by the 2022 Scoping Plan for long-term emissions forecasting. Therefore, this analysis utilizes AR5 GWP values consistent with the current Scoping Plan.
1 Based on 100-year time horizon of the GWP of the air pollutant compared to CO_2.
2 The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

1 Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals); however, water vapor is not considered a pollutant because it is considered part of the feedback loop rather than a primary cause of change.

2 Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. The share of black carbon emissions from transportation is dropping rapidly and is expected to continue to do so between now and 2030 as a result of California's air quality programs. The remaining black carbon emissions will come largely from woodstoves/fireplaces, off-road applications, and industrial/commercial combustion (CARB 2022). However, State and national GHG inventories do not include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHGs in the atmosphere remained relatively constant. During the 20th century, scientists observed a rapid change in the climate and the quantity of climate change pollutants in the Earth's atmosphere that is attributable to human activities.

The recent IPCC Sixth Assessment Report (AR6) summarizes the latest scientific consensus on climate change. It finds that atmospheric concentrations of CO_2 have increased by 50 percent since the Industrial Revolution and continue to increase at a rate of two parts per million each year. By the 2030s, and no later than 2040, the world will exceed 1.5°C warming (CARB 2022b). These recent changes in the quantity and concentration of climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants (CAT 2006). In the past, gradual changes in the Earth's temperature changed the distribution of species, availability of water, and other conditions. Human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but within a human lifetime (IPCC 2007).

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are hard to predict. Projections of climate change depend heavily on future human activity. Therefore, climate models are based on different emission scenarios that account for historical trends in emissions and on observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty. For example, there are varying degrees of certainty on the magnitude of the trends for:

- Warmer and fewer cold days and nights over most land areas.
- Warmer and more frequent hot days and nights over most land areas.
- An increase in the frequency of warm spells and heat waves over most land areas.
- An increase in frequency of heavy precipitation events (or proportion of total rainfall from heavy falls) over most areas.
- Larger areas affected by drought.
- Intense tropical cyclone activity increases.
- Increased incidence of extreme high sea level (excluding tsunamis).

Potential Climate Change Impacts for California

There is at least a greater than 50 percent likelihood that global warming will reach or exceed 1.5°C in the near-term, even for the very low GHG emissions scenario (IPCC 2022). Climate change is already impacting California and will continue to affect it for the foreseeable future. For example, the average temperature in most areas of California is already 1°F higher than historical levels, and some areas have seen average increases in excess of 2°F (CalOES 2020). The California Fourth Climate Change Assessment identifies the following climate change impacts under a business-as-usual (BAU) scenario, in which no new actions are taken to curb GHG emissions:

- Annual average daily high temperatures in California are expected to rise by 2.7°F by 2040, 5.8°F by 2070, and 8.8°F by 2100 compared to observed and modeled historical conditions. These changes are statewide averages. Heat waves are projected to become longer, more intense, and more frequent.
- Warming temperatures are expected to increase soil moisture loss and lead to drier seasonal conditions. Summer dryness may become prolonged, with soil drying beginning earlier in the spring and lasting longer into the fall and winter rainy season.
- High heat increases the risk of death from cardiovascular, respiratory, cerebrovascular, and other diseases.
- Droughts are likely to become more frequent and persistent through 2100.[3]
- Climate change is projected to increase the strength of the most intense precipitation and storm events affecting California.
- Mountain ranges in California are already seeing a reduction in the percentage of precipitation falling as snow. Snowpack levels are projected to decline significantly by 2100 due to reduced snowfall and faster snowmelt. California's water storage system is designed with the expectation that snow will stay frozen for many months, and that as it melts, it will be stored in a series of reservoirs and dams, many of which are used to generate electricity. Changing waterfall patterns therefore impact both water supply and electricity supply.
- Marine layer clouds are projected to decrease, though more research is needed to better understand their sensitivity to climate change.
- Extreme wildfires (i.e., fires larger than 10,000 hectares or 24,710 acres) are expected to occur 50 percent more frequently. The maximum area burned statewide may increase 178 percent by the end of the century. Drought and reduced water supplies can increase wildfire risk.
- Exposure to wildfire smoke is linked to increased incidence of respiratory illness.
- Sea-level rise is expected to continue to increase erosion of beaches, cliffs, and bluffs (CalOES 2020).

Global climate change risks to California are shown in Table 5.8-2, *Summary of GHG Emissions Risks to California*, and include impacts to public health, water resources, agriculture, coastal sea level, forest and biological resources, and energy.

[3] Overall, California has become drier over time, with five of the eight years of severe to extreme drought occurring between 2007 and 2016, and with unprecedented dry years in 2014 and 2015 (OEHHA 2018). Statewide precipitation has become increasingly variable from year to year, with the driest consecutive four years occurring from 2012 to 2015 (OEHHA 2018).

Table 5.8-2 Summary of GHG Emissions Risks to California

Impact Category	Potential Risk
Public Health Impacts	Heat waves will be more frequent, hotter, and longer Fewer extremely cold nights Poor air quality made worse Higher temperatures increase ground-level ozone levels Deaths due to extreme heat
Water Resources Impacts	Decreasing Sierra Nevada snowpack Challenges in securing adequate water supply Potential reduction in hydropower Loss of winter recreation
Agricultural Impacts	Increasing temperature Increasing threats from pests and pathogens Expanded ranges of agricultural weeds Declining productivity Irregular blooms and harvests
Coastal Sea Level Impacts	Accelerated sea-level rise Increasing coastal floods Shrinking beaches Worsened impacts on infrastructure
Forest and Biological Resource Impacts	Increased risk and severity of wildfires Lengthening of the wildfire season Movement of forest areas Conversion of forest to grassland Declining forest productivity Increasing threats from pests and pathogens Shifting vegetation and species distribution Altered timing of migration and mating habits Loss of sensitive or slow-moving species
Energy Demand Impacts	Potential reduction in hydropower Increased energy demand

Sources: CEC 2006, 2009; CCCC 2012; CNRA 2014; CalEOS 2020

5.8.1.3 REGULATORY BACKGROUND

Federal

The U.S. Environmental Protection Agency (USEPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The USEPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not impose any emission reduction requirements but allowed the USEPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation (USEPA 2009).

To regulate GHGs from passenger vehicles, the USEPA was required to issue an endangerment finding (USEPA 2023). The finding identified emissions of six key GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three are applicable to the proposed project's GHG emissions inventory because they constitute the majority of GHG emissions and, according to guidance by the Bay Area Air Quality Management District (BAAQMD), are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory.

US Mandatory Report Rule for GHGs (2009)

In response to the endangerment finding, the USEPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (e.g., large stationary sources) to report GHG emissions data. Facilities that emit 25,000 MT or more of CO_2e per year are required to submit an annual report.

Update to Corporate Average Fuel Economy Standards (2017 to 2026)

The federal government issued new Corporate Average Fuel Economy (CAFE) standards in 2012 for vehicle model years 2017 to 2025, requiring a fleet average of 54.5 miles per gallon (MPG) in 2025. However, on March 30, 2020, the USEPA finalized updated CAFE and GHG emissions standards for passenger cars and light trucks, covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021 to 2026. Under SAFE, the fuel economy standards will increase 1.5 percent per year compared to the 5 percent per year under the CAFE standards established in 2012. Overall, SAFE requires a fleet average of 40.4 MPG for model year 2026 vehicles (85 Federal Register 24174 (April 30, 2020)).

On December 21, 2021, under the direction of Executive Order (EO) 13990 issued by President Biden, the National Highway Traffic Safety Administration (NHTSA) repealed SAFE Vehicles Rule Part One, which had preempted state and local laws related to fuel economy standards. In addition, the NHTSA announced new proposed fuel standards on March 31, 2022. Fuel efficiency under the new standards proposed will increase 8 percent annually for model years 2024 to 2025 and 10 percent for model year 2026. Overall, the new CAFE standards require a fleet average of 49 MPG for passenger vehicles and light trucks for model year 2026, which would be a 10 MPG increase relative to model year 2021 (NHTSA 2022).

State

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in EO S-03-05, EO B-30-15, EO B-55-18, Assembly Bill (AB) 32, AB 1279, Senate Bill (SB) 32, and SB 375.

Executive Order S-03-05

EO S-03-05 was signed June 1, 2005, and set the following GHG reduction targets for the State:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

Assembly Bill 32, the Global Warming Solutions Act (2006)

AB 32 was passed by the California State legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in EO S-03-05. CARB prepared the 2008 Scoping Plan to outline a plan to achieve the GHG emissions reduction targets of AB 32.

Executive Order B-30-15

EO B-30-15, signed April 29, 2015, set a goal of reducing GHG emissions in the state to 40 percent of 1990 levels by year 2030. EO B-30-15 also directed CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the State and requires State agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in EO S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, *Safeguarding California*, in order to ensure climate change is accounted for in State planning and investment decisions.

Senate Bill 32 and Assembly Bill 197

In September 2016, Governor Brown signed SB 32 and AB 197 into law, making the EO goal for year 2030 into a statewide mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires CARB to prioritize direct emissions reductions rather than the market-based cap-and-trade program for large stationary, mobile, and other sources.

Executive Order B-55-18

EO B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." EO B-55-18 directs CARB to work with relevant State agencies to ensure future scoping plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other State goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Assembly Bill 1279

AB 1279, signed by Governor Newsom in September 2022, codifies the carbon neutrality targets of EO B-55-18 for year 2045 and sets a new legislative target for year 2045 of 85 percent below 1990 levels for anthropogenic GHG emissions. CARB was required to update the Scoping Plan to identify and recommend measures to achieve the net-zero and GHG emissions-reduction goals.

2022 Climate Change Scoping Plan

CARB adopted the *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) on December 15, 2022, which lays out a path to achieve carbon neutrality by 2045 or earlier and to reduce the state's anthropogenic GHG emissions (CARB 2022b). The Scoping Plan was updated to address the carbon neutrality goals of EO B-55-18 and the ambitious GHG reduction target as directed by AB 1279. Previous scoping plans focused on

specific GHG reduction targets for industrial, energy, and transportation sectors—to meet 1990 levels by 2020, and then the more aggressive 40 percent below that for the 2030 target. This Plan expands on earlier scoping plans with a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. Carbon neutrality takes it one step further by expanding actions to capture and store carbon, including through natural and working lands and mechanical technologies, while drastically reducing anthropogenic sources of carbon pollution at the same time.

The path forward was informed by the recent IPCC AR6; the measures would achieve 85 percent below 1990 levels by 2045 in accordance AB 1279. CARB's 2022 Scoping Plan identifies strategies as shown in Table 5.8-3, *Priority Strategies for Local Government Climate Action Plans*, that would be most impactful at the local level for ensuring substantial process towards the State's carbon neutrality goals.

Table 5.8-3 Priority Strategies for Local Government Climate Action Plans

Priority Area	Priority Strategies
Transportation Electrification	Convert local government fleets to zero-emission vehicles (ZEV) and provide electric vehicle (EV) charging at public sites.
	Create a jurisdiction-specific ZEV ecosystem to support deployment of ZEVs statewide (such as building standards that exceed State building codes, permit streamlining, infrastructure siting, consumer education, preferential parking policies, and ZEV readiness plans).
Vehicle Miles Traveled (VMT) Reduction	Reduce or eliminate minimum parking standards.
	Implement complete streets policies and investments, consistent with general plan circulation element requirements.
	Increase access to public transit by increasing density of development near transit, improving transit service by increasing service frequency, creating bus priority lanes, reducing or eliminating fares, microtransit, and other approaches.
	Increase public access to clean mobility options by planning for and investing in electric shuttles, bike share, car share, and walking.
	Implement parking pricing or transportation demand management pricing strategies.
	Amend zoning or development codes to enable mixed-use, walkable, transit-oriented, and compact infill development (such as increasing allowable density of the neighborhood).
	Preserve natural and working lands by implementing land use policies that guide development toward infill areas and do not convert "greenfield" land to urban uses (e.g., green belts, strategic conservation easements).
Building Decarbonization	Adopt all-electric new construction reach codes for residential and commercial uses.
	Adopt policies and incentive programs to implement energy efficiency retrofits for existing buildings, such as weatherization, lighting upgrades, and replacing energy-intensive appliances and equipment with more efficient systems (such as Energy Star-rated equipment and equipment controllers).
	Adopt policies and incentive programs to electrify all appliances and equipment in existing buildings such as appliance rebates, existing building reach codes, or time of sale electrification ordinances.
	Facilitate deployment of renewable energy production and distribution and energy storage on privately owned land uses (e.g., permit streamlining, information sharing).
	Deploy renewable energy production and energy storage directly in new public projects and on existing public facilities (e.g., solar photovoltaic systems on rooftops of municipal buildings and on canopies in public parking lots, battery storage systems in municipal buildings).

Source: CARB 2022b

Residential and mixed-use development projects including the following key project attributes would accommodate growth in a manner consistent with State GHG reduction and equity prioritization goals. This is the first approach the State recommends for qualitatively determining whether a proposed residential or mixed-use residential development would align with the State's climate goals while simultaneously advancing fair housing.

Key residential and mixed-use project attributes that reduce GHGs:

- Transportation Electrification
  - Provide EV charging infrastructure that, at a minimum, meets the most ambitious voluntary standards in the California Green Building Standards Code at the time of project approval.

- VMT Reduction
  - Is located on infill sites that are surrounded by existing urban uses and reuses or redevelops previously undeveloped or underutilized land that is presently served by existing utilities and essential public services (e.g., transit, streets, water, and sewer).
  - Does not result in the loss or conversion of the state's natural and working lands.
  - Consists of transit-supportive densities (minimum of 20 residential dwelling units/acre), or is in proximity to existing transit stops (within a half mile), or satisfies more detailed and stringent criteria specified in the region's Sustainable Communities Strategy (SCS).
  - Reduces parking requirements by:
    - Eliminating parking requirements or including maximum allowable parking ratios (i.e., the ratio of parking spaces to residential units or square feet); or
    - Providing residential parking supply at a ratio of <1 parking space per dwelling unit; or
    - For multifamily residential development, requiring parking costs to be unbundled from costs to rent or own a residential unit.
  - At least 20 percent of the units are affordable to lower-income residents.
  - Result in no net loss of existing affordable units.

- Building Decarbonization
  - Use all electric appliances without any natural gas connections and does not use propane or other fossil fuels for space heating, water heating, or indoor cooking.

The second approach to project-level alignment with State climate goals is net zero GHG emissions, especially for new residential development. The third approach to demonstrating project-level alignment with State climate goals is to align with GHG thresholds of significance, which many local air quality management (AQMDs) and air pollution control districts (APCDs) have developed or adopted (CARB 2022b).

Senate Bill 375

SB 375, the Sustainable Communities and Climate Protection Act, was adopted in 2008 to connect the GHG emissions reduction targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (i.e., excluding emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPO). The Metropolitan Transportation Commission (MTC) is the MPO for the Bay Area region, which includes Contra Costa County. Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

2017 Update to the SB 375 Targets

CARB is required to update the targets for the MPOs every eight years. In June 2017, CARB released updated targets and technical methodology, and then released another update in February 2018, which became effective in October 2018. CARB adopted the updated targets and methodology on March 22, 2018. All SCSs adopted after October 1, 2018, are subject to these new targets. The updated targets consider the need to further reduce VMT, as identified in the 2017 Scoping Plan Update, while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. The updated SB 375 targets are in units of percentage per capita reduction in GHG emissions from automobiles and light trucks compared to 2005. This excludes reductions anticipated from implementation of State technology and fuels strategies and any potential future State strategies such as statewide road user pricing. The updated targets call for greater per-capita GHG emission reductions from SB 375 than were currently in place, which for 2035 translates into updated targets that either match or exceed the emission reduction levels in the MPOs' currently adopted SCSs. CARB's updated targets result in an additional reduction of over 8 $MMTCO_2e$ in 2035 compared to the prior targets (CARB 2018).

Transportation Sector Specific Regulations

Advanced Clean Fleets and Advanced Clean Trucks

CARB adopted the Advanced Clean Fleets (ACF) regulation in 2023 to accelerate the transition to zero-emission medium- and heavy-duty vehicles. In conjunction with the Advanced Clean Trucks (ACT) regulation, the ACF regulations helps to ensure that medium- and heavy-duty ZEVs are brought to the market, by requiring certain fleets to purchase ZEVs. The ACF ZEV phase-in approach provides initial focus where the best fleet electrification opportunities exist, sets clear targets for regulated fleets to make a full conversion to ZEVs, and creates a catalyst to accelerate development of a heavy-duty public charging infrastructure network.

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and was anticipated to reduce GHG emissions from new passenger vehicles by

30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the USEPA. In 2012, the USEPA issued a Final Rulemaking that set even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 light-duty vehicles. (See also the previous discussion in federal regulations under "*Update to Corporate Average Fuel Economy Standards [2017 to 2026]*.")

In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of ZEVs into a single package of standards. Under California's Advanced Clean Car program, by 2025 new automobiles will emit 34 percent less GHG emissions and 75 percent less smog-forming emissions.

Executive Order S-01-07

On January 18, 2007, the State set a new low carbon fuel standard (LCFS) for transportation fuels sold in the state. EO S-01-07 set a declining standard for GHG emissions measured in CO_2e gram per unit of fuel energy sold in California. The LCFS required a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applied to refiners, blenders, producers, and importers of transportation fuels, and used market-based mechanisms to allow these providers to choose the most economically feasible methods for reducing emissions during the "fuel cycle."

Executive Order B-16-2012

On March 23, 2012, the State directed CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate ZEVs in major metropolitan areas, including infrastructure to support them (e.g., EV charging stations). EO B-16-2012 also directed the number of ZEVs in California's State vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are ZE by 2015 and at least 25 percent by 2020. The EO also established a target for the transportation sector of reducing GHG emissions to 80 percent below 1990 levels.

Executive Order N-79-20

On September 23, 2020, Governor Newsom signed EO N-79-20, establishing a goal that 100 percent of in-state sales of new passenger cars and trucks will be ZE by 2035. Additionally, the fleet goals for trucks are that 100 percent of drayage trucks are ZE by 2035, and 100 percent of medium- and heavy-duty vehicles in the state are ZE by 2045, where feasible. The EO's goal for the State is to transition to 100 percent ZE off-road vehicles and equipment by 2035, where feasible.

Renewables Portfolio: Carbon Neutrality Regulations

Senate Bills 1078, 107, and X1-2 and Executive Order S-14-08

A major component of California's Renewable Energy Program is the renewables portfolio standard established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at

least 20 percent by December 30, 2010. EO S-14-08, signed in November 2008, expanded the State's renewable energy standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production decreases indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

Senate Bill 350

SB 350 (de Leon) was signed into law in September 2015 and establishes tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100. Under SB 100, the RPS for public-owned facilities and retail sellers consists of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill establishes an overall State policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Senate Bill 1020

SB 1020 was signed into law on September 16, 2022. SB 1020 provides interim RPS targets (90 percent renewable energy by 2035 and 95 percent renewable energy by 2040) and requires renewable energy and zero-carbon resources to reach 100 percent clean electricity by 2045.

Energy Efficiency Regulations

California Building Code: Building Energy Efficiency Standards

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for the consideration and possible incorporation of new energy efficiency technologies and methods.

CEC adopted the 2022 Building Energy Efficiency Standards on August 11, 2021, and they went into effect on January 1, 2023. The 2022 standards encourage efficient electric heat pumps, establish electric-ready requirements for new homes, expand solar photovoltaic and battery storage standards, strengthen ventilation standards, among other approaches. The 2022 standards require mixed-fuel single-family homes to be electric-ready to accommodate replacement of gas appliances with electric appliances. In addition, the new standards include prescriptive photovoltaic system and battery requirements for high-rise, multi-family buildings (i.e.,

more than three stories) and noncommercial buildings such as hotels, offices, medical offices, restaurants, retail stores, schools, warehouses, theaters, and convention centers (CEC 2021).

California Building Code: CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.[4] The mandatory provisions of CALGreen became effective January 1, 2011, and were last updated in 2022. The 2022 CALGreen standards became effective on January 1, 2023.

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR Sections 1601–1608) were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. Though these regulations are now often viewed as "business as usual," they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand.

Solid Waste Diversion Regulations

Assembly Bill 939: Integrated Waste Management Act of 1989

California's Integrated Waste Management Act of 1989 (AB 939, Public Resources Code Section 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the Act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

Assembly Bill 341

AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multi-family residential land uses. Section 5.408 of CALGreen also requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

Assembly Bill 1327

The California Solid Waste Reuse and Recycling Access Act (AB 1327, Public Resources Code Section 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The Act required the California Integrated Waste Management Board to develop a model ordinance for

[4] The green building standards became mandatory in the 2010 edition of the Code.

adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.

Assembly Bill 1826

In October 2014, Governor Brown signed AB 1826, requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses and multi-family residential dwellings with five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed with food waste.

Water Efficiency Regulations

Senate Bill X7-7

The 20x2020 Water Conservation Plan was issued by the California Department of Water Resources (DWR) in 2010 pursuant to SB 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed "SBX7-7." SBX7-7 mandated urban water conservation and authorized DWR to prepare a plan implementing urban water conservation requirements, which DWR did through the 20x2020 Water Conservation Plan. In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 required urban water providers to adopt a water conservation target of a 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

Assembly Bill 1881: Water Conservation in Landscaping Act

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or an equivalent. AB 1881 also requires CEC to consult with DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves, to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Short-Lived Climate Pollutant Reduction Strategy

On September 19, 2016, the Governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and methane. Black carbon is the light-absorbing component of fine particulate matter produced during the incomplete combustion of fuels. SB 1383 required CARB, no later than January 1, 2018, to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The bill also established targets for reducing organic waste in landfills. On March 14, 2017, CARB adopted the Short-Lived Climate Pollutant Reduction Strategy, which identifies the State's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower

than in the early 1960s, despite the tripling of diesel fuel use (CARB 2017a). In-use on-road rules were expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020.

Regional

Plan Bay Area: Strategy for a Sustainable Region

MTC and the Association of Bay Area Governments (ABAG) adopted Plan Bay Area 2050 on October 21, 2021 (ABAG/MTC 2021). Plan Bay Area 2050 provides transportation and environmental strategies to continue to meet the regional transportation-related GHG reduction goals of SB 375. Under the Plan Bay Area 2050 strategies, just under half of all Bay Area households would live within one half-mile of frequent transit by 2050, with this share increasing to over 70 percent for households with low incomes. Transportation and environmental strategies that support active and shared modes, combined with a transit-supportive land use pattern, are forecasted to lower the share of Bay Area residents that drive to work alone from over 50 percent in 2015 to 36 percent in 2050. GHG emissions from transportation would decrease significantly as a result of these transportation and land use changes, and the Bay Area would meet the State mandate of a 19-percent reduction in per-capita emissions by 2035 — but only if all strategies are implemented (ABAG/MTC 2021).

To achieve this sustainable vision for the Bay Area, the Plan Bay Area land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities. An overarching goal of the regional plan is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle, VMT, and associated GHG emissions reductions. Parts of the EIR Study Area lie within identified PDAs (MTC 2023).

Bay Area Clean Air Plan

BAAQMD adopted the 2017 *Clean Air Plan, Spare the Air, Cool the Climate* (Clean Air Plan) on April 19, 2017. The 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.

A comprehensive multipollutant control strategy has been developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, toxic air contaminants, and GHG from a full range of emission sources. These control measures cover the following

sectors: (1) stationary (industrial) sources; (2) transportation; (3) energy; (4) agriculture; (5) natural and working lands; (6) waste management; (7) water; and (8) super-GHG pollutants. Overall, the proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of "super-GHGs," such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (i.e., gasoline, diesel, and natural gas).
  - Increase efficiency of the energy and transportation systems.
  - Reduce demand for vehicle travel and high-carbon goods and services.
- Decarbonize the energy system.
  - Make the electricity supply carbon-free.
  - Electrify the transportation and building sectors.

Bay Area Commuter Benefits Program

Under Air District Regulation 14, Model Source Emissions Reduction Measures, Rule 1, Bay Area Commuter Benefits Program, employers with 50 or more full-time employees within the BAAQMD are required to register and offer commuter benefits to employees. In partnership with BAAQMD and MTC, the Rule's purpose is to improve air quality, reduce GHG emissions, and decrease the Bay Area's traffic congestion by encouraging employees to use alternative commute modes, such as transit, vanpool, carpool, bicycling, and walking. The benefits program allows employees to choose from one of four commuter benefit options, including a pre-tax benefit, employer-provided subsidy, employer-provided transit, and alternative commute benefit.

Local

Contra Costa County Congestion Management Program

The Contra Costa Transportation Authority (CCTA) is Contra Costa County's designated Congestion Management Agency (CMA). It is responsible for implementing programs to ensure traffic levels remain manageable. As the CMA, CCTA is in charge of coordinating land use, air quality, and transportation planning among local jurisdictions.

The Congestion Management Program (CMP) outlines transportation demand management efforts and a land use evaluation program – both of which are built on CCTA's Growth Management Program established by Measure J. The CMP strives to enhance sensitivity to the environment, improve air quality, reduce GHG emissions, and promote sustainable communities (CCTA 2021).

Contra Costa County Climate Emergency Resolution

In September 2020 the Board of Supervisors adopted Resolution No. 2020/256 declaring a climate emergency that threatens the long-term economic and social well-being, health, safety, and security of the county. The resolution demands accelerated actions on the climate crisis and calls on local and regional partners to join together to address climate change.

Contra Costa County Ordinance Code

Ordinance No. 2022-02, All-Electric Ordinance (New Construction), amends the 2019 California Energy Code to require the following building types to be all-electric:

- Residential (including single-family and multi-family buildings)
- Detached Accessory Dwelling Units
- Hotel
- Office
- Retail

Contra Costa County Commuter Benefit Program

The County provides full-time or part-time (over 20 hours per week) employees commuter benefits to cover work related, public transportation expenses such as ferry, train and bus fees, and parking expenses.

5.8.1.4 EXISTING CONDITIONS

California's GHG Sources and Relative Contribution

In 2022, the statewide GHG emissions inventory was updated for 2000 to 2020 emissions using the GWPs in IPCC's AR4, and reported that California produced 369.2 $MMTCO_2e$ GHG emissions in 2020 (CARB 2022a), which was 35.3 $MMTCO_2e$ lower than 2019 levels and 61.8 $MMTCO_2e$ below the 2020 GHG Limit of 431 $MMTCO_2e$. The 2019 to 2020 decrease in emissions is likely due in large part to the impacts of the COVID-19 pandemic. However, since the peak level in 2004, California's GHG emissions have generally followed a decreasing trend. In 2014, statewide GHG emissions dropped below the 2020 GHG Limit and have remained below the Limit since that time. Per capita GHG emissions in California have dropped from a 2001 peak of 13.8 metric tons per person to 9.3 metric tons per person in 2020, a 33-percent decrease (CARB 2022a).

California's transportation sector remains the largest generator of GHG emissions, producing 37 percent of the state's total emissions in 2020. Industrial sector emissions made up 20 percent and electric power generation made up 16 percent of the state's emissions inventory. Other major sectors of GHG emissions include commercial and residential (4 percent), agriculture and forestry (8.6 percent), high-GWP gases (5.8 percent), and recycling and waste (2 percent) (CARB 2022a).

Transportation emissions continued to decline for the past three consecutive years with the rise of fuel efficiency for the passenger vehicle fleet and an increase in battery electric vehicles. The deployment of renewable and less carbon-intensive resources and higher energy efficiency standards have facilitated the continuing decline in fossil fuel electricity generation. The industrial sector trend has been relatively flat in recent years but saw a decrease of 7.1 $MMTCO_2e$ in 2020. Commercial and residential emissions saw a decrease of 1.7 $MMTCO_2e$. Emissions from high-GWP gases have continued to increase as they replace ozone depleting substance (ODS) that are being phased out under the 1987 Montreal Protocol. Emissions from other sectors have remained relatively constant in recent years. Overall trends in the inventory also continue to demonstrate that the carbon intensity of California's economy (i.e., the amount of carbon pollution per million dollars of

gross domestic product [GDP]) is declining. From 2000 to 2020, the carbon intensity of California's economy decreased by 49 percent while the GDP increased by 56 percent (CARB 2022a).

Existing Community-wide GHG Emissions

The existing land uses in the EIR Study Area consist of single- and multi-family residences and retail, office, commercial, industrial, and institutional uses. Operation of these land uses generates GHG emissions from natural gas used for energy, heating, and cooking; electricity usage; vehicle trips for employees and residents; area sources such as landscaping equipment and consumer cleaning products; water demand; waste generation; and solid waste generation.[5] Table 5.8-4, *Unincorporated Contra Costa County 2005 and Existing GHG Emissions Inventory*, shows the emissions associated with existing land uses in the EIR Study Area.

Table 5.8-4 Unincorporated Contra Costa County 2005 and Existing GHG Emissions Inventory

Sector	2005 ($MTCO_2e$/year)	Existing ($MTCO_2e$/year)	Percentage of Total
On-Road Transportation	628,200	464,040	44%
Residential Energy	294,930	191,780	18%
Nonresidential Energy	118,740	159,520	15%
Solid Waste/Landfills	243,940	220,760	21%
Agriculture	33,350	36,130	3%
Off-road Equipment	34,160	54,010	5%
Water and Wastewater	8,080	4,870	<1%
BART	1,040	190	<1%
Land Use and Sequestration	-70,860	-70,860	-7%
Total Community Emissions	**1,291,580**	**1,060,440**	**100%**

Source: Proposed CAP (see Appendix 5.8-1 to this Draft EIR).

5.8.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

GHG-1 Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

GHG-2 Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

BAAQMD's *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans* contains instructions on how to evaluate, measure, and mitigate GHG impacts generated from land use development projects and plans. For purposes of this analysis, Contra Costa County is using BAAQMD's current GHG plan-level significance thresholds to evaluate the proposed project's potential impacts related to GHG emissions.

[5] Emissions from water demand and wastewater are emissions associated with electricity used to supply, treat, and distribute water.

5.8.2.1 GREENHOUSE GAS EMISSION IMPACTS

BAAQMD, in its Justification Report: *CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans* (GHG Justification Report 2022), recommends the use of one of two plan-level criteria to determine the GHG emission impact resulting from a proposed plan. If a proposed plan cannot demonstrate consistency with the BAAQMD-recommended Criterion A or Criterion B, that plan would result in a potentially significant impact related to GHG emissions.

A. The plan must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b); or

B. The plan must meet the State's goals to reduce emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045.

5.8.2.2 CONTRA COSTA COUNTY CLIMATE ACTION PLAN

CEQA Guidelines Section 15183.5(b), *Tiering and Streamlining the Analysis of Greenhouse Gas Emissions*, allows for lead agencies to analyze and mitigate the significant effects of GHG emissions at a programmatic level. Pursuant to CEQA Guidelines Section 15183.5(b), later project-specific environmental documents may tier from and/or incorporate by reference the GHG reduction plan so long as it includes the following plan elements:

- Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
- Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable;
- Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area;
- Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
- Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;
- Be adopted in a public process following environmental review.

The proposed CAP is an update to the County's 2015 CAP. The proposed CAP provides an updated baseline emissions inventory and forecast for the unincorporated areas, which aligns the County's GHG reduction efforts with State-recommended targets of AB 1279. The proposed CAP demonstrates consistency with BAAQMD's significance criteria of meeting the State's goals to reduce emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045; demonstrates consistency with Appendix C "*Guidance for Greenhouse Gas Reduction Strategies*" of BAAQMD's CEQA Guidelines; and meets all of the criteria listed above from CEQA Guidelines Section 15183.5(b). The proposed CAP is a component of the proposed project and is utilized for establishing the significance criteria for the unincorporated county. Additionally, once adopted, the proposed

CAP may be used for streamlined GHG analyses for future individual development projects, consistent with the proposed project and with the provisions contained in CEQA Guidelines Section 15183.5.

5.8.2.3 CONSISTENCY WITH STATEWIDE GHG REDUCTION TARGETS

The proposed General Plan and CAP forecast growth in the EIR Study Area through year 2045; therefore, this EIR analyzes the potential for the proposed project to conflict with statewide GHG reduction goals identified in the CARB 2022 Scoping Plan that are applicable to local governments. This includes AB 1279, which requires an 85 percent reduction in GHG emissions by 2045 to stabilize CO_2e emissions and avoid the most catastrophic impacts of climate change, as well as to make substantial progress toward carbon neutrality.[6]

The proposed CAP outlines strategies and GHG reduction measures to achieve the SB 32 target for year 2030 and the long-range target of AB 1279 for year 2045. The proposed CAP covers GHG emissions reductions through the proposed General Plan's 2045 horizon year. The targets of the proposed CAP are consistent with the statewide GHG emissions reduction goals of AB 1279. Based on the proposed CAP, a trajectory consistent with the State's GHG emissions targets for the proposed project in year 2030 and year 2045 would be:[7]

- Year 2030 (40 percent below the 1990 levels): 658,700 $MTCO_2e$.
- Year 2045 (85 percent below the 1990 levels): 164,680 $MTCO_2e$.

The proposed CAP is intended to meet the CEQA Guidelines Section 15183.5 plan requirements for CEQA streamlining for development projects consistent with the proposed CAP and General Plan in unincorporated Contra Costa County.

5.8.2.4 MASS EMISSIONS AND HEALTH EFFECTS

On December 24, 2018, in *Sierra Club et al. v. County of Fresno et al.* (Friant Ranch), the California Supreme Court determined that the EIR for the proposed Friant Ranch project failed to adequately analyze the project's air quality impacts on human health. The EIR prepared for the project, which involved a master planned retirement community in Fresno County, showed that project-related mass emissions would exceed the San Joaquin Valley Air Pollution Control District's regional significance thresholds. In its findings, the California Supreme Court affirmed the holding of the Court of Appeal that EIRs for projects must not only identify impacts to human health, but also provide an "analysis of the correlation between the project's emissions and human health impacts" related to each criterion air pollutant that exceeds the regional significance thresholds or explain why

[6] The 2022 Scoping Plan includes statewide measures to achieve the State's carbon neutrality goals under EO B-55-18, such as carbon dioxide removal (CDR), that are not applicable to local governments. Carbon neutrality goals are a "no impact" level and not a "less than significant" impact level for climate change effects. There are presently no reliable means of forecasting how future technological developments related to CDR may affect future emissions in a planning jurisdiction. Therefore, carbon neutrality targets are not directly applicable to local governments and CEQA projects to mitigate GHG emissions impacts of a proposed project. Moreover, AB 1279 GHG reduction targets for 2045 are in line with the scientifically established levels needed in the U.S. to limit global warming below 1.5 to 2.0 degrees Celsius, the warming threshold at which scientists say there will likely be major climate disruptions such as super droughts and rising sea levels. For these reasons, the targets of AB 1279 are applicable to the EIR. However, the proposed CAP includes measures that align with the State's carbon neutrality goals under AB 1279, EO B-55-18, and SB 32.

[7] Unincorporated Contra Costa County GHG emissions in 2005 were 1,291,580 $MTCO_2e$, translating to a 1990 GHG emissions level of 1,097,840 $MTCO_2e$ (see Appendix 5.8-1 to this Draft EIR). The 2030 target for SB 32 is a 40 percent reduction from 1990 levels, which equates to 658,700 $MTCO_2e$.

it could not make such a connection. In general, the ruling focuses on the correlation of emissions of toxic air contaminants and criteria air pollutants and their impact to human health.

In 2009, the USEPA issued an endangerment finding for six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in order to regulate GHG emissions from passenger vehicles. The endangerment finding is based on evidence that shows an increase in mortality and morbidity associated with increases in average temperatures, which increase the likelihood of heatwaves and ozone levels. The effects of climate change are summarized in Table 5.8-2. Though identified effects such as sea-level rise and increased extreme weather can indirectly impact human health, neither the USEPA nor CARB has established ambient air quality standards for GHG emissions. The State's GHG reduction strategy outlines a path to avoid the most catastrophic effects of climate change. Yet the State's GHG reduction goals and strategies are based on the State's path toward reducing statewide cumulative GHGs as outlined in AB 32, SB 32, and AB 1279.

As mentioned above, the two significance thresholds that the County uses to analyze GHG impacts are based on achieving the statewide GHG reduction goals (GHG-1) and relying on consistency with policies or plans adopted to reduce GHG emissions (GHG-2). Further, because no single project is large enough to result in a measurable increase in global concentration of GHG emissions, climate change impacts of a project are considered on a cumulative basis. Without federal ambient air quality standards for GHG emissions, and given the cumulative nature of GHG emissions and the County's significance thresholds, which are tied to reducing the State's cumulative GHG emissions, it is not feasible at this time to connect the project's specific GHG emissions to the potential health impacts of climate change.

5.8.3 Programs, Plans, and Policies

5.8.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to GHG emissions. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Policy LU-P3.3:** Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.
- **Policy LU-P3.7:** Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.
- **Action LU-A4.1:** Amend the County Ordinance Code to include requirements for Low Impact Development, the use of low-carbon concrete, water and energy conservation, reclaimed water, renewable energy use, green building, and other measures that reduce the environmental impacts of development, based on the best available science.

Transportation Element

- **Policy TR-P1.3:** Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.
- ***Policy TR-P1.4:*** *Reduce single-occupant vehicle usage, at a minimum using strategies defined in the TDM Ordinance.*
- **Policy TR-P1.11:** Support transitioning all on-road vehicles, including personal vehicles and business, government, and public transit fleets, to electric power from renewable sources or other zero-emission fuels.
- **Policy TR-P1.12:** Continue to improve ZEV (including electric bicycle) charging/fueling infrastructure within new development and public rights-of-way, incorporating new technologies whenever possible.
- ***Policy TR-P1.13:*** *Require designs for new parking facilities to incorporate ZEV charging/fueling infrastructure and maximize opportunities for adaptive reuse.*
- **Action TR-A1.4:** Implement programs to encourage transit use, bicycling, walking, telecommuting, and use of alternative vehicle fuels by County employees.
- **Action TR-A1.11:** Coordinate with CCTA and other local and regional agencies to implement the Contra Costa Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements.
- **Action TR-A1.12:** Update the County Ordinance Code as necessary to support advances in ZEV charging/fueling infrastructure, including for medium- and heavy-duty vehicles.
- **Policy TR-P6.5:** Work with railroads to preserve non-operational contiguous railroad rights-of-way, and highly encourage construction of grade-separated railroad crossings along active lines to support current and future rail operations and ensure the long-term viability of these rail corridors. When no longer in operation, maintain options for future use of the corridors for trails or other public purposes.
- **Policy TR-P7.7:** Embrace emerging aviation-related technologies, such as drones, electric-powered aviation, and vertical takeoff and landing aircraft, to promote economic development and support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.

Conservation, Open Space, and Working Lands Element

- **Policy COS-P14.1:** Implement Climate Action Plan strategies to improve energy efficiency and conservation, promote carbon-free energy sources, and reduce energy-related GHG emissions.

Health and Safety Element

- **Policy HS-P3.1:** Prioritize implementation of the Contra Costa County Climate Action Plan to reduce GHG emissions from community-wide sources and adapt to changing climate conditions.

- **Policy HS-P3.3:** *Require new development projects using the Contra Costa County Climate Action Plan to streamline their environmental review of GHG emissions, as permitted by CEQA Guidelines Section 15183.5, to demonstrate consistency with the Climate Action Plan and incorporate applicable GHG -reduction and climate change adaptation measures.*

5.8.3.2 PROPOSED CLIMATE ACTION PLAN STRATEGIES AND ACTIONS

The following proposed CAP strategies and actions pertain to GHG emissions:

Clean and Efficient Built Environment (BE)

Strategy BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

Strategy BE-1 Actions:

- Maintain, update, publicize, and enforce the County Ordinance Code Title 7 – Building Regulations amendment requiring new residential buildings, hotels, offices, and retail to be all-electric. Evaluate the feasibility of including other building types as appropriate.
- Study the feasibility of establishing a low-carbon concrete requirement for all new construction and retrofit activities and consider additional strategies to reduce embedded carbon in construction materials. The intent is to determine what the County can and should do to support or exceed State requirements for net-zero emissions for cement use by 2045. (HS-A3.2)

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated County, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-neutral fuels.

Strategy BE-2 Actions:

- Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy. (COS-A14.6)
- Require replacement and new water heaters and space heating and cooling systems to be electric if the building electric panel has sufficient capacity in accordance with BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6. (COS-P14.10)
- Implement requirements for cool roofs and light-colored, nonreflective permeable paving materials as part of retrofit, repair, and replacement activities, using recycled materials or other materials with low embedded carbon as feasible and as established by the Building Standards Code.

Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

Strategy BE-3 Actions:

- Require new commercial parking lots with 50 or more spaces to mitigate heat gain through installation of shade trees, solar arrays, or other emerging cooling technologies. Prioritize the use of solar arrays where feasible and appropriate. (HS-P8.3)
- Work with MCE to increase enrollment, especially in the Deep Green tier.

- Continue to enroll all eligible, non-solar-equipped County facility electricity accounts in MCE territory in the Deep Green tier.

No Waste Contra Costa (NW)

Strategy NW-1: Increase composting of organic waste.

Strategy NW-1 Actions:

- Ensure, through franchise agreements and other relationships with waste haulers, a source-separated organics collection service for all residential and commercial customers in County-controlled collection franchise areas.
- Require that new and expanded landfill operations significantly reduce GHG emissions to meet or exceed State targets to the extent feasible, and work toward carbon-neutral landfills.
- Work with wastewater providers to explore the use of organic waste as feedstock for anaerobic digesters to produce biogas that can generate electricity or fuel.
- Require local restaurants, grocery stores, and other edible food generators that handle large quantities of food to partner with food rescue organizations to divert edible food that would be otherwise disposed in landfills for distribution to those in need, in accordance with SB 1383.
- Procure compost or other products made from recovered organic waste in accordance with the County's Recovered Organic Waste Product and Recycled Paper Procurement Policy.

Strategy NW-2: Reduce waste from County operations.

Strategy NW-2 Actions:

- Establish a source-separated organics collection service at all County-owned facilities that includes recovering food waste (scraps) and food-soiled paper.
- Conduct waste audits of County facilities, including assessing the volume and composition of all waste streams, to identify challenges with waste activities and develop educational or operational changes to address issues and reduce waste generation.
- Obtain material for capital projects from local and low-carbon sources to the greatest extent feasible, including allocating additional funds to allow for such materials, and integrate appropriate standards into the County's Environmentally Preferable Purchasing (EPP) policy.

Strategy NW-3: Increase community-wide recycling and waste minimization programs.

Strategy NW-3 Actions:

- Create a source-reduction program in partnership with regional agencies to promote rethinking, refusing, reducing, reusing, and regenerating of materials.

Strategy NW-4: Reduce emissions from landfill gas.

Strategy NW-4 Actions:

- Encourage efforts at Acme, Keller Canyon, and West Contra Costa landfills to install or enhance existing methane capture technology and associated monitoring systems with a goal of increasing the methane capture rate to the greatest extent feasible.

Reduce Water Use and Increase Drought Resilience (DR)

Strategy DR-1: Reduce indoor and outdoor water use.

Strategy DR-1 Actions:

- Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and recycled water, where available.
- Require homes and businesses to install water-efficient fixtures at time of retrofit activities, in accordance with the California Building Standards Code.
- Continue to enforce the Model Water Efficient Landscaping Ordinance and encourage the use of native and drought-tolerant landscaping for exempt residential and commercial landscapes through partnership with local and regional water agencies and other organizations.
- Partner with water and wastewater service providers, Groundwater Sustainability Agencies, irrigation districts, and private well owners to increase participation in water conservation programs countywide. (COS-P7.2)
- Encourage the installation of graywater and rainwater catchment systems, particularly for new construction, as feasible for wastewater infrastructure. Reduce regulatory barriers for these systems and explore creating incentives for installing these systems in new and existing buildings.
- Identify opportunities for graywater use in public spaces and implement them as feasible.
- Promote the installation of composting toilets at appropriate County facilities in locations without wastewater service.

Strategy DR-2: Ensure sustainable and diverse water supplies.

Strategy DR-2 Actions:

- Work with water suppliers to expand recycled water systems as feasible, including considering additional treatment to allow for additional recycled water uses.

Clean Transportation Network (TR)

Strategy TR-1: Improve the viability of walking, biking, zero-carbon commuting, and using public transit for travel within, to, and from the county.

Strategy TR-1 Actions:

- Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report and Action Plan; Active Transportation Plan; and equity-focused plans, programs, and policies.
- Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities.
- Work with CCTA to fill gaps in the countywide Low-Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bicycle facilities.
- In collaboration with key partners, support efforts to establish or join a shared mobility program that provides access to conventional bicycle, e-bikes, and other micromobility modes.
- Support efforts to expand the service area and frequency of regional transit agencies, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT.
- Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance.
- Maintain in place and enforce a Transportation Demand Management (TDM) Ordinance that reflects best practices, and, at a minimum, conforms to Contra Costa Transportation Authority's adopted model TDM ordinance or resolution.
- Support CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions.
- Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.
- Encourage and support increased regional integration of transit systems to promote more equitable fare structures, fare integration, easier transfers, including coordinated transfers between different transit systems and reduced wait times, improved information sharing, and generally a more seamless and modern system.

Strategy TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

Strategy TR-2 Actions:

- Require new County vehicles to be zero emission to the extent a viable vehicle is available on the market, that charging or zero-emission fueling equipment is conveniently located where the vehicle will be stored, and as required by the Advanced Clean Fleet regulations, with the goal that all County vehicles will be zero-emission by 2035.
- Install electric vehicle charging equipment and other infrastructure needed to support the transition to a zero-emission County fleet at County facilities. Consider the appropriate locations, number, and capacity of infrastructure to facilitate the transition of the County fleet to zero-emission vehicles.

- Provide incentives for zero-emission vehicles in partnership with MCE, BAAQMD, and other agencies.
- Work with property owners and other potential partners to pursue installation of zero-emission vehicle charging stations in and near multifamily dwelling units.
- Update off-street parking ordinance to include a requirement for zero-emission vehicle charging infrastructure. Consider including incentives for developers to exceed minimum requirements (i.e., density bonus).
- Increase installation of electric vehicle charging stations for all vehicle types, including bicycles and scooters, at public facilities, emphasizing increased installation in Impacted Communities.
- In partnership with regional agencies, explore providing subsidies for households making less than the area median income to purchase or lease zero-emission vehicles and associated infrastructure.
- Pursue fees and regulatory efforts to convert transportation network company (TNC), taxi, and similar car-hire services to zero-emission vehicles.
- Explore opportunities for implementing electric vehicle sharing programs.
- Work with BAAQMD and other regional agencies to convert off-road equipment to zero-emission clean fuels.
- Work with contractors, fleet operations, logistics companies, and other operators of heavy-duty vehicles to accelerate the transition to zero-emission heavy-duty vehicles.
- Work with Public Works to pursue the use of renewable natural gas (sourced from recovered organic waste) for transportation fuel, electricity, or heating applications in cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available.
- Encourage efforts to maximize EV charging during solar peak hours.
- Support implementation of the Contra Costa County Electric Vehicle Readiness Blueprint.

Resilient Communities and Natural Infrastructure (NI)

Strategy NI-4: Sequester carbon on natural and working lands in Contra Costa County

Strategy NI-4 Actions:

- Pursue implementation of recommendations from carbon sequestration feasibility study, Healthy Lands, Healthy People.
- Continue to support and work with key partners to maintain existing and establish new pilot programs for carbon sequestration on agricultural land.
- Coordinate with farming groups, ranchers, the Contra Costa Resource Conservation District, and the University of California Cooperative Extension to identify and promote varieties of feedstock, livestock, and crops that are resilient to rising temperatures and changing precipitation patterns and that increase carbon sequestration.
- Explore ways to increase carbon sequestration on County-owned facilities.
- Partner with regional landowners and agencies to establish carbon sequestration programs and incentives.

- Consider the development of carbon offset protocols and guidance for use by carbon sequestration program applicants and County permitting staff to promote appropriate sequestration on natural and developed lands.
- Explore the potential for the public to support tree planting and maintenance of existing trees.
- Establish a mechanism to support expanded tree planting and maintenance activities, particularly in areas with few trees.
- Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
- Inventory wetlands, floodplains, marshlands, and adjacent lands that could potentially support climate adaptation (e.g., through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration).
- Encourage and support conservation of natural lands outside the urban limit line in the unincorporated county.
- Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to local residents. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible. If the project site is within or adjacent to an Impacted Community, require offsets or mitigation within that community unless determined infeasible by the County.

5.8.4 Environmental Impacts

5.8.4.1 METHODOLOGY

This GHG evaluation was prepared in accordance with the requirements of CEQA to determine if significant GHG impacts are likely to occur in conjunction with future development in the EIR Study Area. The GHG emissions inventory and forecast is based on data compiled for the proposed CAP and is included as Appendix 5.8-1 to the Draft EIR. The GHG emissions inventory was compiled using the following protocols:

- **Local Government Operations Protocol.** The County operations GHG inventory relies on the *Local Government Operations Protocol* (LGOP), which was first developed in 2008 and updated in 2010. The LGOP is a tool for accounting and reporting GHG emissions of local government (municipal) operations and is used throughout California and the United States. The LGOP includes guidance from several existing programs as well as the State's mandatory GHG reporting regulations.
- **U.S. Community Protocol.** The community-wide GHG inventory uses the *United States Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions* (U.S. Community Protocol), which was first developed in 2012 and last updated in 2019. The California Governor's Office of Planning and Research encourages cities and counties in California to follow the U.S. Community Protocol for community-wide GHG emissions.

- **Global Protocol.** The *Global Protocol for Community-Scale Greenhouse Gas Inventories* (Global Protocol) was first developed in 2014 and is intended for preparing international community-scale GHG inventories. It is largely consistent with the U.S. Community Protocol, although it contains additional guidance and resources to support a wider range of activities in other countries. This protocol is used to assess GHG emissions from sources that are not covered in the U.S. Community Protocol.

Sectors

- **On-Road Transportation** includes GHG emissions created by driving on-road vehicles in the unincorporated county, including passenger and freight vehicles, based on data from CARB.
- **Residential Energy** includes GHG emissions attributed to the use of electricity and natural gas and other home heating fuels in residential buildings, based on data from Pacific Gas & Electric Company (PG&E) and Marin Clean Energy (MCE).
- **Solid Waste** includes the GHG emissions released from trash collected in the EIR Study Area based on data from CalRecycle, as well as collective annual emissions from waste already in place at the Acme, Keller Canyon, and West Contra Costa Landfills.
- **Off-Road Equipment** includes GHG emissions from equipment that does not provide on-road transportation (excluding agricultural equipment), such as tractors for construction or equipment used for landscape maintenance.
- **Agriculture** includes GHG emissions from various agricultural activities, including agricultural equipment, crop cultivation and harvesting, and livestock operations.
- **Bay Area Rapid Transit (BART)** includes GHG emissions associated with the operation of BART for unincorporated county residents.
- **Water and Wastewater** accounts for the electricity used to transport every gallon of water or wastewater to and from unincorporated county residents and businesses as well as direct emissions resulting from processing of wastewater material.
- **Land Use and Sequestration** includes GHG emissions absorbed and stored in trees and soils on locally controlled lands as part of healthy ecosystems and released into the atmosphere from development of previously undeveloped land.

Industrial sources of emissions that require a permit from BAAQMD are not included in the community inventory. However, due to the 15/15 Rule, natural gas and electricity use data for industrial land uses may also be aggregated with the nonresidential land uses in the data provided by PG&E. Life-cycle emissions are not included in this analysis because not enough information is available, and therefore they would be speculative. Black carbon emissions are not included in the GHG analysis because CARB does not include this short-lived climate pollutant in the State's GHG emissions inventory, treating it separately.

GHG Emissions Factors

Table 5.8-5, *Existing GHG Emission Factors,* shows the emissions factors for the baseline year. Some sectors, including agriculture and off-road emissions, are calculated using formulae or models and do not have specific emission factors.

Table 5.8-5 Existing GHG Emission Factors

Sector	$MTCO_2e$ / Unit	Baseline Year Rate	Source
PG&E electricity	kWh	0.000108	PG&E
Direct access electricity	kWh	0.000187	California Energy Commission
MCE	kWh	0.000045	MCE
Natural gas	therm	0.005311	US Community Protocol
Propane	gallons	0.005844	US Community Protocol
Kerosene	gallon	0.010569	US Community Protocol
Wood	MMBTU	0.095624	US Community Protocol
On-road vehicles	VMT	0.000408	CARB EMFAC2021
BART	passenger mile	0.000013	BART
Solid waste (municipal solid waste)	ton	0.261659	CalRecycle
Solid waste (alternative daily cover)	ton	0.245693	CalRecycle

Source: Draft EIR Appendix 5.8-1, proposed CAP.

GHG Emissions Forecast

The forecast assumes that each person in the EIR Study Area will continue to contribute the same amount of GHG emissions to the community total as they did in the baseline year, so the amount of GHG emissions changes proportionally to the projected change in community demographics.

Impact 5.8-1: Implementation of the proposed project is not projected to result in emissions that would exceed the unincorporated county's GHG reduction target established under SB 32 and progress toward the State's carbon neutrality goal. [Threshold GHG-1]

Proposed General Plan

Future potential development under the proposed General Plan would contribute to global climate change through direct and indirect emissions of GHGs from land uses within the unincorporated county. However, a general plan is a long-range policy document that does not directly result in development without additional approvals. Before any development can occur in the unincorporated county, it must be analyzed for consistency with the General Plan, zoning requirements, and other applicable local and State requirements; comply with the requirements of CEQA; and obtain all necessary clearances and permits from regulatory agencies.

Horizon Year 2045 Emissions Compared to Existing Conditions

The projected development under the proposed General Plan is not linked to a specific development time frame but is assumed over a 20-year project horizon through 2045. Implementation of the proposed General Plan by the horizon year of 2045 would result in a net increase in service population of 74,969 in the EIR Study Area. Table 5.8-6, *Contra Costa County GHG Emissions Business-as-Usual Forecast*, provides a comparison of the change in GHG emissions in the EIR Study Area between the CEQA baseline (2019) and the proposed General Plan horizon year (2045) conditions.

As shown in Table 5.8-6, the increase in residential units and population associated with the proposed General Plan results in an increase in on-road transportation, residential and nonresidential building energy use, solid waste, off-road equipment, water and wastewater, and BART.

Table 5.8-6 Contra Costa County GHG Emissions Business-as-Usual Forecast

Category	Contra Costa County GHG Emissions ($MTCO_2e$/Year)		
	Existing	Year 2030	Year 2045
On-road transportation	464,040	542,020	605,080
Residential energy	191,780	217,710	259,380
Nonresidential energy	159,520	167,720	180,200
Solid waste	220,760	229,450	260,490
Agriculture	36,130	34,770	33,410
Off-road equipment	54,010	69,520	76,100
Water and wastewater	4,870	5,530	6,590
BART	190	220	260
Land use and sequestration	-70,860	-67,580	-58,890
Total Community Emissions (BAU)	**1,060,440**	**1,199,360**	**1,362,620**
Reductions from State Actions	NA	-185,520	-483,340
Total Community Emissions with State Actions	NA	**1,013,840**	**879,280**
SB 32 (2030) and AB 1279 (2045) Targets	NA	658,700	164,680
Achieves Target?	**NA**	**No**	**No**

Source: Draft EIR Appendix 5.8-1, 2024 CAP Update.
Notes: The 2045 forecast includes State actions to reduce GHG emissions. Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC Fifth Assessment Report (AR5). BAU = business as usual.

Table 5.8-6 accounts for reductions from State measures that have been adopted to reduce GHG emissions, including:

- The RPS requires increases in renewable electricity supplies.
- The Clean Car Standards require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels.
- The updated Title 24 Building Energy Efficiency Standards require new buildings to achieve increased energy efficiency targets.
- The LCFS mandates reduced carbon intensity of fuels used in off-road equipment.
- The short-lived climate pollutants law (SB 1383) proposes a comprehensive strategy to reduce methane and other emissions of short-lived GHGs through regulations on dairy operations and urban landfills, including higher diversion rates of food waste from landfills.

As shown in Table 5.8-6, after accounting for reductions from State actions, projected development in 2045 that would be accommodated under the proposed General Plan would result in a net decrease of 181,160 $MTCO_2e$ GHG emissions from existing conditions. The primary reason for the decrease in overall community-wide GHG emissions, despite an increase in service population, is a result of regulations adopted to reduce GHG emissions and turnover of California's on-road vehicle fleets. Consequently, implementation of the proposed General Plan would not result in a substantial increase in GHG emissions because there would be a

decrease in emissions from existing conditions (CEQA baseline). However, without additional local GHG reduction strategies, Contra Costa County would not achieve consistency with the GHG reduction goals of AB 1279 (i.e., 85 percent reduction below 1990 levels by 2045).

Local GHG Reduction Measures

The proposed General Plan directs implementation of the proposed CAP. The proposed CAP draws on strategies from the 2015 CAP, with new strategies to address current State regulations and local issues of concern. Contra Costa County has implemented the following GHG reduction measures identified in the 2015 CAP to reduce GHG emissions in the EIR Study Area:

- To increase the number of carbon neutral buildings, the Board of Supervisors adopted the All-Electric Ordinance (Ordinance No. 2022-02) to require new construction of residential, detached accessory dwelling units (ADU), hotel, office, and retail building types to be all-electric. As of June 2022, 67 single-family or duplex projects and 40 ADU projects received permits in alignment with the all-electric ordinance. Current new construction and major renovations of County facilities include LED lighting and heat pump technology, and the County enrolled in MCE's Strategic Energy Management Program to increase energy efficiency in County facilities. Additionally, 42 projects within the unincorporated area utilized the Bay Area Regional Energy Network program, which provides rebates to single-family homeowners for energy efficiency improvements.
- To replace fossil fuel electricity with renewable electricity, the majority of residential accounts in the unincorporated area are enrolled in MCE for an estimated 43,690 metric tons of CO_2e reduced. Around 70 percent of the County's electricity usage is associated with MCE's Deep Green account, which provides electricity from 100 percent renewable energy.
- The County has developed a carbon sequestration feasibility study through a grant from the California Department of Conservation. The study, *Healthy Lands, Healthy People,* will identify strategies to store carbon in various land uses across the county, such as agriculture, parks and open space, conservation lands, and towns and cities (Contra Costa 2022a).
- The County has also enhanced the accessibility and connectivity of active transportation options with the adoption of the Active Transportation Plan and 2022 Capital Road Improvement & Preservation Program (CRIPP) (Contra Costa 2022b). The CRIPP lays out funded transportation projects in the county that provide safe, efficient, and reliable transportation. Currently, there are 33 actively funded projects.
- The County is working to implement projects at over 25 sites to facilitate the transition to an all-electric County fleet. MCE has also established numerous EV charging ports over the years, including 33 EV charging port installations in year 2022.

The proposed CAP identifies GHG emissions reductions targets for the EIR Study Area that would ensure consistency with the State GHG reduction goals of AB 1279 and substantial progress toward the State's carbon neutrality goals. In addition, the proposed CAP includes additional GHG reduction measures to achieve the State's carbon neutrality goals identified in the 2022 Scoping Plan. Table 5.8-7, *Proposed CAP Local GHG Reduction Strategies*, shows the local GHG reduction measures and reductions associated with the local measures in the proposed CAP in 2045 that would help achieve those reductions.

Table 5.8-7 Proposed CAP Local GHG Reduction Strategies

Local GHG Reduction Strategies	2045 GHG Reductions (MTCO2e)
BE-1 Construct new low-carbon or carbon neutral buildings.	10,710
BE-2 Convert existing buildings to carbon-neutral and low-carbon buildings.	177,830
NW-1 Compost Organic Waste.	4,000
NW-2 Reduce County operations waste.	1,620
NW-3 Recycling and waste minimization.	2,530
NW-4 Reduce landfill gas emissions.	61,410
DR-1 Reduce indoor and outdoor water use.	1,440
TR-1 Improve the viability of walking, biking, zero-carbon commuting, and public transit.	40,370
TR-2 Increase use of ZEVs.	332,850
NI-4 Sequester carbon.	88,910
Total GHG Reductions from Proposed CAP Strategies	**721,670**

Source: Draft EIR Appendix 5.8-1, proposed CAP.
Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC's AR5.

Table 5.8-8, *Contra Costa County 2045 GHG Emissions Reduction Target Analysis with the Proposed CAP*, shows that with the additional local measures identified in the proposed CAP, the unincorporated county would achieve the AB 1279 GHG reduction targets for year 2045. With implementation of the proposed CAP, Contra Costa County would achieve an 85-percent decrease in GHG emissions in the unincorporated areas of the county by 2045 from 1990 levels, and would make substantial progress toward the State's carbon neutrality goals. Therefore, the proposed General Plan, which includes implementation of the proposed CAP, would not result in a substantial increase in the magnitude of GHG emissions and would be consistent with the GHG reduction goals identified under AB 1279.

Table 5.8-8 Contra Costa County 2045 GHG Emissions Reduction Target Analysis with the Proposed CAP

Scenario	2045 GHG Emissions ($MTCO_2e$/Year)
Total Community Emissions (BAU)	**1,362,620**
GHG Reductions from State Actions	-483,340
GHG Reductions from Proposed CAP GHG Reduction Strategies	-721,670
Total Community Emissions with State Actions & Local CAP GHG Reduction Strategies	**157,610**
AB 1279 Target	164,680
Achieves Target	**Yes**

Source: Draft EIR Appendix 5.8-1, proposed CAP.
Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC's AR5.

Additionally, implementation of the following proposed General Plan policies and actions would also minimize energy and mobile-source emissions in the unincorporated areas.

- **Policy LU-P3.3:** Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.
- **Policy LU-P3.7:** Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.
- **Policy TR-P1.3:** Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.
- **Policy TR-P1.4:** Reduce single-occupant vehicle usage, at a minimum using strategies defined in the TDM Ordinance.
- **Policy TR-P1.11:** Support transitioning all on-road vehicles, including personal vehicles and business, government, and public transit fleets, to electric power from renewable sources or other zero-emission fuels.
- **Policy TR-P1.12:** Continue to improve ZEV (including electric bicycle) charging/fueling infrastructure within new development and public rights-of-way, incorporating new technologies whenever possible.
- **Policy TR-P1.13:** Require designs for new parking facilities to incorporate ZEV charging/fueling infrastructure and maximize opportunities for adaptive reuse.
- **Action TR-A1.4:** Implement programs to encourage transit use, bicycling, walking, telecommuting, and use of alternative vehicle fuels by County employees.
- **Action TR-A1.11:** Coordinate with CCTA and other local and regional agencies to implement the Contra Costa Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements.
- **Action TR-A1.12:** Update the County Ordinance Code as necessary to support advances in ZEV charging/fueling infrastructure, including for medium- and heavy-duty vehicles.
- **Policy COS-P14.1:** Implement Climate Action Plan strategies to improve energy efficiency and conservation, promote carbon-free energy sources, and reduce energy-related GHG emissions.

Individual development projects facilitated by the proposed General Plan would experience emission reductions from implementation of State measures and strategies to reduce statewide GHG emissions, such as the LCFS mandate or RPS requirements. The above proposed General Plan policies and actions would serve to further support potential GHG reductions for individual development projects facilitated by the proposed General Plan. Furthermore, individual projects would be required to demonstrate consistency with the proposed CAP by preparing a CAP Consistency Checklist, identify specific GHG emissions reduction strategies from the proposed CAP that are applicable to the project, and demonstrate how the project will implement these strategies to ensure that the project's emissions are consistent with the community-wide emissions forecast contained herein.

In summary, implementation of the proposed General Plan would result in a net decrease in emissions from existing conditions. Additionally, with implementation of the proposed CAP, emissions from existing and planned development in the EIR Study Area would achieve the GHG reduction goals identified under AB 1279 for year 2045, which is consistent with the thresholds identified by BAAQMD in their CEQA Guidelines. Therefore, growth within the county associated with the proposed General Plan would not have a cumulatively considerable impact on GHG emissions and this impact would be less than significant.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. Because there is no specific land use component associated with the proposed CAP, its implementation would not directly result in the generation of GHG emissions.

In addition, the proposed General Plan directs implementation of the proposed CAP, recognizing that the County's climate action planning efforts must be updated more regularly to be responsive to the changing regulations, guidance, technology, best practices, and science. For instance, the proposed CAP transportation strategies that reduce VMT (e.g., Strategy TR-1) would result in a reduction in GHG emissions from the transportation sector. Likewise, the proposed CAP also promotes building energy-efficiency improvements (e.g., Strategies BE-1 and BE-2), increasing water efficiency (e.g., Strategy DR-1 and DR-2) and reducing energy demand through renewable energy sources (e.g., Strategy BE-3) to minimize energy sector emissions. Furthermore, the proposed CAP supports the East Bay Energy Watch, which is a partnership between PG&E and local governments in the East Bay region to conduct energy efficiency outreach to residents and businesses, retrofit existing government facilities to improve energy efficiency, and provide training to agency staff. Thus, implementation of the proposed CAP would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.8-1 would be less than significant.

Mitigation Measures

With implementation of the proposed CAP, no mitigation measures would be required.

Level of Significance After Mitigation: Impact 5.8-1 would be less than significant.

Impact 5.8-2: Implementation of the proposed project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions. [Threshold GHG-2])

Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan and ABAG's/MTC's *Plan Bay Area 2050*. A consistency analysis with these plans is presented below.

Proposed General Plan

CARB Scoping Plan

The CARB Scoping Plan is applicable to State agencies but is not directly applicable to cities, counties, and individual projects (i.e., the Scoping Plan does not require local jurisdictions to adopt its policies, programs, or regulations to reduce GHG emissions). However, new regulations adopted by the State agencies from the Scoping Plan result in GHG emissions reductions at the local level. So local jurisdictions benefit from reductions in transportation emissions rates, increases in water efficiency in the building and landscape codes, and other statewide actions that affect a local jurisdiction's emissions inventory from the top down. Statewide strategies to reduce GHG emissions include the LCFS and changes in the CAFE standards. Additionally, local jurisdictions are encouraged to prepare local GHG reduction plans to align local GHG reductions with the State GHG reduction targets identified in the Scoping Plan.

Development projects under the proposed General Plan would be required to adhere to the programs and regulations identified by the Scoping Plan and implemented by State, regional, and local agencies to achieve the statewide GHG reduction goals of AB 32, SB 32, and AB 1279. Future development projects would be required to comply with these State GHG emissions reduction measures because they are statewide strategies. For example, new buildings under the proposed General Plan would be required to meet the CALGreen and Building Energy Efficiency Standards in effect at the time when applying for building permits. Furthermore, the proposed General Plan includes policies that minimize GHG emissions and therefore help achieve GHG reduction goals.

Moreover, the proposed General Plan directs implementation of the proposed CAP. As described under Impact 5.8-2, the proposed CAP aligns the GHG reduction goals for the unincorporated areas for existing and new development with AB 1279 and the carbon neutrality goals identified in the 2022 Scoping Plan. Therefore, the proposed General Plan would result in a net benefit because implementation of the proposed CAP would align future development in the county with the policies and objectives identified by CARB. Implementation of the proposed General Plan would not obstruct implementation of the CARB Scoping Plan, and impacts would be less than significant.

ABAG/MTC's Plan Bay Area

Plan Bay Area 2050 is the Bay Area's regional transportation plan to achieve the passenger vehicle emissions reductions identified under SB 375. Plan Bay Area 2050 is the current SCS for the Bay Area, adopted October 21, 2021 (ABAG/MTC 2021). In addition to significant transit and roadway performance investments to encourage focused growth, Plan Bay Area 2050 directs funding to neighborhood active transportation and complete streets projects, climate initiatives, lifeline transportation and access initiatives, safety programs, and PDA planning (ABAG/MTC 2021). In Contra Costa County, a number of PDAs and Transit Priority Areas have been designated in the EIR Study Area, as shown on Figure 5.16-1, *Priority Development Areas and Transit Priority Areas*, in Section 5.16 of this Draft EIR (MTC 2023a, MTC 2023b).

While Plan Bay Area 2050 does not override local land use control, it provides guidance to the local jurisdictions such as Contra Costa County on how future development can be consistent with the State's GHG and VMT reduction goals. This includes constructing more infill development in downtowns and centers in close proximity to jobs and services.

As further discussed in Section 5.14, *Population and Housing*, the proposed General Plan would exceed current regional projections for housing and population. However, it is important to note that regional projections used were from Play Bay Area 2040, which does not differentiate between Contra Costa County as a whole and the unincorporated portion of the county. In addition, the proposed General Plan includes policies and actions that would limit development in certain areas and control the growth within the EIR Study Area. All potential future development would be required to comply with any required site-specific infrastructure improvements and to pay any project-specific impact fees.

The proposed Land Use Element includes policies to encourage high-density, mixed-use development to create shorter commutes and reduced dependency on single-occupant vehicles (see Land Use and Planning Impact 5.11-2). The proposed Growth Management Element also establishes goals, policies, and actions intended to manage and mitigate impacts of future growth within the unincorporated county. Furthermore, future development projects that could result in significant VMT impacts are required to include Transportation Demand Management (TDM) strategies and physical measures to reduce VMT (see Section 5.16, *Transportation*).

Overall, the proposed General Plan would be consistent with the goals of Plan Bay Area 2050 in concentrating new development in locations where there is existing infrastructure and transit. Therefore, the proposed General Plan would not conflict with the land use concept plan in Plan Bay Area 2050 and impacts would be less than significant.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. Furthermore, as discussed under Impact Discussion 5.8-1, implementation of the proposed CAP would result in beneficial GHG emissions impacts by contributing to reducing VMT, increasing energy and water use efficiency, and increasing renewable energy use. Therefore, the proposed CAP would be complementary to statewide and regional plans to reduce GHG and would not interfere with or obstruct the implementation of the CARB Scoping Plan or Plan Bay Area 2050. Implementation of the proposed CAP would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.8-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.8-2 would be less than significant.

5.8.5 Cumulative Impacts

Project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Therefore, impacts identified under Impact 5.8-1 and Impact 5.8-2 are not project-specific impacts to global warming, but the proposed project's contribution to this cumulative impact. As discussed above, the EIR Study Area would experience a reduction in GHG emissions from existing conditions despite the anticipated population and employment growth. Additionally, with implementation of the proposed CAP, Contra Costa County would achieve the local GHG reduction targets that align with SB 32 and AB 1279 and substantial progress with the State's carbon neutrality targets. Consequently, the proposed project's cumulative contribution to global climate change impacts are less than cumulatively considerable.

5.8.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.8.7 Mitigation Measures

No mitigation measures are required.

5.8.8 Level of Significance After Mitigation

Impacts would be less than significant.

5.8.9 References

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5. Environmental Analysis
GREENHOUSE GAS EMISSIONS

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5.9 HAZARDS AND HAZARDOUS MATERIALS

This section describes the regulatory framework and existing conditions of the Environmental Impact Report (EIR) Study Area and evaluates the potential hazards and hazardous material impacts from future development that could occur by adopting and implementing the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project. The relevant Appendix G threshold concerning wildfire (H-7) is discussed in Section 5.18, *Wildfire*.

5.9.1 Environmental Setting

5.9.1.1 REGULATORY BACKGROUND

Federal

Emergency Planning Community Right-to-Know Act

The Emergency Planning Community Right-to-Know Act (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act, was enacted in October 1986. This law requires any infrastructure at the state and local levels to plan for chemical emergencies. Reported information is then made publicly available so that interested parties may become informed about potentially dangerous chemicals in their communities. EPCRA Sections 301 through 312 are administered by U.S. Environmental Protection Agency's (USEPA) Office of Emergency Management. The USEPA's Office of Information Analysis and Access implements the EPCRA Section 313 program. In California, Superfund Amendments and Reauthorization Act Title III is implemented through the California Accidental Release Prevention program. The State of California has delegated local oversight authority of the California Accidental Release Prevention (CalARP) program to the Contra Costa County.

Comprehensive Environmental Response, Compensation, and Liability Information System

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) was developed to protect the water, air, and land resources from the risks created by past chemical disposal practices. Under CERCLA, USEPA maintains a list, known as the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), of all contaminated sites in the nation that have in the past or are currently undergoing cleanup activities. CERCLIS contains information on current hazardous waste sites, potential hazardous waste sites, and remedial activities. This includes sites that are on the National Priorities List (NPL) or being considered for the NPL ("Superfund").

Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984

The Resource Conservation and Recovery Act (RCRA) establishes a framework for national programs to achieve environmentally sound management of both hazardous and nonhazardous wastes. RCRA was designed to protect human health and the environment, reduce or eliminate the generation of hazardous waste, and

conserve energy and natural resources. RCRA also promotes resource recovery techniques. A waste can legally be considered hazardous if it is classified as ignitable, corrosive, reactive, or toxic. Under RCRA, the USEPA regulates hazardous waste from the time that the waste is generated until its final disposal ("cradle to grave"). The Hazardous and Solid Waste Amendments of 1984 (HSWA) both expanded the scope of RCRA and increased the level of detail in many of its provisions. The Hazardous Waste Management subchapter of RCRA deals with a variety of issues regarding the management of hazardous materials, including the export of hazardous waste, state programs, inspections of hazardous waste disposal facilities, enforcement, and the identification and listing of hazardous waste.

Hazardous Materials Transportation Act

The transportation of hazardous materials is regulated by the Hazardous Materials Transportation Act (HMTA), which is administered by the Research and Special Programs Administration of the U.S. Department of Transportation (DOT). HMTA provides DOT with a broad mandate to regulate the transport of hazardous materials, with the purpose of adequately protecting the nation against risk to life and property that is inherent in the commercial transportation of hazardous materials. HMTA governs the safe transportation of hazardous materials by all modes, excluding bulk transportation by water. DOT regulations that govern the transportation of hazardous materials are applicable to any person who transports, ships, causes to be transported or shipped, or is involved in any way with the manufacture or testing of hazardous materials packaging or containers. DOT regulations pertaining to the actual movement of hazardous materials govern every aspect of the movement, including packaging, handling, labeling, marking, placarding, operational standards, and highway routing.

Occupational Safety and Health Act

The Occupational Safety and Health Act of 1970 authorizes each state (including California) to establish their own safety and health programs with the U.S. Department of Labor, Occupational Safety and Health Administration's (OSHA) approval. The California Department of Industrial Relations regulates implementation of worker health and safety in California.

OSHA Regulation 29 CFR 1926.62 regulates the demolition, renovation, or construction of buildings involving lead materials. Federal, state, and local requirements also govern the removal of asbestos or suspected asbestos-containing materials (ACMs), including the demolition of structures where asbestos is present. All friable (crushable by hand) ACMs, or non-friable ACMs subject to damage, must be abated prior to demolition following all applicable regulations.

Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 requires state and local governments to prepare mitigation plans that identify hazards, potential losses, mitigation needs, goals, and strategies. It is intended to facilitate cooperation between state and local governments.

Toxic Substances Control Act

The Toxic Substances Control Act of 1976 was enacted by Congress to give the USEPA the ability to track the 75,000 industrial chemicals currently produced by or imported into the United States. The USEPA repeatedly screens these chemicals and can require reporting or testing of any that may pose an environmental or human health hazard. It can ban the manufacture and import of chemicals that pose an unreasonable risk. Also, the USEPA has mechanisms in place to track the thousands of new chemicals that industry develops each year with either unknown or dangerous characteristics. It then can control these chemicals as necessary to protect human health and the environment. The Act supplements other federal statutes, including the Clean Air Act and the Toxics Release Inventory under EPCRA.

Federal Response Plan

The Federal Response Plan of 1999 is a signed agreement among 27 federal departments and agencies and other resource providers, including the American Red Cross, that: (1) provides the mechanism for coordinating delivery of federal assistance and resources to augment efforts of state and local governments overwhelmed by a major disaster or emergency; (2) supports implementation of the Robert T. Stafford Disaster Relief and Emergency Act, as well as individual agency statutory authorities; and (3) supplements other federal emergency operations plans developed to address specific hazards. The Federal Response Plan is implemented in anticipation of a significant event likely to result in a need for federal assistance or in response to an actual event requiring federal assistance under a Presidential declaration of a major disaster or emergency. The Federal Response Plan is part of the National Response Framework, which was most recently updated in October 2019.

National Response Framework

The 2019 National Response Framework, published by the Department of Homeland Security, is a guide to how the nation responds to all types of disasters and emergencies. The Framework describes specific authorities and best practices for managing incidents that range from serious local to large-scale terrorist attacks or catastrophic natural disasters. In addition, the Framework describes the principles, roles, and responsibilities, and coordinating structures for responding to an incident, and further describes how response efforts integrate with those of the other mission areas.

Natural Gas Pipeline Safety Act of 1968

The Natural Gas Pipeline Safety Act of 1968 authorizes the DOT to regulate pipeline transportation of flammable, toxic, or corrosive natural gas and other gases as well as the transportation and storage of liquefied natural gas. The Pipeline and Hazardous Materials Safety Administration (PHMSA) within the DOT develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.6-million-mile pipeline transportation system. DOT's and PHMSA's regulations governing natural gas transmission pipelines, facility operations, employee activities, and safety are found in the Code of Federal Regulations (CFR) Title 49, *Transportation*, Parts 190 through 192, Part 195, and Part 199.

Pipeline Safety Improvement Act of 2002

The Pipeline Safety Improvement Act mandates that the DOT, Department of Energy, and National Institute of Standards and Technology in the Department of Commerce carry out a program of research, development, demonstration, and standardization to ensure the integrity of pipeline facilities (USDOT 2002). The purpose of the Research and Design Program is to identify safety and integrity issues and develop methodologies and technologies to characterize, detect, and manage risks associated with natural gas and hazardous liquid pipelines.

Pipeline Inspection, Enforcement, and Protection Act of 2006

The Pipeline Inspection, Enforcement, and Protection Act confirms the commitment to the Integrity Management Program and other programs enacted in the Pipeline Safety Improvement Act of 2002. The 2006 legislation includes provisions on:

- Preventing excavation damage to pipelines through the enhanced use and improved enforcement of State "One-Call" laws that preclude excavators from digging until they contact the State One-Call system to locate the underground pipelines.
- Minimum standards for Integrity Management Programs for distribution pipelines (including installation of excess flow valves on single-family residential service lines based on feasibility and risk).
- Standards for managing gas and hazardous liquid pipelines to reduce risks associated with human factors (e.g., fatigue).
- Authority for the Secretary to waive safety standards in emergencies.
- Authority for the Secretary to assist in restoration of disrupted pipeline operations.
- Review and update incident reporting requirements.
- Requirements for senior executive officers to certify operator integrity management performance reports.
- Clarification of jurisdiction between states and PHMSA for short laterals that feed industrial and electric generator consumers from interstate natural gas pipelines (INGAA 2022).

State

California Hazardous Waste Control Act

Under the California Hazardous Waste Control Act, California Health and Safety Code, Division 20, Chapter 6.5, Article 2, Section 25100, et seq., the Department of Toxic Substance Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste in California. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. DTSC is also the administering agency for the California Hazardous Substance Account Act. California Health and Safety Code, Division 20, Chapter 6.8, Sections 25300 et seq., also known as the State Superfund law, provides for the investigation and remediation of hazardous substances pursuant to State law.

In Contra Costa County, remediation of contaminated sites is performed under the oversight of Contra Costa Health Services with the cooperation of the Regional Water Quality Control Board (RWQCB). At sites where contamination is suspected or known to occur, the project sponsor is required to perform a site investigation and draw up a remediation plan, if necessary. For typical development projects, actual site remediation is done either before or during the construction phase of the project. Site remediation or development may be subject to regulation by other agencies. For example, if dewatering of a hazardous waste site were required during construction, subsequent discharge to the sewer collection system could require a permit from Contra Costa Water District, while discharge to a storm drain could require a permit from both Contra Costa Health Services and the San Francisco RWQCB.

California Health and Safety Code and Code of Regulations

California Health and Safety Code Chapter 6.95 and California Code of Regulations (CCR), Title 19, Section 2729 describe the minimum requirements for business emergency plans and chemical inventory reporting. These regulations require businesses to provide emergency response plans and procedures, training program information, and a hazardous material inventory disclosing hazardous materials stored, used, or handled on-site. A business that uses hazardous materials, or mixtures containing them, in certain quantities must establish and implement a business plan.

CCR Title 8 provides standards for workers dealing with hazardous materials (including hazardous wastes). The DTSC and the State Department of Occupational Health and Safety Administration (Cal OSHA) are the agencies that are responsible for overseeing that appropriate measures are taken to protect workers from exposure to potential groundwater contaminants. At sites known or suspected to have soil or groundwater contamination, a site health and safety plan must be prepared. The health and safety plan establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

Tanner Act (Assembly Bill 2948)

Although numerous State policies deal with hazardous waste, the most comprehensive is the Tanner Act (California Civil Code Section 1793.22), which was adopted in 1986. The Tanner Act governs the preparation of hazardous waste management plans and the siting of hazardous waste facilities in California. To comply with the Tanner Act, local or regional hazardous waste management plans need to include provisions that define: (1) the planning process for waste management, (2) the permit process for new and expanded facilities, and (3) the appeals process to the State available for certain local decisions.

California Building Code

The State of California provides a minimum standard for building design through the California Building Code (CBC), which is in Part 2 of Title 24 of the California Code of Regulations. The CBC is based on the 2022 International Building Code but has been modified for California conditions. The CBC is updated every three years, and the current (2022) CBC became effective on January 1, 2023. Contra Costa County has adopted the CBC and incorporated it as Division 72, *Building Code,* of the County Ordinance Code, as discussed below. Commercial and residential buildings are plan-checked by County building officials for compliance with the typical fire safety requirements of the CBC.

Underground Storage Tank Program

Releases of petroleum and other products from underground storage tanks (UST) are the leading source of groundwater contamination in the United States. RCRA Subtitle I establishes regulations governing the storage of petroleum products and hazardous substances in USTs and the prevention and cleanup of leaks. In USEPA Region 9, which covers California, Arizona, Hawaii, Nevada, Pacific Islands, and over 140 tribal nations, the UST program operates primarily through state agency programs with USEPA oversight. In California, the State Water Resources Control Board (SWRCB), under the umbrella of the California Environmental Protection Agency (CalEPA), assists local agencies enforcing UST requirements. The purpose of the UST program is to protect public health and safety and the environment from releases of petroleum and other hazardous substances. The program consists of four elements: leak prevention, cleanup, enforcement, and tank tester licensing. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs, including groundwater analytical data, the surveyed locations of monitoring wells, and other data. The SWRCB's GeoTracker system currently has information submitted by responsible parties for over 10,000 leaking UST (LUST) sites statewide and has been extended to include all SWRCB groundwater cleanup programs, including the LUST, non-LUST (i.e., Spill, Leaks, Investigation, and Cleanup), Department of Defense, and landfill programs.

Hazardous Materials Disclosure Programs

Both the federal government (CFR, USEPA, SARA, and Title III) and the State (Health and Safety Code, Division 20, Chapter 6.95, Section 2500-25520; 19 CCR, Chapter 2, Subchapter 3, Article 4, Section 2729-2734) require all businesses that handle more than specified amount of hazardous materials or extremely hazardous materials, termed a "reporting quantity," to submit a hazardous materials emergency/contingency plan (also known as a "hazardous materials business plan") to their local Certified Unified Program Agency (CUPA). The responsible CUPA in Contra Costa County is Contra Costa Health Services., which is responsible for conducting compliance inspections of regulated facilities in the county.

The hazardous materials business plan includes the business owner/operator identification page, hazardous materials inventory chemical description page, and an emergency response plan and training plan. Business plans must include an inventory of the hazardous materials at the facility. The entire hazardous materials business plan needs to be reviewed and recertified every three years. Business plans are required to include emergency response plans and procedures to be used in the event of a significant or threatened significant release of a hazardous material. These plans need to identify the procedures to follow for immediate notification to all appropriate agencies and personnel of a release, identification of local emergency medical assistance appropriate for potential accident scenarios, contact information for all emergency coordinators of the business, a listing and location of emergency equipment at the business, an evacuation plan, and a training program for business personnel. All facilities must keep a copy of their plan onsite.

Hazardous materials business plans are designed to be used for responding agencies, such as the Contra Costa County Fire Protection District, during a release or spill to allow for a quick and accurate evaluation of each situation for appropriate response. Businesses that handle hazardous materials are required by law to provide an immediate verbal report of any release or threatened release of hazardous materials if there is a reasonable

belief that the release or threatened release poses a significant present or potential hazard to human health and safety, property, or the environment. If a release involves a hazardous substance listed in Title 40 of the CFR in an amount equal to or exceeding the reportable quantity for that material, a notice must be filed with the California Office of Emergency Services within 15 days of the incident.

California Department of Transportation and California Highway Patrol

The California Department of Transportation (Caltrans) and the California Highway Patrol (CHP) are the two State agencies that have primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies. Caltrans manages more than 50,000 miles of California's highways and freeways, provides intercity rail services, permits more than 400 public-use airports and special-use hospital heliports, and works with local agencies. Caltrans is also the first responder for hazardous material spills and releases that occur on highways, freeways, and intercity rail lines.

CHP enforces hazardous materials and hazardous waste labeling and packing regulations designed to prevent leakage and spills of materials in transit and to provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of CHP, which conducts regular inspections of licensed transporters to assure regulatory compliance. In addition, the State of California regulates the transportation of hazardous waste originating or passing through the state.

Common carriers are licensed by CHP, pursuant to Section 32000 of the California Vehicle Code. This section requires licensing every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time and every carrier, if not for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards. Common carriers conduct a large portion of the business in the delivery of hazardous materials.

Senate Bill 673 - Hazardous Waste

Senate Bill (SB) 673 made updates to the California Health and Safety Code Section 25200.21 to improve DTSC's permitting process for hazardous waste facilities and increase community protection through stronger permit criteria. Specifically, this Bill directed DTSC to update its criteria to consider "the vulnerability of, and existing health risks to, nearby populations" when deciding whether to issue new or modified permits or permit renewals of hazardous waste facilities. SB 673 also authorizes the DTSC to consider the use of "minimum setback distances from sensitive receptors" in making a permitting decision (DTSC 2021). As part of its implementation framework, DTSC identified seven key elements for addressing community vulnerability and impacts during the permitting process for hazardous waste uses, which are described in the SB 673 Cumulative Impacts and Community Vulnerability Regulatory Framework (DTSC 2021).

Regional

San Francisco Bay Regional Water Quality Control Board

The Porter-Cologne Water Quality Control Act established the SWRCB and divided the state into nine regional basins, each under the jurisdiction of a RWQCB. The San Francisco Bay RWQCB, Region 2, and the Central Valley RWQCB, Region 5, regulate water quality in the EIR Study Area. The San Francisco Bay and Central Valley RWQCBs have the authority to require groundwater investigations and/or remedial action if the quality of groundwater or surface waters of the State are threatened.

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) has primary responsibility for control of air pollution from sources other than motor vehicles and consumer products. The latter are typically the responsibility of CalEPA and the California Air Resources Board (CARB). BAAQMD is responsible for preparation of attainment plans for non-attainment criteria pollutants, control of stationary air pollutant sources, and issuance of permits for activities, including demolition and renovation activities affecting asbestos-containing materials (District Regulation 11, Rule 2) and lead (District Regulation 11, Rule 1).

Association of Bay Area Governments Hazard Mitigation Plan

The Association of Bay Area Governments' (ABAG) multijurisdictional Local Hazard Mitigation Plan for the San Francisco Bay Area was updated in 2021 in partnership with the Bay Conservation and Development Commission's (BCDC) Adapting to Rising Tides Program (ART). This detailed five-year plan identifies potential natural and human-made hazards, assesses their potential risks, and includes mitigation methods to reduce risks. The potential hazards identified in the Plan include earthquakes and liquefaction, wildfires, floods, drought, solar storms, dam or levee failure, disease outbreak, freezes, wind, heat, thunder and lightning storms, siltation, tornadoes, hazardous materials, slope failure and mudflows, and other hazards. Similarly, mitigation measures include hazard event planning, emergency preparedness coordination, education, facility upgrades, and monitoring actions.

Regional Catastrophic Earthquake Mass Transportation/Evacuation Plan

The Bay Area Urban Area Security Initiative Approval Authority prepared a mass transportation and evacuation plan on behalf of the counties and cities within the 12-county Bay Area region. The Plan describes the general strategy for emergency response to an incident with regional impact. The Plan evaluated two earthquake disaster scenarios that could occur in the Bay Area, including a 7.9 magnitude (M) earthquake on the northern segment of the San Andreas Fault and a 7.05 M earthquake on the entire Hayward Fault. It additionally coordinates the provision of transit services during these disaster events.

Local

Contra Costa Health Services Hazardous Materials Programs

The Contra Costa Health Services – Hazardous Materials Program (CCHSHMP) is the CUPA for all of Contra Costa County. As the CUPA, CCHSHMP administers the State's hazardous materials regulatory programs through routine inspections at sites that handle hazardous materials, as well as the County's Industrial Safety Ordinance, Unannounced Inspection, Green Business, and Pollution Prevention programs.

Contra Costa Hazardous Materials Interagency Task Force

The Hazardous Materials Interagency Task Force is a coalition of agencies with responsibility for public and environmental health and safety, which have joined in a cooperative and voluntary effort to enhance their level of service individually and collectively, with a focus on Contra Costa County (Contra Costa Health 2023). Contra Costa County contains heavy industrial development that may be associated with hazardous waste transport across the county (Contra Costa 2005a). Hundreds of miles of pipelines for the transportation of natural gas, crude oil, and refined petroleum products traverse Contra Costa County, including residential and commercial areas. Some of these pipelines may cross unstable slopes and areas underlain by soft mud and peat. The hazard of petroleum fires is considered more dangerous than natural gas fires as they are more likely to spread to nearby property. The Task Force provides members with a continuing forum to coordinate and improve efforts in accident prevention; emergency response; communication, outreach, and public participation; and efficiency, including the identification of gaps and overlaps in policies and programs to protect the public's health and safety (Contra Costa Health 2023).

Contra Costa County Hazardous Materials Area Plan

The County Hazardous Materials Area Plan provides the planning framework for the County's hazardous materials emergency planning and community right-to-know programs. The Plan describes the overall hazardous materials emergency response organization within the county; establishes the lines of authority and coordination for hazardous materials incidents; identifies the roles and responsibilities of local, State and federal government agencies necessary to minimize the impacts of a hazardous materials incident; and provides support for hazardous materials management in the county, including the coordination of data management, business plans, and facility inspections (Contra Costa Health 2021).

Contra Costa County Local Hazard Mitigation Plan

The County's Local Hazard Mitigation Plan (LHMP) serves to reduce injury, loss of life, property damage, and loss of services from natural disasters. The LHMP provides a comprehensive analysis of the natural and human-caused hazards that threaten the county, with a focus on mitigation, allowing the County to remain eligible to receive additional federal and State funding to assist with emergency response and recovery, as permitted by the federal Disaster Mitigation Act of 2000 and California Government Code Sections 8685.9 and 65302.6; it also complements the efforts undertaken by the existing General Plan Safety Element. The LHMP complies with all requirements set forth under the federal Disaster Mitigation Act of 2000 and was adopted and approved by the Federal Emergency Management Agency (FEMA) in 2018.

Contra Costa County Emergency Operations Plan

The Emergency Operations Plan (EOP) provides the basis for a coordinated response before, during, and after an emergency affecting Contra Costa County. It facilitates multi-jurisdictional and interagency coordination in emergency operations, particularly between local government, private sector, operational area (geographic county boundary), State response levels, and appropriate federal agencies. It also establishes the organizational framework of the California Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS) within Contra Costa County.

Contra Costa County Ordinance Code

Chapter 42-2 – Disaster Council and Emergency Services

The Contra Costa County Emergency Services Policy Board consists of occupants of County or other public positions and offices. The Operational Area Council is created as an advisory council to the Emergency Services Policy Board. The Operational Area Council consists of emergency managers from incorporated cities, special districts, key utilities and businesses, and staff of the Sheriff's Office, Office of Emergency Services. The County Administrator oversees the County's emergency organization.

Chapter 450-2 – Hazardous Materials Release Response Plans and Inventories

Health and Safety Code Chapter 6.95 requires, among other things, that any business which handles a specified quantity of a hazardous material establish a business plan for emergency response to a release or threatened release of a hazardous material, which includes an inventory of hazardous materials handled by the business, and report to the administering agency and the State Office of Emergency Services occurrences of specified releases or threatened releases of hazardous materials. This Ordinance implements Division 20 Chapter 6.95 of the California Health and Safety Code.

Chapter 450-6 – Underground Storage of Hazardous Substances

Section 450-6.402 – Additional Permits. According to this section, no person may repair or make any modifications to an underground storage tank without a permit from Contra Costa Health Services. The permits required by this section are in addition to the permit required by the California Health and Safety Code Section 25284.

Section 450-6.404 – Delivery. This section states that no person may deliver any product to an underground storage tank unless Contra Costa Health Services has issued a permit for its operation to the owner and the permit has not expired or been revoked. Upon request by any person, the owner or operator of an underground storage tank must allow inspection of the permit.

Section 450-6.406 – Fencing. This section states that no person may leave unattached any excavation over three feet in depth, associated in any way with an underground storage tank, without erecting a fence adequate to prevent persons or animals from falling into the excavation.

Chapter 450-8 – Risk Management

Chapter 450-8 requires that a facility classified as a stationary source submit a safety plan to the County Health Services Director within three years of the date a facility becomes a stationary source. The safety plan must comply with the provisions of this section and include the safety elements listed in full in Section 450-8.016, *Stationary Source Safety Requirements*.

Chapter 84-63 – Land Use Permits for Development Projects Involving Hazardous Material

Known as the "Industrial Safety Ordinance," this Chapter mitigates health and safety impacts of industrial facilities by requiring additional safety measures that go beyond State requirements to protect public health and safety. The Chapter applies to new permanent buildings, structures, or facilities that will manage hazardous materials or hazardous waste in any non-agricultural zoning district. It requires that such projects be scored based on various risk factors, and projects scoring above a certain threshold are required to obtain a land use permit.

Article 84-63.12, *Land Use and Variance Permits*, further states that land use permits, variances, or other land use entitlements granted for the operation or expansion of an offsite hazardous waste facility must be consistent with the portions of the County Hazardous Waste Management Plan that identify siting criteria, siting principles, or other policies applicable to hazardous waste facilities. Before approving the application, the County must find that the application complies with the applicable siting criteria, siting principles, and other policies identified in the County Hazardous Waste Management Plan, and that the proposed offsite hazardous waste facility is consistent with the County Hazardous Waste Management Plan and the land uses which surround them.

Section 1004-2.806 – Hazardous Materials

Prior to the issuance of any encroachment permit for the construction or installation of any pipelines for the transmission of flammable liquids or gases, this section requires that approval be obtained from the Road Commissioner and, as applicable, from each fire protection district or the State Fire Marshal in which any pipelines will be located. All approvals should be based on the determination that no undue fire hazard will be created to life or property in the areas through which the proposed pipeline will be located.

Chapter 86-4- Airport Zoning

Section 86-4.004 – Purpose. This Chapter of the County Ordinance Code is intended to promote the health, safety, and general welfare of Contra Costa County residents by preventing the creation or establishment of airport hazards, thereby protecting the lives and property of the users of the Buchanan Field Airport and of the occupants of the land in its vicinity, and preventing destruction or impairment of the utility of the airport and the public investment in it, in accordance with and as a part of the comprehensive master plan of airports of the county.

Section 86-4.014 – Height Limits. This section prohibits structures or trees from being erected, altered, allowed to grow, or maintained in any airport approach zone, airport turning zone, or airport transition zone to a height greater than the height limit established in this section for that zone. This regulation establishes the following height limits for each zone:

(1) Approach Zones 1, 2, 3, and 4 have a maximum height limit of 20 feet at a distance of 1,000 feet from the end of the runway. The maximum allowable height must be increased in step-ups of five feet each for every 200-foot segment added to the 1,000-foot distance from the end of the runway, to a maximum height of 150 feet.

(2) Approach Zones 5 and 6 have a maximum height limit of 20 feet at a distance of 600 feet from the end of the runway. The maximum allowable height must be increased in step-ups of five feet each for every 100-foot segment added to the 600-foot distance from the end of the runway, to a maximum height of 150 feet.

(3) All turning zones have a maximum height limit of 150 feet, except that portion of the turning zone marked on the Airport Zoning Plan for Buchanan Field as "not included in turning zone."

(4) All transition zone areas have the maximum height limit indicated on the Airport Zoning Plan for Buchanan Field.

Contra Costa County Airport Land Use Combability Plan

The Airport Land Use Combability Plan (ALUCP) is a planning document that is used to promote compatibility between the airports in Contra Costa County and the land uses that surround them. As adopted by the Contra Costa County Airport Land Use Commission, it serves as a tool for use by the Commission in fulfilling its duty to review airport and adjacent land use development proposals. Additionally, the Plan sets compatibility criteria applicable to local agencies in their preparation or amendment of land use plans and ordinances and to landowners in their design of new development.

Byron Airport Master Plan

The Master Plan for Byron Airport was last updated in 2005 and involves a 20-year planning period, with 2003 as the base year. In addition to an assessment of the airport's existing facilities, the Plan provides forecasts of aviation activity and includes individual airport improvement recommendations for 5-, 10-, and 20-year planning horizons. The intent of the Byron Airport Master Plan is to provide Contra Costa County with guidance concerning how the airport should develop over the 20-year planning period (Contra Costa County 2005b).

Buchanan Field Airport Master Plan

The Master Plan for Buchanan Field Airport was last updated in 2008 and addresses a variety of concerns with the formulation of a long-range physical development plan for the airport. The primary goal of the Plan is the continued improvement of the airport in a manner that is financially realistic and that is appropriate in consideration of its surroundings. Like the Byron Airport Master Plan, the Buchanan Field Airport Master Plan

assesses and directs improvements that will likely be necessary to accommodate future aviation needs (Contra Costa 2008).

5.9.1.2 EXISTING CONDITIONS

Schools

As described in Section 5.3, *Air Quality*, of this Draft EIR, some land uses are considered more sensitive to airborne hazardous materials than others due to the types of population groups or activities involved. Because sensitive population groups include children, the California Environmental Quality Act (CEQA) requires an evaluation of hazardous emissions or handling hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school, private or public.

Contra Costa County contains 18 public school districts and 285 total schools, including public and private schools (CCCOE 2022). There are currently no known proposals for new public schools in the EIR Study Area.

Hazardous Materials

Hazardous Materials Sites

California Government Code Section 65962.5 directs CalEPA to compile, maintain, and update specified lists of hazardous material release sites. CEQA (California Public Resources Code Section 21092.6) requires the lead agency to consult the lists compiled pursuant to Government Code Section 65962.5 to determine whether the project and any alternatives are identified on any of the following lists:

- **USEPA NPL.** The USEPA's NPL includes all sites under the USEPA's Superfund program, which was established to fund cleanup of contaminated sites that pose risks to human health and the environment.
- **USEPA CERCLIS and Archived Sites.** The USEPA's CERCLIS includes a list of 15,000 sites nationally identified as hazardous sites. This would also involve a review for archived sites that have been removed from CERCLIS due to No Further Remedial Action Planned status.
- **USEPA RCRIS (RCRA Info).** The Resource Conservation and Recovery Act Information System (RCRIS or RCRA Info) is a national inventory system about hazardous waste handlers. Generators, transporters, handlers, and disposers of hazardous waste are required to provide information for this database.
- **DTSC Cortese List.** DTSC maintains the Hazardous Waste and Substances Sites (Cortese) list as a planning document for use by the State and local agencies to comply with CEQA requirements by providing information about the location of hazardous materials release sites. This list includes the Site Mitigation and Brownfields Reuse Program Database.
- **DTSC HazNet.** DTSC uses this database to track hazardous waste shipments.
- **SWRCB LUSTIS.** Through the Leaking Underground Storage Tank Information System (LUSTIS), SWRCB maintains an inventory of USTs and LUSTs, which tracks unauthorized releases.

The required lists of hazardous material release sites are commonly referred to as the "Cortese List," named after the legislator who authored the legislation. Because the statute was enacted more than 20 years ago, some of the provisions refer to agency activities that were conducted many years ago and are no longer being implemented and, in some cases, the information required in the Cortese List does not exist. Those requesting a copy of the Cortese Lists are now referred directly to the appropriate information resources contained on websites hosted by the boards or departments referenced in the statute, including DTSC's online EnviroStor database and the SWRCB's online GeoTracker database. These two databases include hazardous material release sites, along with other categories of sites or facilities specific to each agency's jurisdiction.

A search of the online EnviroStor and GeoTracker databases on April 18, 2023, identified 679 hazardous materials sites within the EIR Study Area (SWRCB 2023; DTSC 2023). Of the 679 sites, 209 are designated as "active", "open", or "require further review", and the remaining 468 sites are designated as "closed", "completed – case closed", "no action required", or "no further action." The 209 active hazardous materials sites in the EIR Study Area are shown in Table 5.9-1, *Active Hazardous Material Sites in the EIR Study Area***,** and on Figure 5.9-1, *Active Hazardous Material Sites*. The majority of the listed sites are classified as cleanup program sites, where recent or historical unauthorized releases of pollutants to the environment, including soil, groundwater, surface water, and sediment, have occurred.

Hazardous Materials Releases

Numerous types of hazardous materials and chemicals are transported and used throughout homes and businesses within the county. Contra Costa County contains extensive heavy industrial development along its western and northern shorelines, some of which is associated with hazardous materials uses. Military Ocean Terminal Concord, adjacent to the communities of Bay Point and Clyde, is an active installation that ships munitions throughout the Pacific region. Richmond hosts the largest oil refinery in California. This refinery, in addition to numerous other facilities across the County's northern waterfront, released a combined total of 3.61 million pounds of toxic material in 2021, according to USEPA's Toxics Release Inventory (EPA 2023). As shown in Figure HS-15, Toxic Release Rankings Relative to the State, Figure HS-16, Hazardous Waste Generators and Facilities Rankings Relative to the State, and Figure HS-17, Clean-Up Sites Rankings Relative to the State, in the proposed Health and Safety Element, there are higher concentrations of toxic releases, hazardous waste generators and facilities, and cleanup sites in and around these Impacted Communities[1] on the western and northern shorelines than many other parts of the county.

These heavy industrial uses present potential risks to public safety due to the explosiveness and flammability of petroleum and chemical materials, especially during transport. A majority of the transportation routes used to transport these materials are major roadways, freeways, rail lines, and waterways. These include several major state and interstate routes that traverse the county in addition to several railroads. Including the Union Pacific Railroad as shown in Figure 5.9-2, *Goods Movement Facilities*.

[1] "Impacted Communities" refers to census tracts in the unincorporated county that are disproportionately burdened by pollution. As discussed further in Section 5.3, *Air Quality*, these designations have been applied to census tracts that score at or above the 72nd percentile for various pollution and population indicators in the California Office of Environmental Health Hazard Assessment's CalEnviroScreen program.

In addition, storage tanks and pipelines are throughout the county and could present public safety risks due to geologic conditions. DOT's National Pipeline Mapping System (NPMS) Public Viewer shows the routes of hundreds of miles of gas transmission and hazardous liquid pipelines in the county (USDOT 2023).

At-Risk Facilities

As part of the process to prepare the proposed General Plan, a vulnerability assessment was prepared, which determined the number of industrial buildings and hazardous waste material facilities vulnerable to climate change-related hazards. The assessment notes that 61 industrial buildings in the EIR Study Area are within coastal flood areas; 68 industrial buildings, including five hazardous use facilities, are within the 500-year floodplain; 34 industrial structures are within landslide-prone areas; 44 industrial buildings are within sea-level rise inundation areas; and 24 industrial buildings are within fire hazard zones.

5. Environmental Analysis
HAZARDS AND HAZARDOUS MATERIALS

Table 5.9-1 Active Hazardous Materials Sites in the EIR Study Area

Site Name	Address/Location	Site Type	Cleanup Status
EnviroStor Sites			
Selby Slag	Shoreline & Marsh Adj. To Carquinez Strait, Selby	State Response	Active
Acme Fill Corporation	950 Waterbird Way, Martinez	Corrective Action	Active
Military Ocean Terminal Concord	Port Chicago Highway, Concord	Federal Superfund	Active
General Chemical Corp/Bay Point Works	501 Nichols Rd, Bay Point	Corrective Action	Active
West County Landfill Inc	Parr Blvd & Garden Tract Rd, Richmond	Corrective Action	Active
Maltby Pump Station	900 Central Avenue, Martinez	Voluntary Cleanup	Active
GBF / Pittsburg Dumps	Somerville Rd & James Donlon Blvd, Antioch	Federal Superfund	Active
Allied Signal Bay Point	501 Nichols Road, Bay Point	Voluntary Cleanup	Active
Brookside Drive	506-580 Brookside Drive, Richmond	Voluntary Cleanup	Active
Classic Cleaners	679 Parker Avenue, Rodeo	Voluntary Cleanup	Active
Fred's Cleaners	3164 Danville Boulevard, Alamo	Voluntary Cleanup	Active
Central Contra Costa Sanitary District	5019 Imhoff Place, Martinez	Voluntary Cleanup	Certified / Operation & Maintenance
Fass Metals	818 W. Gertrude Avenue, Richmond	State Response	Certified / Operation & Maintenance
Vine Hill Complex	896 Waterbird Way, Martinez	Corrective Action	Certified / Operation & Maintenance
Chemical And Pigment Company	600 Nichols Road, Bay Point	State Response	Certified / Operation & Maintenance
Reichelt Site	521 West Gertrude Avenue, Richmond	State Response	Certified O&M – Land Use Restrictions Only
Apogee Chemical Inc	525 De Carlo Avenue, Richmond	Voluntary Cleanup	Certified O&M – Land Use Restrictions Only
Clyde Pedestrian Path	East Of Port Chicago Highway from Sussex St to Warwick St, Clyde	Voluntary Cleanup	Certified O&M – Land Use Restrictions Only
Antioch Bomb Target	Latitude: N 38"" 01.596' Longitude: W 121' 36.727, Antioch	State Response	Inactive – Action Required
Thompson Property	1499/1621 Delta Road, Knightsen	School Cleanup	Inactive – Needs Evaluation
Port Chicago Highway Site	805 Port Chicago Highway, West Pittsburg	Evaluation	Inactive – Needs Evaluation
NAD Concord	Concord	Military Evaluation	Inactive – Needs Evaluation
I T Transportation Corp/No Calif	4501 Pacheco Blvd, Martinez	Corrective Action	Inactive – Needs Evaluation
Caltrans-Carquinez Bridge	Toll Bridge, Crocket	Voluntary Cleanup	Inactive – Needs Evaluation
Karnes Property	11 Parr Boulevard, Richmond	Evaluation	Inactive – Needs Evaluation
Neon Associates	2800 Radiant Avenue, Richmond	Evaluation	Inactive – Needs Evaluation

Table 5.9-1 Active Hazardous Materials Sites in the EIR Study Area

Site Name	Address/Location	Site Type	Cleanup Status
Hegarty Site	560 W. Gertrude Ave, Richmond	Evaluation	Inactive – Needs Evaluation
Xcel Etch Tek	2455 Bates Avenue, Concord	Tiered Permit	Inactive – Needs Evaluation
Selby Smelter Offsite Area	Shoreline And Marsh Street, Selby	Evaluation	Inactive – Needs Evaluation
Contra Costa County Fair	1201 West 10th Street, Antioch	Voluntary Cleanup	Refer: Local Agency
Myers Drum Co.	900 Brookside Dr., San Pablo	Historical	Refer: Other Agency
Denning Mills, Inc	385 Pittsburg Avenue, Richmond	Historical	Refer: Other Agency
Mannon Estate	650 Parker Avenue, Rodeo	Historical	Refer: Other Agency
Tosco, San Francisco Area Refinery	1380 San Pablo Avenue, Rodeo	Tiered Permit	Refer: Other Agency
Tosco Refining Co., Avon Refinery	Solano Way, Martinez	Tiered Permit	Refer: Other Agency
West Contra Costa Sanitary Landfill, Inc.	Foot of Parr Boulevard, Richmond	Tiered Permit	Refer: Other Agency
Tosco Corporation Avon Refinery	Solano Way / Waterfront Road, Martinez	Historical	Refer: RCRA
Acme Landfill	End of Arthur Road, Martinez	Evaluation	Refer: RCRA
General Conveyer Of Northern Californ	4575 Pacheco Blvd., Martinez	Historical	Refer: RCRA
Union Oil Of Calif., S.F. Refinery	San Francisco Refinery, Rodeo	Historical	Refer: RCRA
Shell Oil Co. #3	1800 Marina Vista Avenue, Martinez	Historical	Refer: RCRA
General Chemical	501 Nichols Road, Pittsburg	Evaluation	Refer: RCRA
Allied Corp Bay Point Works	501 Nichols Road, Pittsburg	Historical	Refer: RCRA
Oscar Erickson Inc	255 Parr Blvd, Richmond	Historical	Refer: RCRA
Richmond Sanitary Service	Parr Boulevard and Garden Tract Road, Richmond	Historical	Refer: RCRA
Shell Chemical Company	2840 Willow Pass Road, Pittsburg	Evaluation	Refer: RCRA
Pure/Chemical Corporation	508 De Carlo Avenue, Richmond	Historical	Refer: RWQCB
Mt Diablo Quicksilver Co Ltd	West Of Morgan Territory Road, Clayton	Historical	Refer: RWQCB
Tidewater Oil Co.	Avon Refinery, Martinez	Historical	Refer: RWQCB
Rodeo Refinery	On San Pablo Bay, 9 Miles W Of Martinez, Martinez	Historical	Refer: RWQCB
Martinez City Dump	301 Waterfront Rd (1 Mile E Of Martinez), Martinez	Historical	Refer: RWQCB
Pacific Resins & Chemicals Inc.	2502 Goodrich Avenue, Richmond	Historical	Refer: RWQCB
Bay Standard	24485 Marsh Creek Road, Brentwood	Evaluation	Refer: RWQCB
Antioch A B F	James Donlon Blvd, East of Somesrville, Antioch	Evaluation	Refer: RWQCB
Chevron Old Valley Pipeline Right-Of-Way	Bruns And Byron Roads, Byron	Voluntary Cleanup	Refer: RWQCB

5. Environmental Analysis
HAZARDS AND HAZARDOUS MATERIALS

Table 5.9-1 Active Hazardous Materials Sites in the EIR Study Area

Site Name	Address/Location	Site Type	Cleanup Status
Dla – Ozol Terminal	700 Carquinez Scenic Drive, Martinez	State Response	Refer: RWQCB
Union Oil Company Of California	1380 San Pablo Ave., Rodeo	Historical	Refer: RWQCB
2701 Goodrick Ave	2701 Goodrick Ave, Richmond	Evaluation	Refer: RWQCB
Byron Sanitary District	3288 Camino Diablo Road, Byron	Historical	Refer: RWQCB
Shell Oil Products/Us Martinez Refinery	Marina Vista Ave, Martinez	Corrective Action	Refer: RWQCB
Golden Eagle Refinery	150 Solano Way, Martinez	Corrective Action	Refer: RWQCB
Agra Foundations Inc.	155 B Parr Boulevard, Richmond	Evaluation	Refer: RWQCB
Mckosker Site	716 W. Gertrude Ave, Richmond	Evaluation	Refer: RWQCB
Conoco Phillips	1380 San Pablo Ave, Rodeo	Corrective Action	Refer: RWQCB
Rose	2701 Goodrick Avenue, Richmond	Evaluation	Refer: RWQCB
Mt. Diablo Mine	Marsh Creek Road, Brentwood	Historical	Refer: RWQCB
Zieminski Site	816 W. Gertrude Ave, Richmond	Evaluation	Refer: RWQCB
Simpson Filtration	81 Parr Blvd, Richmond	Evaluation	Refer: RWQCB
Acme Packaging	761 Port Chicago Highway, Bay Point	Corrective Action	Refer: RWQCB
San Francisco Nike Battery 08-09 (J09ca0936)	Berkeley	Military Evaluation	Refer: RWQCB
Union Collier	Nichols Rd. & Port Chicago Hwy, Pittsburg	Evaluation	Refer: RWQCB
GeoTracker Sites			
Acme Fill Corp	950 Waterbird Way, North Parcel, Martinez	Cleanup Program Site	Open – Verification Monitoring
Alliance Minimart	2747 Willow Pass Road, Bay Point	LUST Cleanup Site	Open – Assessment & Interim Remedial Action
Buchanan Field	550 Sally Ride Dr., Concord	Cleanup Program Site	Open – Assessment & Interim Remedial Action
Central Assembly-Former 7 Oaks Shopping Center Dry Cleaner	5098 Sobrante Avenue, El Sobrante	Cleanup Program Site	Open – Site Assessment
Central Contra Costa Sanitary District	5019 Imhoff Place, Martinez	Cleanup Program Site	Open – Inactive
Chevron Historical Pipeline – PIM Site 23	Near Waterbird Way, East of Interstate 680 and just North of Santa Fe Railroad, Martinez	Cleanup Program Site	Open – Site Assessment
EBMUD Watershed Headquarter	500 San Pablo Dam Road, Orinda	Cleanup Program Site	Open – Inactive
Fass Metal/Bonner	818 W Gertrude Avenue, Richmond	Cleanup Program Site	Open – Inactive
Joseph's Marina and Lone Tree Point	13 Pacific Ave, Rodeo	Cleanup Program Site	Open – Inactive
Kinder Morgan Concord Station	1550 Solano Way, Concord	Cleanup Program Site	Open – Remediation
Kinder Morgan – Rodeo/Crockett Terminal – Selby Pond Release	North of San Pablo Ave, Rodeo	Cleanup Program Site	Open – Verification Monitoring

Table 5.9-1 Active Hazardous Materials Sites in the EIR Study Area

Site Name	Address/Location	Site Type	Cleanup Status
LP Catalyst Holding	2840/2850 Willow Pass Rd, Bay Point	Cleanup Program Site	Open – Assessment & Interim Remedial Action
Martinez Refining Company	1801 Marina Vista, Martinez	Cleanup Program Site	Open – Assessment & Interim Remedial Action
MONSANTO Chemical Facility	1778 Monsanto Way, Martinez	Cleanup Program Site	Open – Verification Monitoring
Phillips 66 San Francisco Refinery, Rodeo	1380 San Pablo Ave, Rodeo	Cleanup Program Site	Open – Remediation
Point Ozol, Fuel Terminal DFSP – Administration Area	700 Carquinez Scenic Drive, Martinez	Military UST Site	Open – Remediation
Point Ozol, Fuel Terminal DFSP – Concord Pump Station	Imhoff Drive, Concord	Military Cleanup Site	Open – Remediation
Point Ozol, Fuel Terminal DFSP – Parent Facility – Point Ozol, Fuel Terminal DFSP	Martinez, CA	Military Cleanup Site	Open – Assessment & Interim Remedial Action
Point Ozol, Fuel Terminal DFSP – Upper Tank Area	700 Carquinez Scenic Strait, Martinez	Military UST Site	Open – Remediation
Private Residence	Private Residence, Kensington	LUST Cleanup Site	Open – Eligible for Closure
RKR Associates LLC	2455 Bates Ave, Concord	Cleanup Program Site	Open – Remediation
San Ramon Valley Fire Protection District – Station #32	1101 Stone Valley Road, Alamo	LUST Cleanup Site	Open – Eligible for Closure
Shell Oil Co – Martinez Refinery	North End Marina Vista Blvd, Martinez	Cleanup Program Site	Open – Verification Monitoring
Shore Terminals LLC Selby Terminal	90 San Pablo Avenue, Crockett	Cleanup Program Site	Open – Site Assessment
Southern Pacific Pipelines	2nd Street, Rodeo	Cleanup Program Site	Open – Inactive
Tesoro / Tdpi / Cop Committee Site	150 Solano Way, Martinez	Cleanup Program Site	Open – Remediation
Tesoro Avon Refinery	150 Solano Way, Martinez	Cleanup Program Site	Open – Remediation
Tesoro Golden Eagle Refinery	150 Solano Way, Martinez	Cleanup Program Site	Open – Remediation
Tosco Avon Refinery	1 Solano Way, Martinez	Cleanup Program Site	Open – Remediation
Tosco Pipeline – Wickland	2801 Waterfront Road, Martinez	Cleanup Program Site	Open – Eligible for Closure
US Army MOTCO - MRS 10 – Suisun Bay Impact Area	Suisun Bay, Concord	Military Cleanup Site	Open – Site Assessment
US Army MOTCO - MRS 7 – Tidal Explosive Ordnance Disposal	Port Chicago Hwy, Concord	Military Cleanup Site	Open – Long Term Management
US Army MOTCO - MRS 8 – Port Chicago Terrestrial Explosion Area	Tidal Area, Concord	Military Cleanup Site	Open – Long Term Management
US Army MOTCO - Site 1 – Tidal Area Landfill	Kinney Blvd, Concord	Military Cleanup Site	Open – Long Term Management
US Army MOTCO - Site 11	Kinney Blvd, Concord	Military Cleanup Site	Open – Long Term Management
US Army MOTCO - Site 1A – Tidal Area Landfill Groundwater	Kinney Blvd, Concord	Military Cleanup Site	Open – Remediation
US Army MOTCO - Site 2	Kinney Blvd, Concord	Military Cleanup Site	Open – Long Term Management
US Army MOTCO - Site 25, 26, and 28	Nichols Rd, Concord	Military Cleanup Site	Open – Long Term Management

5. Environmental Analysis
HAZARDS AND HAZARDOUS MATERIALS

Table 5.9-1 Active Hazardous Materials Sites in the EIR Study Area

Site Name	Address/Location	Site Type	Cleanup Status
US Army MOTCO - Site 3	Nichols Rd, Concord	Military Cleanup Site	Open – Long Term Management
US Army MOTCO - Site 30 – Taylor Boulevard Bridge Disposal Area	Kinney Blvd, Concord	Military Cleanup Site	Open – Eligible for Closure
US Army MOTCO - Site 31	400 Port Chicago Highway, Concord	Military Cleanup Site	Open – Remediation
US Army MOTCO - Site 31A	101 Port Chicago Highway, Concord	Military Cleanup Site	Open – Site Assessment
US Army MOTCO - Site 32	Port Chicago Hwy, Concord	Military Cleanup Site	Open – Remediation
US Army MOTCO - Site 33	Port Chicago Hwy, Concord	Military Cleanup Site	Open – Remediation
US Army MOTCO - Site 38 – Port of Chicago Main Street Dump	Main Street, Concord	Military Cleanup Site	Open – Assessment & Interim Remedial Action
US Army MOTCO - Site 39 – E-103 Dry Cleaning Facility	Building E-103, Concord	Military Cleanup Site	Open – Eligible for Closure
US Army MOTCO - Site 4 and 5	Port Chicago Hwy, Concord	Military Cleanup Site	Open – Long Term Management
US Army MOTCO - Site 40 – Former Copper Smelting Plant	Kinney Blvd, Concord	Military Cleanup Site	Open – Remediation
US Army MOTCO - Site 6	Port Chicago Hwy, Concord	Military Cleanup Site	Open – Long Term Management
US Army MOTCO - Site 9	Froid and Taylor Road, Concord	Military Cleanup Site	Open – Long Term Management

Source: SWRCB 2022.

HAZARDS AND HAZARDOUS MATERIALS

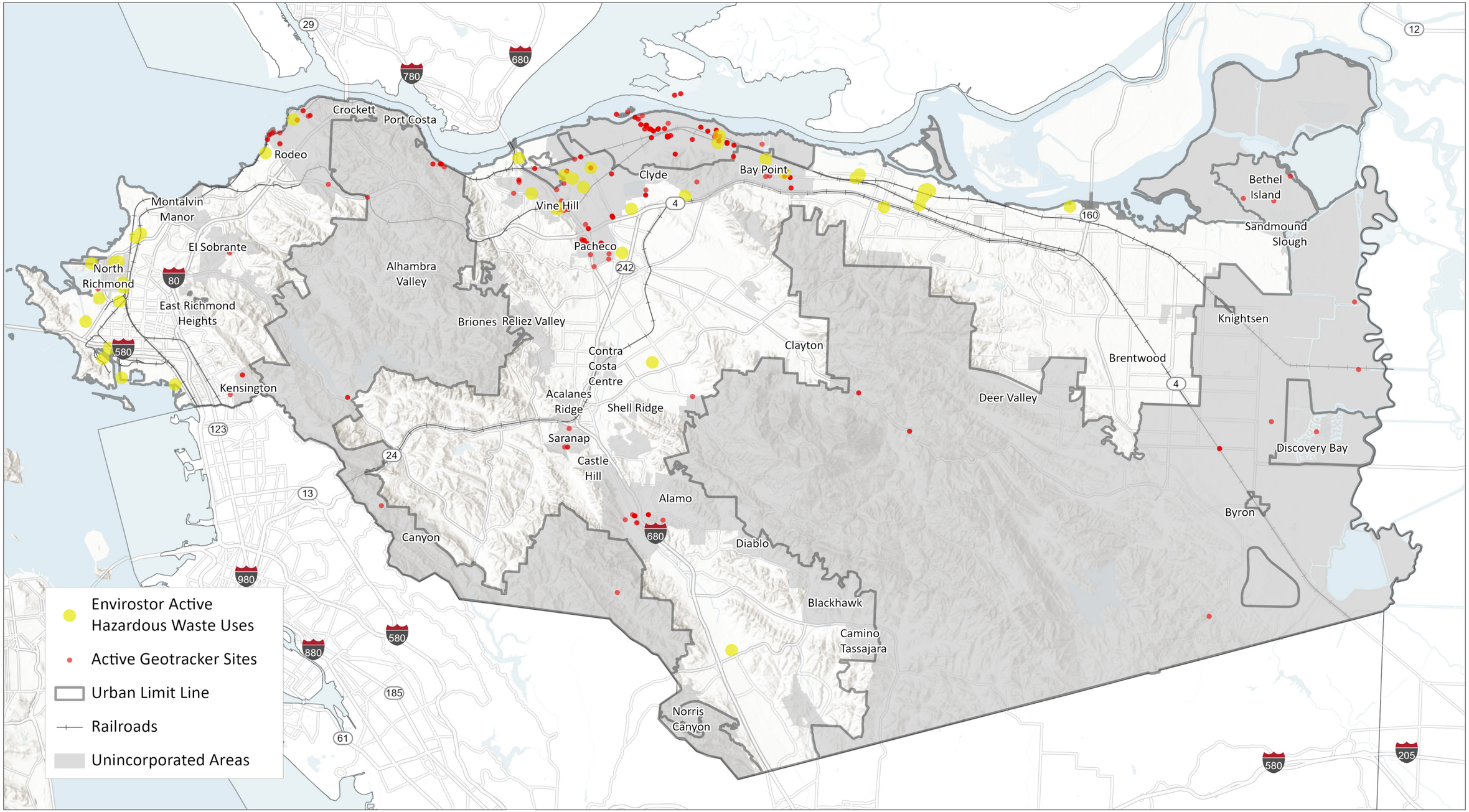


Figure 5.9-1
Active Hazardous Material Sites

HAZARDS AND HAZARDOUS MATERIALS

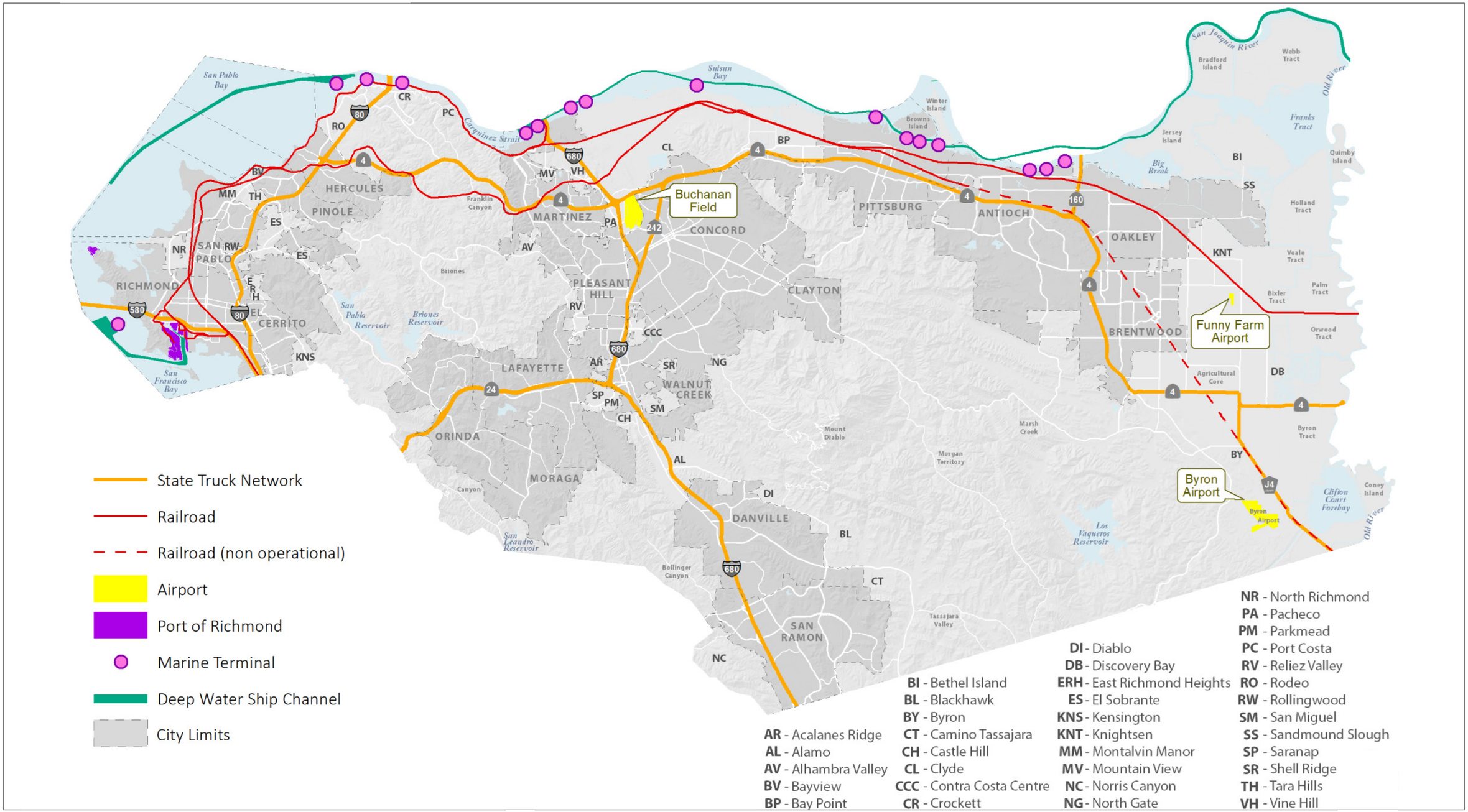


Figure 5.9-2
Goods Movement Facilities

Airports

There are two public general aviation airports in Contra Costa County, Buchanan Field Airport and Byron Airport. There are also two private airstrips in eastern Contra Costa County. Both airports are public reliever airports that serve the residents of Contra Costa County. Buchanan Field Airport is west of Concord and covers 495 acres (FAA 2022). Byron Airport is south of Byron and covers 1,427 acres (Contra Costa County 2022).

The Contra Costa County ALUCP was adopted by the Contra Costa County Airport Land Use Commission in 2000. Recently, to promote economic development, the County amended its ALUCP with regard to Byron Airport to substantially broaden the range of uses allowed by right on the airport property. The Byron Airport Development Program was adopted by the Board of Supervisors on June 7, 2022. This included adoption of a County-initiated General Plan amendment and approval of a development plan modification that established development standards, such as maximum building heights, maximum floor area, and landscaping requirements. Additionally, the ALUCP was updated with new policies and maps specific to Byron Airport that reflect the 2017 Airport Layout Plan for Byron Airport, the 2005 Byron Airport Master Plan, and guidance set forth in the most recent version of the Caltrans California Airport Land Use Planning Handbook.

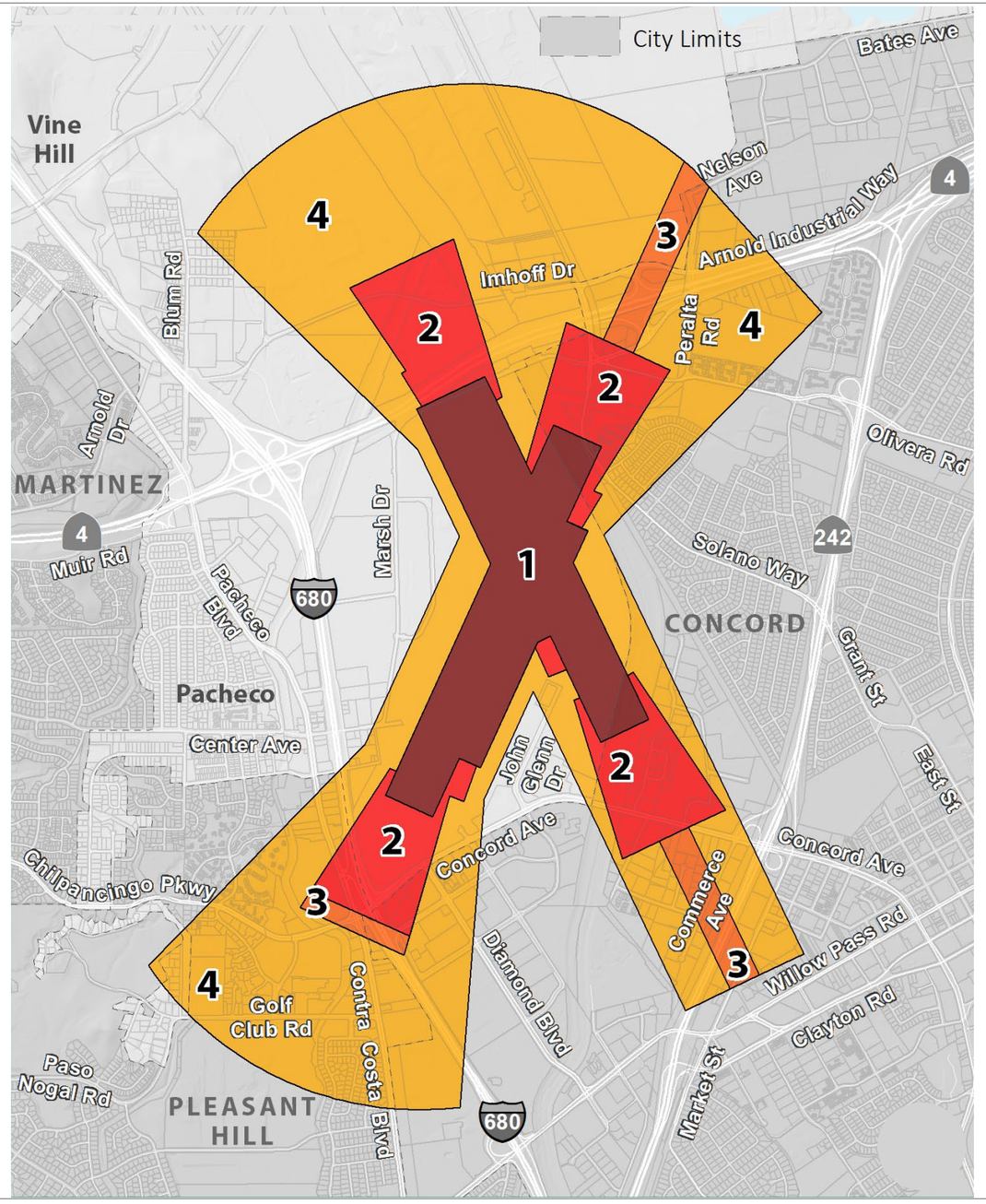
Areas within the unincorporated county and several cities are within Buchanan Field and Byron Airports' Safety Compatibility Zones, as shown in Figure 5.9-3, *Buchanan Field Airport and Byron Airport Safety Zones*. These zones restrict certain land uses and heights of structures pursuant to Federal Aviation Administration (FAA) Part 77 Regulations protecting airspace near the airport (ALUC 2000a, ALUC 2000b).

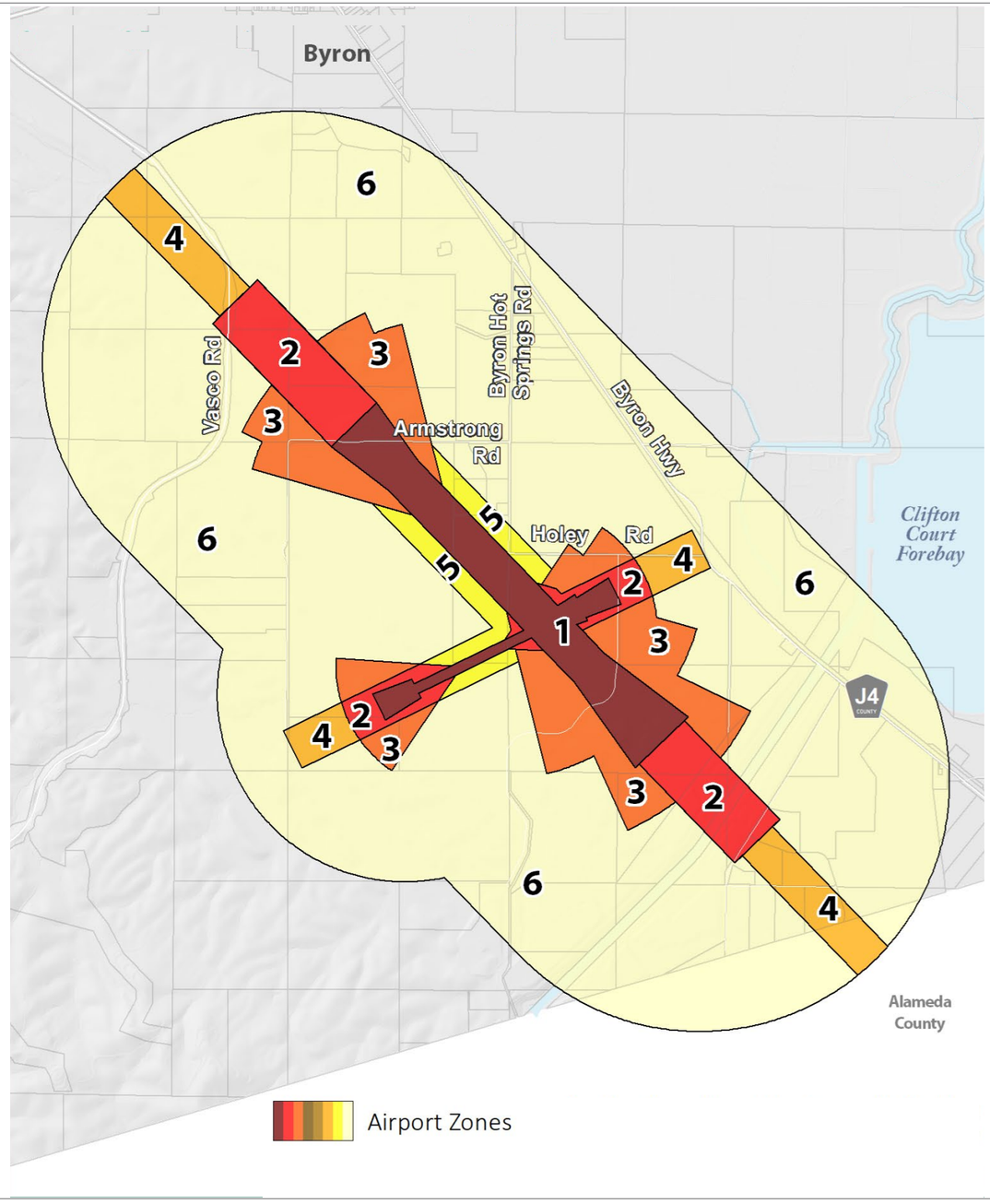
Emergency Response and Evacuation Planning Areas

As described in Section 5.9.1.1, *Regulatory Background*, the EIR Study Area is within the planning areas of the Contra Costa County Operational Area EOP and the Contra Costa County LHMP. The Sheriff's Office of Emergency Services is responsible for coordinating emergency services in the county. The County Administrator is the designated Administrator of Emergency Services as provided by County Ordinance Code, Chapter 42-2, *Disaster Council and Emergency Services*. The Administrator of Emergency Services is supported by the Contra Costa County Sheriff's Office of Emergency Services and has overall responsibility for developing response and recovery plans for the Operational Area and the unincorporated areas of the county; operating the Emergency Operations Center; operating communications and warning systems; maintaining information on the status of resources, services, and operations; identifying and analyzing potential hazards and recommending appropriate counter-measures; and collecting, evaluating, and disseminating damage assessment and other essential information.

As shown in Figure 5.9-4, *Evacuation Routes*, potential evacuation routes in the county include interstate freeways, state routes, and major surface streets, like Interstate (I-) 680 through the central part of the county, I-580 and I-80 in the western county, and State Route (SR-) 4 in the eastern county. Preferred evacuation routes in any individual evacuation order will depend on the emergency. Contra Costa County has identified evacuation zones to support efficient communication with community members regarding evacuation warnings and orders, which can be viewed and monitored via the County Sheriff's Office's Community Warning System website.

Evacuation access in the county also varies dependent on location. Some areas may only have one viable evacuation route, which presents a greater risk for safe evacuation during emergency evacuation events. Per State law, the proposed Health and Safety includes an analysis to identify evacuation constraints in hazard-prone residential areas. These residential parcels with evacuation constraints are shown in Figure 5.9-5, *Single-Access Road Residential Parcels.* All areas identified are more than a half-mile from a major roadway and may have access to only one emergency evacuation route.





Source: https://www.contracosta.ca.gov/4307/Airport-Land-Use-Commission-ALUC

0 2,000
Scale (Feet)

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Scale (Feet)

Figure 5.9-3
Buchanan Field Aiport and Byron Airport Safety Zones

HAZARDS AND HAZARDOUS MATERIALS

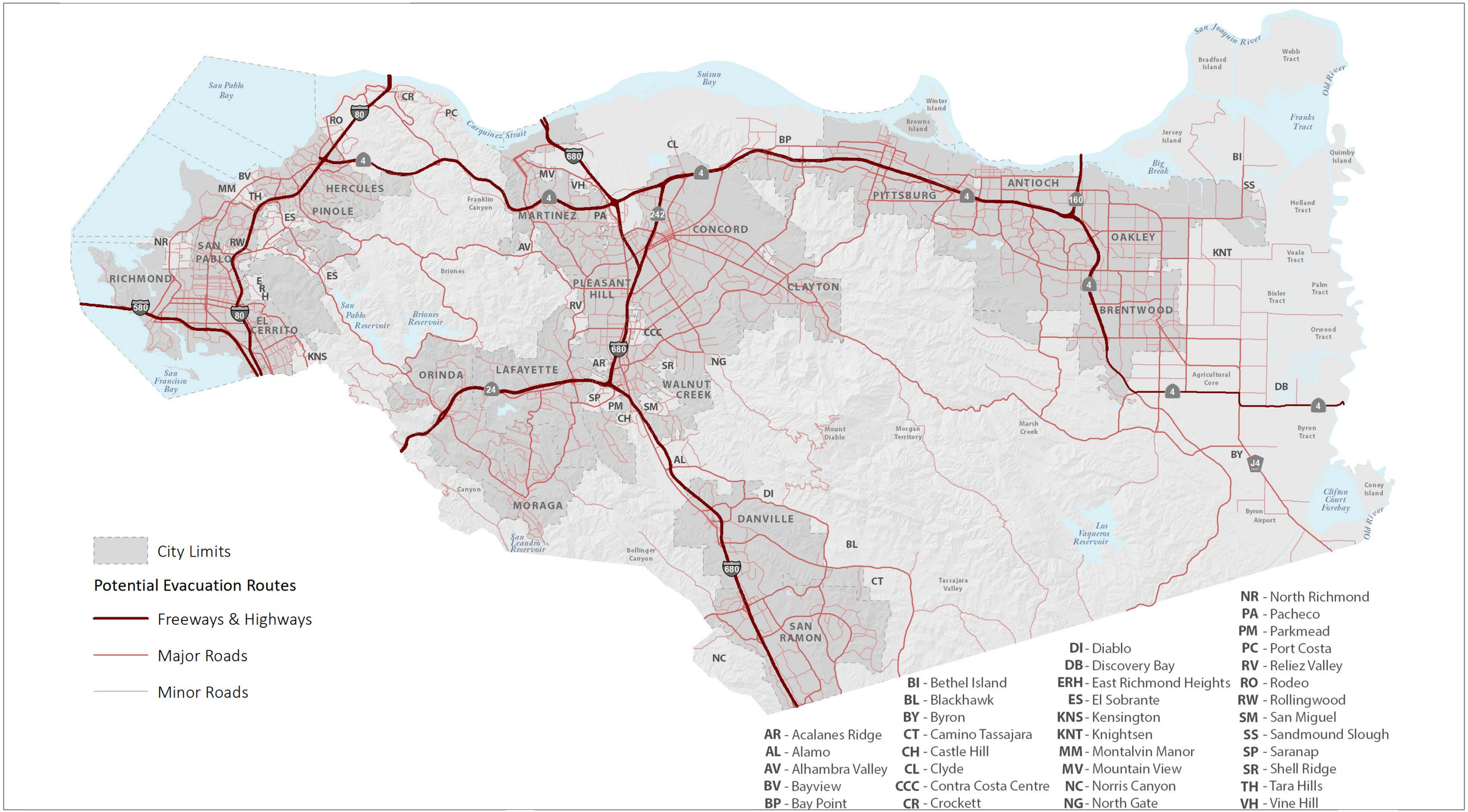

Figure 5.9-4
Evacuation Routes

HAZARDS AND HAZARDOUS MATERIALS

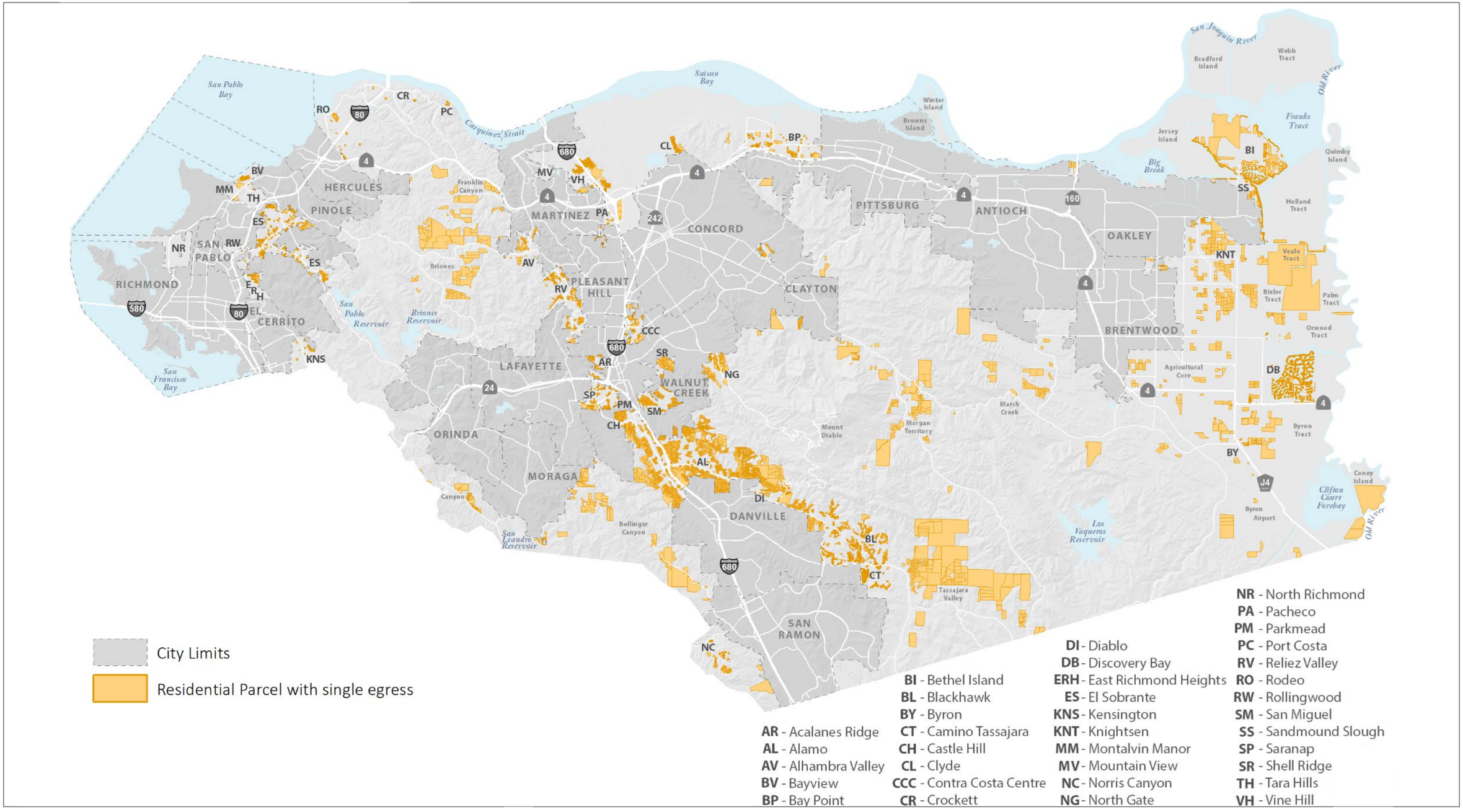

Figure 5.7-5
Single-Access Road Residential Parcels

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5.9.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

H-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

H-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

H-3 Emit hazardous emissions or handle hazardous or acutely hazardous materials, substance, or waste within one-quarter mile of an existing or proposed school.

H-4 Be located on a site which is included on a list of hazardous materials compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.

H-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area.

H-6 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

5.9.3 Programs, Plans, and Policies

5.9.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to hazards and hazardous materials. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Stronger Communities Element

- **Policy SC-P1.6**: For projects negatively affecting an Impacted Community, support community benefits agreements (CBAs) negotiated with the project applicant to address the community's expressed needs. The primary objective of these CBAs is to mitigate project impacts to the greatest extent possible, which could include mitigations exceeding the requirements of the California Environmental Quality Act (CEQA). Secondarily, to compensate for impacts that cannot be fully mitigated, these CBAs should secure community benefits that exceed inherent project benefits and support the community's objectives, especially as identified in the Community Profile. Neighborhood-serving retail uses that fill critical needs are exempt from this policy.

- ***Action SC-A1.2****: Amend County Ordinance Code Chapter 84-63, Land Use Permits for Development Projects Involving Hazardous Waste or Hazardous Materials, to:*
  - *a) Increase the hazard scores for projects with potential to adversely affect Impacted Communities to ensure more projects are subject to discretionary review.*
  - *b) Address ambiguities and antiquated terminology that complicate administration of the ordinance.*
  - *c) Require preparation of a plan to prevent and remediate any contaminant releases, along with bonds or other financial assurances that guarantee remediation plans are implemented, for projects in areas subject to sea-level rise or tsunami inundation.*

Land Use Element

- **Policy LU-P7.4**: Require new residential development to be planned, designed, and constructed in a way that promotes health, minimizes hazard exposure for future residents, and mitigates potential adverse effects on natural resources and the environment.

Transportation Element

- **Action TR-A2.3:** Coordinate with the California Public Utilities Commission and railroads to design and implement projects that address safety concerns and conflicts from at-grade rail crossings.

- **Goal TR-7**: Safe and viable general and commercial aviation activities in Contra Costa County.
  - **Policy TR-P7.2**: Work with the Federal Aviation Administration and aviation operators to minimize conflicts with residential areas and other sensitive receptors.
  - **Policy TR-P7.3**: Regulate the location of private airfields and heliports to protect public safety and minimize impacts on nearby residents and sensitive receptors.
  - ***Policy TR-P7.4****: Protect the County's airports from encroachment by incompatible uses and minimize the public's exposure to safety hazards and excessive noise by ensuring that all future development within each Airport Influence Area is consistent with the Contra Costa County Airport Land Use Compatibility Plan.*
  - **Policy TR-P7.5**: Partner with the Cities of Concord and Pleasant Hill in making land use decisions that support Buchanan Field Airport's ongoing viability while protecting public safety, consistent with the Airport Master Plan and Airport Land Use Compatibility Plan.
  - **Policy TR-P7.6**: Enhance Byron Airport's viability by protecting it from incompatible urban encroachment, such as large-scale residential development, and providing infrastructure that supports existing and planned airport activities, consistent with the Airport Master Plan and Airport Land Use Compatibility Plan.

Conservation, Open Space, and Working Lands Element

- **Policy COS-P8.5:** Require groundwater monitoring programs for all large-scale commercial and industrial facilities using wells and prohibit discharge of hazardous materials through injection wells.

Public Facilities and Services Element

- ***Policy PFS-P7.9****: Prohibit new landfills in ecologically sensitive areas, and require that new landfills be located, designed, and operated to avoid adverse impacts to surrounding land uses, including by limiting the area of landfill activities; limiting hours of operation; providing safe and appropriate transportation routes; maintaining site security; identifying associated off-site feeder transfer stations; to blend the landfill disturbance area with surrounding topography; covering refuse daily; and mitigating noise, odor, litter, and visual impacts.*

Health and Safety Element

- ***Policy HS-P7.3****: Require new development within a Very High Fire Hazard Severity Zone in the LRA or SRA (as shown on Figure HS-10) or in the WUI (as shown on Figure HS-11), and on a residential parcel with evacuation constraints (as shown on Figure HS-21), to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with evacuation plans during the construction period. Work with the appropriate fire protection district to review and approve the traffic control plan prior to issuance of building permits.*
- ***Policy HS-P7.4****: Require subdivisions in the High Fire Hazard Severity Zone in the LRA or SRA and projects requiring a land use permit in the High or Very High Fire Hazard Severity Zone in the LRA or SRA, as shown in Figure HS-10, to complete a site-specific fire protection plan. Work with the appropriate fire protection district to review and revise the fire protection plans. The fire protection plan shall include measures for fire-resistant construction materials and modifying fuel loading, as well as a plan to maintain that protection over time. The fire protection plan shall include:*
  - *a) A risk analysis*
  - *b) Fire response capabilities*
  - *c) Defensible space requirements*
  - *d) Fire safety requirements for infrastructure*
  - *e) Building ignition resistance*
  - *f) Mitigation measures and design for non-conforming fuel modification*
  - *g) Wildfire education*
  - *h) Maintenance and limitations*
  - *i) A plan for emergency preparedness, response, and evacuation*
- **Policy HS-P7.10**: Work with energy service providers to ensure an adequate power supply to vulnerable populations during planned power shutoffs.
- **Action HS-A7.1**: Collaborate with local fire safe councils, CAL FIRE Santa Clara Unit, and other fire protection agencies to update and implement the Community Wildfire Protection Plan for Contra Costa County.
- **Action HS-A7.2**: Support local fire protection agencies with efforts to seek funding for development and implementation of a continuous vegetation management program in fire hazard severity zones and WUI areas.

- **Action HS-A7.5:** Collaborate with local and regional fire safe councils, CAL FIRE Santa Clara Unit, and other fire protection agencies to develop a fire safe education program to provide information about State fuel modification, defensible space, access, water, signage, and other fire safe regulations.

- **Goal HS-9**: Communities that are protected from hazards associated with use, manufacture, transport, storage, treatment, and disposal of hazardous materials and hazardous waste, including from fossil fuels, chemical refining, and power plants, as well as pipelines, rail lines, and truck transportation.
  - **Policy HS-P9.1**: Provide equitable inspection and enforcement of hazardous material and hazardous waste regulations throughout the county.
  - **Policy HS-P9.2**: Ensure CCHSMP staff have an opportunity to review and comment on development applications for projects involving use of hazardous materials or hazardous waste.
  - ***Policy HS-P9.3****: Require new industrial development to reduce generation and disposal of hazardous materials to the maximum extent feasible by (listed in order of importance):*
    - *a) Implementing operational source reduction strategies and replacing hazardous materials with less hazardous materials.*
    - *b) Reducing generation of those wastes not amenable to source reduction or recycling.*
    - *c) Recovering and recycling the remaining waste for reuse.*
    - *d) Properly disposing of hazardous wastes and residuals generated from treatment of hazardous waste.*
  - **Policy HS-P9.4**: Support development of alternative hazardous waste management technologies and methodologies that reduce the relative risk to human health and the environment.
  - ***Policy HS-P9.5****: Require facilities that manage hazardous materials or hazardous waste in stationary or fixed storage tanks and that are in areas at risk of inundation from sea-level rise and flooding to conduct sea-level rise studies to address the risk of hazardous materials release from rising water levels, including rising groundwater. Require these facilities to incorporate best management practices to reduce the risk of release.*
  - **Policy HS-P9.6**: Require transport of hazardous materials via the safest available method for each material, avoiding Impacted Communities, populated areas, and areas subject to natural hazards whenever possible.
  - **Policy HS-P9.7**: Prioritize implementation of safety projects along hazardous material transportation corridors in Impacted Communities to address high-risk scenarios.
  - **Policy HS-P9.8**: Require applicants for projects in Impacted Communities that involve hazardous materials or hazardous waste to provide clear information in plain language about potential hazards their projects pose to nearby residents. Review and verify this information, make it available to residents, and encourage project applicants to host at least one community meeting to discuss potential hazards.
  - **Policy HS-P9.9**: Discourage construction of new large-scale facilities that treat, store, or dispose of hazardous waste from off-site sources and negatively impact Impacted Communities.

- ***Policy HS-P9.10****: Prohibit new hazardous waste facilities in the following areas:*
  - *a) Watersheds of an existing or planned drinking water reservoir.*
  - *b) Ecologically significant resource areas.*
  - *c) Within 200 feet of an active or potentially active fault.*
  - *d) Within a 100-year floodplain.*
  - *e) Within a setback distance determined in accordance with DTSC guidance under SB 673, once final.*
- ***Policy HS-P9.11****: Require design and operation of new or expanded hazardous waste facilities to adhere to the following criteria, as well as the permitting criteria established by the DTSC for vulnerable communities and cumulative impacts pursuant to SB 673, once final:*
  - *a) Minimize risk to the surrounding area in the case of a hazardous waste accident or spill.*
  - *b) Ensure spills of waste will not reach the Bay, Delta, streams, creeks, reservoirs, or other bodies of water or environmentally sensitive resources by incorporating buffers as appropriate and/or using engineered structural design features (e.g., spill containment and monitoring devices).*
  - *c) Avoid known or suspected groundwater recharge areas or areas where residential uses rely on wells. If located in such areas, facilities must provide properly engineered spill containment features, inspection measures, and other environmental protection controls.*
  - *d) In areas with unstable soils, such as steep slopes and areas subject to liquefaction or subsidence, ensure structural stability through engineered design features.*
  - *e) Use access roads leading to major transportation routes that:*
    - *Do not traverse residential neighborhoods.*
    - *Minimize, buffer, or employ physical barriers to residential frontages.*
    - *Demonstrate road network safety through road design, construction, accident rates, and traffic flow.*
    - *Minimize noise impacts on the surrounding area.*
- ***Policy HS-P9.12****: Require hazardous waste facilities to prepare a cumulative risk assessment that analyzes, characterizes, and quantifies the combined risks to human health and the environment from the facility, in combination with other off-site hazardous materials risks. The assessment must consider risks in the absence of actions to control or mitigate a potential release and determine whether buffers or other mitigation is necessary to protect residential uses, immobile populations (e.g., schools, hospitals, behavioral health facilities, convalescent homes, and prisons), other places where people gather, environmentally sensitive resources, and other sensitive areas from adverse emissions or contamination. The assessment must also be guided by DTSC guidance for vulnerable communities and cumulative impacts pursuant to SB 673, when final. Require that project applicants fund the needed technical review for the assessment.*
- **Policy HS-P9.13**: Include a condition in entitlements for new and expanded hazardous waste facilities that requires periodic (i.e., every one to three years) permit review to ensure ongoing compliance with conditions of approval.
- **Policy HS-P9.14**: Encourage and facilitate establishment of adequate sites for collection of household hazardous waste (HHW), unused pharmaceuticals, and universal wastes, along with provisions for residents who are physically unable to deliver materials to a collection site.

- **Action HS-A9.1**: Provide technical assistance to hazardous waste generators to encourage them to reduce their hazardous waste to the maximum extent feasible.
- **Action HS-A9.2**: Update the Oil Spill Contingency Plan to protect the Bay and shoreline areas in the event of an oil or other hazardous materials spill.
- **Action HS-A9.3**: Provide information to county residents about less toxic alternatives to household products containing universal wastes and the safe handling, storage, and disposal of such products, including pharmaceuticals.

- **Goal HS-10**: Communities that are protected from the impacts of historical hazardous waste releases.
  - **Policy HS-P10.1**: Coordinate with other agencies in efforts to remediate or treat contaminated surface water, groundwater, and soils in or affecting Impacted Communities.
  - ***Policy HS-P10.2****: Require development of contaminated sites to comply with all clean-up plans, land use covenants, and deed restrictions imposed by the DTSC or Regional Water Quality Control Board (RWQCB).*
  - ***Policy HS-P10.3:*** *Require new or expanded industrial uses involving hazardous materials or wastes to provide sufficient funds, in the form of a cash deposit, surety bond, or other financial instrument acceptable to the County, to guarantee site remediation, including removal of facilities, equipment, and structures, and ensure community safety and site reusability.*
  - **Action HS-A10.1**: Support public access to the inventory of contaminated sites published by the DTSC and California State Water Resources Control Board by posting links to this information on the County's website.

- **Goal HS-12**: Communities and local economies that continue to function during all hazards and have coordinated and effective response and recovery procedures.
  - **Policy HS-P12.1**: Continue implementing the *Contra Costa County Local Hazard Mitigation Plan*, which was adopted by the Board of Supervisors and certified by FEMA and is incorporated into this Health and Safety Element.
  - **Policy HS-P12.2**: Locate facilities and uses on the County's designated critical facilities list outside of identified hazard areas whenever possible, accounting for how climate change may increase frequency and intensity of hazards. If critical facilities must be in hazard areas, ensure these facilities and their access routes are protected from the hazard risks inherent to each location.
  - **Policy HS-P12.3:** Coordinate with cities, school districts, recreation and park districts, and community-based organizations to ensure adequate emergency shelters, community resilience centers, and alternate care sites are available when natural disasters and other highly hazardous conditions, such as industrial accidents, occur.
  - **Action HS-A12.1**: Update the *Contra Costa County Local Hazard Mitigation Plan* as necessary to remain compliant with State and federal laws and reflect changing climate conditions.

- **Action HS-A12.2**: Incorporate the assessments and projections for future emergency service needs from the most recent Municipal Services Reviews into updates of the *Contra Costa County Local Hazard Mitigation Plan*.
- **Action HS-A12.4**: At least every eight years, evaluate the effectiveness of and update public safety, preparedness, and hazard mitigation policies, including in this Health and Safety Element, considering changing climate conditions.

  Action HS-A12.5: Ensure the designs for new and significantly renovated community-oriented County facilities allow for flexible uses and support multiple community purposes, including being used as community resilience centers.
- ***Action HS-A12.8**: Install backup power and water resources at critical County facilities, emergency shelters, community resilience centers, and cooling centers.*
- **Action HS-A12.13**: Continue providing CERT training programs and encourage the Contra Costa CERT Coalition to provide updated training on hazards and related risks identified in the Contra Costa County Vulnerability Assessment or the best-available climate science data.
- ***Policy HS-P13.1**: Except for infill sites, require new development in High and Very High Fire Hazard Severity Zones, the WUI, and 100-year or 200-year floodplain to have access to at least two emergency evacuation routes, and encourage the same for existing development.*
- **Policy HS-P13.2:** Coordinate with transit agencies and community service and faith-based organizations to assist with evacuation efforts and ensure that evacuation services are made available to vulnerable people, including those with limited English proficiency or limited access to transportation, communication, and other lifeline resources and services.
- **Action HS-A13.1:** Partner with cities and public protection agencies to delineate evacuation routes, identifying their capacity, safety, and viability under different hazard scenarios, as well as emergency vehicle routes for disaster response, and where possible, alternate routes where congestion or road failure might reasonably be expected to occur. Update as new information and technologies become available.
- ***Action HS-A13.2:** At least once every five years, update maps identifying neighborhoods with only one emergency evacuation route.*
- ***Action HS-A13.3:** Coordinate with local fire districts to develop and maintain minimum roadway, ingress, and egress standards for evacuation of residential areas in Very High Fire Hazard Severity Zones.*
- **Action HS-A13.4:** Develop an evacuation education program to help inform community members about the Contra Costa County Community Warning System and recommended approaches to evacuation.

5.9.3.2 PROPOSED CAP UPDATE STRATEGIES AND ACTIONS

The following strategies and actions in the proposed Climate Action Plan (CAP) are applicable to hazards and hazardous materials.

Strategy NI-2: Protect against and adapt to increases in the frequency and intensity of wildfire events.

Strategy NI-2 Actions:

- Prohibit new residential subdivisions in Very High Fire Hazard Severity Zones and discourage residential subdivisions in High Fire Hazard Severity Zones. (HS-P7.1)
- Require any construction of buildings or infrastructure within a High or Very High Fire Hazard Severity Zone in the Local or State Responsibility Areas, or in the Wildland-Urban Interface, to incorporate fire-safe design features that meet the applicable State Fire Safe Regulations and Hazard Reduction Around Buildings and Structures Regulations for road ingress and egress, fire equipment access, and adequate water supply. (HS-P7.2)
- Require subdivisions in the High Fire Hazard Severity Zones in the Local or State Responsibility Areas, or projects requiring a land use permit in the High or Very High Fire Hazard Severity Zones in the Local or State Responsibility Areas, to complete a site-specific fire protection plan. Collaborate with the appropriate fire protection district to review and revise the fire protection plans. (HS-P7.3)
- Work with property owners in mapped High or Very High Fire Hazard Severity Zones or in the Wildland-Urban Interface to establish and maintain fire breaks and defensible space, vegetation clearance, and firefighting infrastructure. (HS-P7.4)
- Support undergrounding of utility lines, especially in the Wildland-Urban Interface and Fire Hazard Severity Zones. (HS-P7.8)
- Review indoor air filtration standards and consider whether filtration requirements can and should be strengthened for projects permitted by the County.
- Work with community organizations to help Impacted Communities have access to financing and other resources to reduce the fire risk on their property, prepare for wildfire events, and allow for a safe and speedy recovery.

Strategy NI-3: Establish and maintain community resilience hubs.

Strategy NI-3 Actions:

- Pursue funding to develop a resilience hub master plan that identifies existing community facilities that can serve as resilience hubs and support affected populations during hazard events. This process should start with an assessment of community needs. Such facilities should be distributed equitably throughout the county, with an emphasis on easy access for Impacted Communities. Where appropriate facilities do not exist, develop plans to create new resilience hubs.
- Pursue funding to implement the resilience hub master plan, including retrofitting selected facilities to function as resilience hubs. These retrofits should involve adding solar panels, battery backup systems, water resources, supplies to meet basic community and emergency medical needs, and other needs as identified by the resilience hub master plan.
- Create a virtual resilience hub that connects County resources to communities through virtual community networks to provide detailed, up-to-date information about preparing for natural disasters, public safety notifications and alerts, space for virtual gathering and information-sharing, and other appropriate uses. Materials shall be accessible in multiple languages.

- Coordinate resilience hub activities with planning efforts around public safety power shutoffs and wildfire smoke resiliency.

Strategy NI-6: Protect the community against additional hazards created or exacerbated by climate change.

Strategy NI-6 Actions:

- Discourage new below-market-rate housing in High and Very High Wildfire Hazard Severity zones, the Wildland-Urban Interface, and Alquist-Priolo Fault Zones. If below-market-rate housing must be constructed within these zones, require it to be hardened or make use of nature-based solutions to remain habitable to the greatest extent possible. (HS-P3.4)
- Treat susceptibility to hazards and threats to human health and life as primary considerations when reviewing all development proposals and changes to land uses.
- Partner with community-based organizations to provide information to community members about how to prepare for projected climate change hazards.
- Promote, and develop as necessary, available funding sources to create incentives for residents and businesses to prepare for natural disasters, particularly members of Impacted Communities.
- Consider projected impacts of climate change when siting, designing, and identifying the construction and maintenance costs of capital projects.
- Actively promote and expand participation in local and regional community emergency preparedness and response programs.
- Support and fund efforts to enhance ongoing community and cross-sector engagement in community-level resilience and cohesion. Support non-government organizations to actively engage in developing a network of community-level actions that enhance resiliency.

5.9.4 Environmental Impacts

Impact 5.9-1: Implementation of the proposed project, including construction and operation activities, could involve the transport, use, and/or disposal of hazardous materials; however, compliance with existing local, State, and federal regulations would ensure impacts are minimized. [Thresholds H-1, H-2, and H-3]

Proposed General Plan

Construction and operation of projects built under the proposed General Plan would involve the transport, use, storage, and disposal of hazardous materials. As discussed in Chapter 3, *Project Description*, development facilitated under the proposed General Plan could result in 23,200 new residential units and nearly 6.2 million square feet of new nonresidential building space, including both new commercial/office and industrial uses.

Pipelines

As noted in Section 5.9.1.2, *Existing Conditions*, several hundred miles of pipelines transporting natural gas, petroleum, or other hazardous liquids run through the EIR Study Area. The pipelines are monitored by pipeline operators who are responsible for the upkeep of pipelines and the authorization of excavations around pipeline locations. Development under the proposed General Plan would increase the exposure of people and the environment to potential hazards related to pipeline or electrical line rupture. As with all development in California, development in Contra Costa County would be required to follow the procedural requirements of the Underground Service Alert of Northern California, or USA North 811.

Construction

Construction of future projects would involve the use of substances such as paints, sealants, solvents, greases, adhesives, cleaners, lubricants, and fuels. However, the materials used would not be in such quantities or stored in such a manner as to pose a significant safety hazard to the public or the environment. These activities would also be short term or one time in nature. Project construction workers would be trained in safe handling and hazardous materials use, as required under OSHA Regulation 29 CFR 1926.62 and CCR Title 8. Project construction contractors would maintain equipment and supplies on construction sites for containing and cleaning up spills. If a hazardous materials release could not be safely contained and cleaned up by on-site personnel, the affected project applicant would notify the applicable fire department immediately.

Additionally, to prevent hazardous conditions, existing local, State, and federal laws and regulations—such as those listed under Section 5.9.1.1, *Regulatory Background*—are required to be enforced at construction sites. For known or potential contaminated sites, prior to issuing a grading or building permit, the County would require an assessment of potential hazards. If the development project could pose a human health or environmental risk, the CCHSHMP would require that such hazards be managed appropriately. This could include, but would not be limited to, actions such as removal of the contaminants (i.e., remediation), site controls to reduce exposure (e.g., capping soils or installation of soil vapor barriers), or administrative mechanisms (e.g., deed restrictions).

Compliance with existing laws and regulations governing the use, storage, transportation, and disposal of hazardous materials would ensure that all potentially hazardous materials are used and handled in an appropriate manner and would minimize the potential for safety impacts to occur.

Demolition

Future development projects under the proposed General Plan may involve demolition of existing buildings and structures associated with a specific development site. Some building materials used in the mid and late 1900s are considered hazardous to the environment and harmful to people. Asbestos, for example, was generally not used in building materials by 1980, but was still occasionally used until the late 1980s. Lead-based paint was banned for residential use in 1978 and phased out for commercial structures in 1993.

Due to the age of the buildings and structures in the EIR Study Area (many over 50 years old), it is likely that some contain ACMs and lead-based paint (LBP), as well as other building materials containing lead (e.g., ceramic tile and insulation). Demolition could cause encapsulated ACM (if present) to become friable; once airborne, they are considered a carcinogen.[2,3] Demolition could also cause the release of lead into the air. The USEPA has classified lead and inorganic lead compounds as "probable human carcinogens," and such releases could pose significant risks to persons living and working in and around a proposed development site (USEPA 2004).

Abatement of all ACM and LBP encountered during any future building demolition activities would be required in accordance with all applicable laws and regulations, including those of the USEPA (which regulates disposal), OSHA, U.S. Department of Housing and Urban Development, the California Division of Occupational Safety and Health (Cal/OSHA, which regulates employee exposure), and BAAQMD.

To further prevent impacts from the potential release of ACM or LBP, an ACM and LBP survey of existing buildings and structures prior to the commencement of any demolition of renovation is required under BAAQMD Regulation 11, Rule 2, *Asbestos Demolition, Renovation, and Manufacturing*. Lead emissions are similarly controlled under Regulation 11, Rule 1, *Lead*. With compliance of existing laws and regulations, hazardous impacts related to the release of ACMs and LBP are not anticipated to occur. Compliance with these laws, regulations, and mitigation measure would be ensured through the County's development review and building plan check process.

Operation

Industrial uses and some commercial uses utilize greater amounts of hazardous materials than do other uses such as residential uses and schools. The proposed General Plan could facilitate the development of up to 1.2 million square feet of new commercial space and 5 million square feet of new industrial space in the EIR Study Area. Uses of hazardous materials in operations of land uses permitted under the proposed General Plan would be subject to regulations enforced by the same agencies as for uses of hazardous materials in construction.

However, per Chapter 83-63, *Land Use Permits for Development Projects Involving Hazardous Material*, of the County Ordinance Code, the operation or expansion of hazardous waste facilities is required to comply with the County Hazardous Waste Management Plan, which identifies siting criteria, siting principles, and other policies applicable to hazardous waste facilities. Businesses that generate any amount of hazardous waste or handle hazardous materials equal to, or greater than, program threshold quantities are also required to obtain a Hazardous Materials (CUPA) Permit per Chapter 450-2, *Hazardous Materials Release Response Plans and Inventories*. Under these regulations, businesses would be required to provide workers with training on safe use, handling, and storage of hazardous materials. Businesses would maintain equipment and supplies for containing and cleaning up spills of hazardous materials that could be safely contained and cleaned by onsite workers; and would immediately notify emergency response agencies in the event of a hazardous materials release that could not be safely contained and cleaned up by on-site personnel.

[2] When dry, an ACM is considered friable if it can be crumbled, pulverized, or reduced to powder by hand pressure. If it cannot, it is considered non-friable ACM. It is possible for non-friable ACM to become friable when subjected to unusual conditions, such as demolishing a building or removing an ACM that has been glued into place.

[3] A carcinogen is a substance that causes cancer or helps cancer grow.

Furthermore, the proposed Health and Safety Element contains goals, policies, and actions that require local planning and development decisions to consider impacts that contribute to the risk of loss, injury, or death as a result of hazardous materials releases. The proposed policies and actions under Goal HS-9 that are italicized in Section 5.9.3.1, *Proposed General Plan Goals, Policies, and Actions,* would serve to minimize potential adverse impacts from hazardous materials, including by proposing more stringent regulation on certain hazardous material uses. For example, Policy HS-P9.5 would require that facilities that manage and store hazardous waste in areas at risk of sea-level rise and flooding conduct sea-level rise studies to address the risk of hazardous materials release from rising water levels, including rising groundwater. Policy HS-P9.10 specifically prohibits new hazardous waste facilities in ecologically sensitive areas or areas at-risk of flood and geologic hazards. Policies HS-P9.10, HS-P9.11, and HS-P9.12 would also help to ensure that hazardous waste facilities are assessed and sited in compliance with SB 673 (Health and Safety Code Sections 25200.21(b) and (c)).

Implementation of the above goals, policies, and actions, as well as compliance with State, regional, and local regulations, would regulate the handling of hazardous substances to reduce potential releases, exposure, and risks of transporting, storing, treating, and disposing of hazardous materials and wastes, and would ensure that future development under the proposed General Plan would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death. Therefore, impacts would be less than significant.

Proposed CAP

The proposed CAP is a policy document that aims to reduce greenhouse gas (GHG) emissions and help the County to adapt to changing climate conditions and is therefore not expected to result in any specific impacts with regard to the use, transport, or disposal of hazardous materials. Strategies and actions included in the proposed CAP could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP. However, future construction of these physical infrastructure improvements and other related development would be unlikely to involve the transport or disposal of hazardous materials. Additionally, all future construction would be subject to the applicable federal, State, and local regulations outlined above.

Furthermore, in addition to including strategies that aim to reduce GHG emissions, the proposed CAP includes a suite of climate adaptation strategies aimed at responding to the key vulnerabilities identified in the County's vulnerability assessment. As noted in Section 5.9.1.2, *Existing Conditions*, this assessment identified several existing industrial and hazardous waste facilities in areas at risk of climate hazards, including flooding, landslides, and wildfire. Strategies that address these hazards include Strategy NI-1 and its accompanying actions that aim to protect the community against permanent and temporary inundation from rising sea levels and shoreline flooding through green infrastructure, effective building siting and retrofits, and informed land use decisions; Strategy NI-2 and its actions that aim to increase community resilience to the direct and indirect effects of wildfires; and Strategy NI-6 and its actions that include a broader suite of actions aimed at protecting existing and future development from hazards including by considering projected impacts of climate change when siting, designing, and identifying the construction and maintenance costs of capital investment projects. These strategies and actions would help to reduce impacts from climate-related hazards to existing and future development in the county, including facilities and uses that involve the handling of hazardous materials.

Therefore, adoption of the proposed CAP would primarily result in beneficial impacts with regard to hazardous material use, transport, and disposal, and would therefore have less than significant impacts.

Level of Significance Before Mitigation: Impact 5.9-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.9-1 would be less than significant.

Impact 5.9-2: Implementation of the proposed project could facilitate development of a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 but would not create a significant hazard to the public or the environment. [Threshold H-4]

Proposed General Plan

As indicated in Table 5.9-1 and in Figure 5.9-1, there are multiple sites identified in the EIR Study Area that are considered active, open, or in need of further review for hazardous material cleanup. Redevelopment of these sites for development under the proposed General Plan could potentially expose future residents and workers to hazards from known hazardous materials releases on and near the sites.

However, development would be conducted in accordance with the proposed General Plan and the regulations and policies of the agency assigned to the site (i.e., DTSC, Water Quality Control Board, CUPA, or USEPA). Environmental site assessments by a qualified professional would also be required as applicable to ensure that the relevant projects would not disturb hazardous materials on any of the hazardous materials sites or plumes of hazardous materials diffusing from one of the hazardous materials sites, and that any proposed development, redevelopment, or reuse would not create a substantial hazard to the public or the environment. Phase I Environmental Site Assessments are also required for land purchasers to qualify for the Innocent Landowner Defense under CERCLA and to minimize environmental liability under other laws such as RCRA. Properties contaminated by hazardous substances are also regulated at the local, State, and federal level and are subject to compliance with stringent laws and regulations for investigation and remediation. For example, compliance with the CERCLA, RCRA, California Code of Regulations Title 22, and related requirements would remedy all potential impacts caused by hazardous substance contamination.

Furthermore, requirements for hazardous materials sites are bolstered by various goals, policies, and actions of the proposed General Plan, including those discussed in Impact 5.9-1. Additional relevant General Plan policies and actions included under Goal HS-10 specifically address efforts to ensure that future and existing development would not be impacted by historic hazardous material releases. These include Policy HS-P10.2, which requires development of contaminated sites to comply with all cleanup plans, land use covenants, and deed restrictions imposed by the DTSC or RWQCB, and Action HS-A10.2, which directs the County to establish a mechanism to ensure that new or expanded industrial uses involving hazardous materials will fund any needed cleanup of resulting contamination.

Compliance with existing regulations and adherence to proposed General Plan goals, policies, and actions would ensure that impacts from the proposed project would be less than significant.

Proposed CAP

As indicated in the discussion of the proposed CAP in Impact 5.9-1, this policy document is not expected to result in any specific impacts with regard to hazardous materials, including development on a hazardous material release or cleanup site. The proposed CAP does not include strategies or actions specific to hazardous materials and contaminated sites; however, as noted above, several CAP strategies and actions would help to increase the County's ability to adapt to climate change-related hazards and increase resiliency against these hazards. As such, the proposed CAP would have no impact.

Level of Significance Before Mitigation: Impact 5.9-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.9-2 would be less than significant.

Impact 5.9-3: Development under the proposed project would not result in a safety hazard or excessive noise for people residing or working within two miles of an airport. [Threshold H-5]

Proposed General Plan

Airport-related hazards are generally associated with aircraft accidents, particularly during take-off and landing. Airport operation hazards include incompatible land uses, power transmission lines and tall structures that penetrate airspace operational areas, visual distractions, and wildlife hazards (e.g., bird strikes). In accordance with State law, the Contra Costa County Airport Land Use Commission adopted an ALUCP. The ALUCP sets land use compatibility and design criteria applicable to all development, including residential, that is within a certain distance from one of the County's two public airports. The ALUCP was updated in 2022 to implement the Byron Development Program. This effort included updates with new policies and maps specific to Byron Airport that reflect the 2017 Airport Layout Plan for Byron Airport, the 2005 Byron Airport Master Plan, and guidance set forth in the most recent version of the Caltrans California Airport Land Use Planning Handbook.

The proposed General Plan would allow for the development of sites that are within the Safety Zones of the Buchanan Field Airport or Byron Airport, as shown in Figure 5.9-2, *Buchanan Field Airport and Byron Airport Safety Zones*. However, all potential development within each airports' Safety Zones would be required to comply with the provisions for development within the ALUCP, which restricts the heights of structures pursuant to FAA Part 77 regulations. The height regulations are also adopted within the County Ordinance Code under Chapter 86.4, Airport Zoning, for the Buchanan Field Airport. Additionally, pursuant to Section 21096 of the Public Resources Code, the County must consider during future environmental review whether the project will result in a safety hazard or noise problem for persons using the airport or for persons residing or working in the project area. In addition to the provisions of the ALUCP, the FAA and Caltrans Division of Aeronautics provide guidance for land use safety near airports. With adherence to these guidelines, high concentrations of

people will not be exposed to potential airplane accidents along runways or near airports while airplanes are departing and arriving. There are also guidelines on the placement of housing, schools, and other sensitive land uses near airports because of the noise pollution caused by airplanes (see also Section 5.13, *Noise*, of this Draft EIR).

The proposed General Plan also includes several policies under Goal TR-7 of the Transportation Element that would help to ensure that development is compliant with the airport land use requirements. These include Policy TR-P7.4, which directs the County to protect its airports from encroachment by incompatible uses and minimize the public's exposure to safety hazards and excessive noise by ensuring that all future development within each Airport Influence Area is consistent with the Contra Costa County ALUCP. Additionally, Policies TR-P7.5 and TR-P7.6 further reinforce the County's commitment to land use compatibility by directing the County to support existing and planned airport activities consistent with each airport's respective Airport Master Plan and the ALUCP.

With adherence to applicable procedures and requirements described above, future development projects under the proposed project would not contribute to airport-related hazards and the impact would be less than significant.

Proposed CAP

As indicated in the discussion of the proposed CAP in Impact 5.9-1 and Impact 5.9-2, the CAP is a policy document and is not expected to result in any specific impacts with regard to hazards, including safety and noise hazards associated with development in proximity to an airport. The proposed CAP does not include any strategies or actions specific to airports or airport-related hazards. Therefore, the proposed CAP would have no impact.

Level of Significance Before Mitigation: Impact 5.9-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.9-3 would be less than significant.

Impact 5.9-4: Development under the proposed project would not affect the implementation of an emergency responder or evacuation plan. [Threshold H-6]

Proposed General Plan

As shown in Figure 5.9-4, major evacuation routes for the county include a large network of interstate freeways, state routes, arterial streets, and minor roads that feed into the higher capacity evacuation routes. However, as shown in Figure 5.9-5, many residential areas in the EIR Study Area have access to only one viable evacuation route, which presents a significant risk to safe evacuation for existing and future residents of these areas. As discussed in greater detail within Section 5.7, *Geology and Soils*, Section 5.10, *Hydrology and Water Quality*, and Section 5.18, *Wildfire*, many areas of the county are vulnerable to hazards including earthquakes, liquefaction,

landslides, flooding, and wildfire. Any disasters involving these hazards can cause damage to transportation infrastructure, preventing or impeding access by emergency responders and evacuation by residents. In addition, future development under the proposed General Plan would result in construction activities that could temporarily affect roadways as a result of lane closures or narrowing for roadway and/or utility improvements. This could affect emergency response times or evacuation routes. By increasing the residential and daytime population in the EIR Study Area, traffic congestion may increase in some areas as well. Therefore, in the event of an accident or natural disaster, evacuation plans and routes could be adversely affected by the increased traffic.

To address such impacts, the County has adopted and continually updates an LHMP. The LHMP reduces injury, loss of life, property damage, and loss of services from natural disasters and provides a comprehensive analysis of the natural and human-caused hazards that threaten the county, with a focus on mitigation. This allows the County to remain eligible to receive additional federal and State funding to assist with emergency response and recovery, as permitted by the federal Disaster Mitigation Act of 2000 and California Government Code Sections 8685.9 and 65302.6. In addition to the LHMP, the County implements the EOP and a Community Wildfire Protection Plan (CWPP) to address emergency response and wildfire mitigation planning. Contra Costa County also participates in implementing regional plans, including the Bay Area Multi-Jurisdictional Hazard Mitigation Plan, to provide the framework for responding to major emergencies or disasters.

Additionally, several proposed General Plan Health and Safety Element policies and actions support the update and implementation of the County's LHMP and other emergency planning efforts. Policy HS-P7.3 requires new development within a Very High Fire Hazard Severity Zone in the Local Responsibility Area (LRA) or State Responsibility Area (SRA) or in the Wildland-Urban Interface (WUI), and on a residential parcel with evacuation constraints, to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with an evacuation plan during the construction period. Additionally, Policy HS-P12.1 and Action HS-A12.1 direct the County to continue updating and implementing its LHMP, Action HS-A12.2 directs the County to incorporate the assessments and projections for future emergency service needs from the most recent Municipal Services Reviews into updates of the LHMP, and Action HS-A12.4 further directs the County to evaluate the effectiveness of and update public safety, preparedness, and hazard mitigation policies, including in the proposed Health and Safety Element, considering changing climate conditions. Several policies and actions included under Goal HS-13 also target the improvement of the county's evacuation capacity, including by requiring new development (except for infill sites) in High and Very High FHSZs, the WUI (see Section 5.18), and 100-year or 200-year floodplain to have access to at least two emergency evacuation routes, and encouraging the same for existing development, per Policy HS-P13.1. Action HS-A13.2 directs the County to update maps identifying neighborhoods with only one emergency evacuation route every five years, and Action HS-A13.3 directs coordination with local fire districts to develop and maintain minimum roadway, ingress, and egress standards for evacuation of residential areas in Very High FHSZs.

Implementation of these proposed General Plan policies would ensure that development under the proposed General Plan would not affect the implementation of an emergency responder or evacuation plan, resulting in a less-than-significant impact.

Proposed CAP

As indicated in the impact discussions above, the proposed CAP is a policy document that provides strategies to reduce GHG emissions and improve climate resiliency and adaptation. As such, all strategies and actions within the proposed CAP inherently support the implementation of emergency responder and evacuation plans, while some directly address County efforts for emergency planning. For example, Strategy NI-3 and its accompanying actions direct the County to establish and maintain community resilience hubs with microgrids, education, training opportunities, and other community-focused resources, in line with the policies and actions included under proposed Health and Safety Element Goal HS-12. Therefore, the proposed CAP would have no impact on emergency response and evacuation plans.

Level of Significance Before Mitigation: Impact 5.9-4 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.9-4 would be less than significant.

5.9.5 Cumulative Impacts

The geographic scope of analysis for cumulative hazards and hazardous materials impacts encompasses the entirety of Contra Costa County, including both the EIR Study Area and incorporated areas. While some impacts relative to hazardous materials are generally site-specific and depend on the nature and extent of the hazardous materials release, other impacts, including the transport of hazardous materials across regional transportation systems, have the potential to impact areas outside of the EIR Study Area.

Hazardous Materials

During the construction phase, construction equipment and materials would include fuels, oils and lubricants, solvents and cleaners, cements and adhesives, paints and thinners, degreasers, cement and concrete, and asphalt mixtures, which are all commonly used in construction. The routine use or an accidental spill of hazardous materials could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment. Construction activities for all projects in the county, including within incorporated jurisdictions, would be subject to the same regulatory requirements discussed for the project for compliance with existing hazardous materials regulations, including the management of hazardous materials and spill response within the respective jurisdictions. Cumulative projects that transport, use, store, or dispose of hazardous materials would be required to comply with the same regulations as the proposed project. Entities that use hazardous materials would be required to prepare and implement Hazardous Materials Business Plans that would describe procedures for the safe and legal transportation, storage, use, and disposal of hazardous materials. As discussed further in Section 5.10, any project that disturbs more than one acre of ground would be required to implement a Stormwater Pollution Prevention Plan to control run on and runoff from their respective sites.

All projects in the county that have had previous spills of hazardous materials would be required to remediate their respective sites to the same established regulatory standards as the potential projects developed as a result of the proposed General Plan. This would be the case regardless of the number, frequency, or size of the release(s). The responsible party associated with each spill would be required to remediate site conditions to the same established regulatory standards. The residual less-than-significant effects that would remain after remediation would not combine with the potential residual effects of other projects to cause a potential significant cumulative impact because residual impacts would be highly site-specific and would be below regulatory standards.

Emergency Response and Evacuation

With respect to emergency response and evacuation, once constructed, projects under the proposed General Plan, as well in other jurisdictions, would not restrict or interfere with the flow of emergency vehicles or evacuation and would therefore not create a cumulatively considerable effect. While additional traffic volumes are expected under the planning horizon of the proposed General Plan, the County would be required to periodically update its emergency response and evacuation plan(s) as required under AB 747. This periodic reevaluation would address these changed conditions and would adjust the evacuation plans accordingly. Based on these considerations, the cumulative effect of the proposed project's implementation would be less than significant.

5.9.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.9.7 Mitigation Measures

No mitigation measures are required.

5.9.8 Level of Significance After Mitigation

All impacts would be less than significant.

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5. Environmental Analysis
HAZARDS AND HAZARDOUS MATERIALS

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5.10 HYDROLOGY AND WATER QUALITY

This section describes the regulatory framework and existing conditions of the Environmental Impact Report (EIR) Study Area and evaluates the potential hydrology and water quality impacts from future development that could occur by adopting and implementing the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project.

5.10.1 Environmental Setting

5.10.1.1 REGULATORY BACKGROUND

Federal

Clean Water Act

The U.S. Environmental Protection Agency (USEPA) is the lead federal agency responsible for water quality management. The Clean Water Act (CWA) is the primary federal law that governs water quality control activities by the USEPA and the states. The CWA regulates direct and indirect discharge of pollutants; sets water quality standards for all contaminants in surface waters; and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit is obtained under its provisions. The CWA mandates permits for wastewater and stormwater discharges; requires states to establish site-specific water quality standards for navigable bodies of water; and regulates other activities that affect water quality and nonpoint sources of pollution.

Permits to dredge or fill waters of the United States are administered by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA. "Waters of the United States" are defined as territorial seas and traditional navigable waters, perennial and intermittent tributaries to those waters, lakes and ponds and impoundments of jurisdictional waters, and wetlands that have a surface connection with and are adjacent to jurisdictional waters. The regulatory branch of the USACE is responsible for implementing and enforcing Section 404 of the CWA and issuing permits. Any activity that discharges fill material and/or requires excavation in waters of the United States must obtain a Section 404 permit. Before issuing the permit, the USACE requires that an analysis be conducted to demonstrate that the proposed project is the least environmentally damaging practicable alternative. Also, the USACE is required to comply with the National Environmental Policy Act before it may issue an individual Section 404 permit.

Under Section 401 of the CWA, every applicant for a Section 404 permit that may result in a discharge to a water body must first obtain State Water Quality Certification that the proposed activity will comply with State water quality standards. Certifications are issued in conjunction with USACE Section 404 permits for dredge and fill discharges. In addition, an application for Individual Water Quality Certification and/or Waste Discharge Requirements must be submitted for any activity that would result in the placement of dredged or fill material in waters of the State that are not jurisdictional to the USACE, such as isolated wetlands, to ensure that the proposed activity complies with State water quality standards. In California, the authority to either grant

water quality certification or waive the requirement is delegated by the State Water Resources Control Board (SWRCB) to its nine Regional Water Quality Control Boards (RWQCB).

Under federal law, the USEPA has published water quality regulations under Volume 40 of the Code of Federal Regulations. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question and (2) criteria that protect the designated uses. Section 304(a) requires the USEPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. In California, the USEPA has delegated authority to the SWRCB and its RWQCBs to identify beneficial uses and adopt applicable water quality objectives.

When water quality does not meet CWA standards and compromises designated beneficial uses of a receiving water body, Section 303(d) of the CWA requires that water body be identified and listed as "impaired". Once a water body has been designated as impaired, a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding applicable water quality standards, with a factor of safety included. Once established, the TMDL allocates the loads among current and future pollutant sources to the water body.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established by the CWA to regulate municipal and industrial discharges to surface waters of the United States, including discharges from municipal separate storm sewer systems (MS4). Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify effluent and receiving water limits on allowable concentrations and/or mass emissions of pollutants in the discharge; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities.

Under the NPDES program, all facilities that discharge pollutants into waters of the United States are required to obtain a NPDES permit. Requirements for stormwater discharges are also regulated under this program. In California, the NPDES permit program is administered by the SWRCB through the nine RWQCBs. The western half of Contra Costa County is within the jurisdiction of the San Francisco Bay RWQCB (Region 2) and is subject to the waste discharge requirements of the recently revised MS4 Permit (Order No. F2-2022-0018) which became effective on July 1, 2022 (San Francisco Bay RWQCB 2022). Although the eastern half of Contra Costa County is within the boundaries of the Central Valley RWQCB (Region 5), an agreement between Region 2 and Region 5 was enacted for consistency in permit compliance and the eastern half of Contra Costa County is also under the jurisdiction of the San Francisco Bay RWQCB MS4 Permit (Central Valley RWQCB, 2023).

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues Flood Insurance Rate Maps (FIRMs) that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA. FEMA's minimum level of flood protection for new development is the 100-year flood event, also described as a flood that has a 1-in-100 chance of occurring in any given year.

As required by the FEMA regulations, all development constructed within the 100-year floodplain or a Special Flood Hazard Area (as delineated on the FIRM) must be elevated so that the lowest floor is at or above the base flood elevation level. The term "development" is defined by FEMA as any human-made change to improved or unimproved real estate, including but not limited to buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials. Per these regulations, if development in these areas occurs, a hydrologic and hydraulic analysis must be performed prior to the start of development and must demonstrate that the development does not cause any rise in base flood elevation levels, because no rise is permitted within regulatory floodways. After completion of any development that changes existing Special Flood Hazard Area boundaries, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision, as soon as practicable, but not later than six months after such data become available.

Rivers and Harbors Act of 1899

Under the Rivers and Harbors Act of 1899, the USACE requires permits for activities involving the obstruction of the navigable capacity of any waters of the United States or the construction of any structures in or over navigable waters of the United States, including ports, canals, navigable rivers, or other waters. "Navigable waters" under Section 10 of the Rivers and Harbors Act are defined as "those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce." Pursuant to Section 10 of the Rivers and Harbors Act, the USACE administers this regulatory program separate from the Section 404 program. A Section 10 permit may be required for structures or work outside the limits of navigable waters if the structure or work affects the course, location, condition, or capacity of the water body.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act provides the basic authority for the U.S. Fish and Wildlife Service (USFWS) to evaluate impacts to fish and wildlife from proposed water resource development projects. This Act requires that all federal agencies consult with the USFWS, the National Marine Fisheries Service, and State wildlife agencies (i.e., the California Department of Fish and Wildlife or CDFW) for activities that affect, control, or modify waters of any stream or bodies of water. Under this Act, the USFWS has responsibility for reviewing and commenting on all water resources projects. For example, it would provide consultation to the USACE prior to issuance of a Section 404 permit.

An incidental take permit is required if a project may result in the "incidental take" of a listed species. An incidental take permit allows a developer to proceed with an activity that is legal in all other respects but that results in the "incidental taking" of a listed species. A habitat conservation plan must also accompany an application for an incidental take permit. The purpose of a habitat conservation plan is to ensure that the effects of the permitted action or listed species are adequately minimized and mitigated.

State

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Act (Water Code Sections 13000 et seq.) is the basic water quality control law for California. This Act established the SWRCB and divided the state into nine regional basins, each under the jurisdiction of a RWQCB. The SWRCB is the primary State agency responsible for the protection of California's water quality and groundwater supplies. The RWQCBs carry out the regulation, protection, and administration of water quality in each region. Each regional board is required to adopt a water quality control plan, or basin plan, that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water-quality conditions and problems. As stated previously, Contra Costa County is within the jurisdiction of both the San Francisco Bay RWQCB (Region 2) and the Central Valley RWQCB (Region 5).

The Porter-Cologne Act also authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, or other approvals. Other State agencies with jurisdiction over water quality regulation in California include the California Department of Health Services for drinking water regulations, the CDFW, and the Office of Environmental Health and Hazard Assessment.

State Water Resources Control Board

In California, the SWRCB has broad authority over water quality control issues for the State. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the State by the federal government under the CWA. It also regulates public drinking water systems, NPDES wastewater discharges, water quality monitoring, water recycling programs, landfill disposal, water rights, and drought restrictions. As stated previously, western Contra Costa County is within the jurisdiction of the San Francisco Bay RWQCB (Region 2) and eastern Contra Costa County is within the jurisdiction of the Central Valley RWQCB (Region 5). Each RWQCB regulates surface water and groundwater quality in the watersheds within their jurisdiction.

State Water Resources Control Board General Construction Permit

Construction activities that disturb one or more acres of land that could impact hydrologic resources must comply with the requirements of the newly reissued SWRCB Construction General Permit (Order WQ 2022-0057-DWQ). Under the terms of the permit, applicants must file Permit Registration Documents (PRD) with the SWRCB prior to the start of construction. The PRDs include a Notice of Intent, risk assessment, site map, Storm Water Pollution Prevention Plan (SWPPP), annual fee, and a signed certification statement. The PRDs

are submitted electronically to the SWRCB via the Stormwater Multiple Application and Report Tracking System (SMARTS) website.

Applicants must also demonstrate conformance with applicable best management practices (BMPs) and prepare a SWPPP containing a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project site. The SWPPP must list BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Additionally, the SWPPP must contain a visual monitoring program, a sampling program to ensure compliance with water quality standards, and on-site collection of samples and inspection of BMPs during a qualifying precipitation event.

State Water Resources Control Board General Industrial Permit

The Statewide General permit for Storm Water Discharges Associated with Industrial Activities, Order No. 2014-0057-DWQ and amended by 2015-0122-DWQ (2018), implements the federally required storm water regulations in California for storm water associated with industrial activities that discharge to waters of the United States. This regulation covers facilities that are required by federal regulations or by the RWQCBs to obtain an NPDES permit. Dischargers are required to eliminate non-storm water discharges, develop SWPPPs that include BMPs, conduct monitoring of stormwater runoff, and submit all compliance documents via the SWRCB's SMARTS program.

State Water Resources Control Board Trash Amendments

On April 7, 2015, the SWRCB adopted an amendment to the *Water Quality Control Plan for Ocean Waters of California* to control trash and Part 1, Trash Provisions, of the *Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California*. They are collectively referred to as "the Trash Amendments". The Trash Amendments apply to all surface waters of California and include a land use-based compliance approach to focus trash controls on areas with high trash-generation rates. Areas such as high density residential, industrial, commercial, mixed urban, and public transportation stations are considered priority land uses. There are two compliance tracks for Phase I and Phase II MS4 permittees:

- Track 1: Permittees must install, operate, and maintain a network of certified full capture systems in storm drains that capture runoff from priority land uses.
- Track 2: Permittees must implement a plan with a combination of full capture systems, multi-benefit projects, institutional controls, and/or other treatment methods that have the same effectiveness as Track 1 methods.

The Trash Amendments provide a framework for permittees to implement their provisions, which is provided in Section C.10, Trash Load Reduction, of the San Francisco RWQCB MS4 permit. Section C.10 of the San Francisco RWQCB MS4 permit provides more specific trash load requirements than the Trash Amendments. The Contra Costa County Watershed Program (CWP) is working to meet trash load reduction goals by installing full trash capture devices or control measures for full trash capture equivalency throughout unincorporated Contra Costa County (CWP 2022a).

California Water Code Section 13751: Water Wells

Section 13751 of the Water Code requires a Well Completion Report (WCR) to be completed by each person who digs, bores, or drills a water well, cathodic protection well, groundwater monitoring well, or geothermal heat exchange well or abandons or modifies an existing well. The WCR should be filed with the California Department of Water Resources (DWR) within 60 days of the date that construction, alteration, abandonment, or destruction of a well is completed (DWR 2023a). Completed WCRs are sent to and maintained at the DWR regional office that serves the area where the well is located.

California Coastal Act of 1976

The California Coastal Act of 1976 established three designated coastal management agencies to plan and regulate the use of land and water in the coastal zone: the California Coastal Commission, the San Francisco Bay Conservation and Development Commission (BCDC), and the California Coastal Conservancy. Under California's federally approved Coastal Management Program, the California Coastal Commission manages development along the California coast except for San Francisco Bay, which is overseen by the BCDC. The mission of the California Coastal Conservancy is to purchase, protect, restore, and enhance coastal resources and provide shoreline access. Additional information on the BCDC is discussed under Regional Regulations, below.

California Department of Fish and Wildlife

CDFW protects streams, water bodies, and riparian corridors through the streambed alteration agreement process under Sections 1601 to 1606 of the California Fish and Game Code. The Fish and Game Code stipulates that it is "unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake" without notifying the CDFW, incorporating necessary mitigation, and obtaining a streambed alteration agreement. CDFW's jurisdiction extends to the top of banks and often includes the outer edge of riparian vegetation.

Sustainable Groundwater Management Act of 2014

On September 16, 2014, a three-bill legislative package was signed into law, composed of Assembly Bill (AB) 1739, Senate Bill (SB) 1168, and SB 1319, collectively known as the Sustainable Groundwater Management Act. The Governor's signing message states "a central feature of these bills is the recognition that groundwater management in California is best accomplished locally." Under the roadmap laid out by the legislation, local and regional authorities in medium and high priority groundwater basins must form groundwater sustainability agencies that oversee the preparation and implementation of groundwater sustainability plans.

Water Conservation in Landscaping Act of 2006

The Water Conservation in Landscaping Act includes the State of California's Model Water Efficient Landscape Ordinance (MWELO), which requires cities and counties to adopt landscape water conservation ordinances. The MWELO was revised in July 2015 via Executive Order B-29-15 to address the ongoing drought and build resiliency for future droughts. State law requires all land use agencies, which includes cities and counties, to adopt a WELO that is at least as efficient as the MWELO prepared by DWR. The 2015 revisions to the

MWELO improve water conservation in the landscaping sector by promoting efficient landscapes in new developments and retrofitted landscapes. The revisions increase water efficiency by requiring more efficient irrigation systems, incentives for grey water usage, improvements in on-site stormwater capture, and limiting the portion of landscapes that can be covered in high-water-use plants and turf. New development projects that include landscape areas of 500 square feet or more are subject to the MWELO. This applies to residential, commercial, industrial, and institutional projects that require a permit, plan check, or design review. The previous landscape size threshold for new development projects ranged from 2,500 square feet to 5,000 square feet. The size threshold for rehabilitated landscapes has not changed and remains at 2,500 square feet. Contra Costa County has adopted the MWELO, as codified in Chapter 82-26, *Water Efficient Landscapes,* of the Contra Costa County Ordinance Code.

Regional

San Francisco Bay Regional Water Quality Control Board

Portions of Contra Costa County that drain to the San Francisco Bay are within the jurisdiction of the San Francisco Bay RWQCB (Region 2). The San Francisco Bay RWQCB addresses regionwide water quality issues through the creation and triennial update of the *San Francisco Bay Basin Water Quality Control Plan* (Basin Plan). The Basin Plan was adopted in 1995 and most recently amended in March 2023. This Basin Plan designates beneficial uses of the State waters within Region 2, describes the water quality that must be maintained to support such uses, and provides programs, projects, and other actions necessary to achieve the standards established in the Basin Plan. The *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*, as adopted by the SWRCB in 1995 and last amended in 2023, also provides water quality principles and guidelines to prevent water quality degradation and protect the beneficial uses of waters of enclosed bays and estuaries. The San Francisco Bay RWQCB also administers the MS4 permit for all cities, towns, and unincorporated areas within Contra Costa County. The cities and towns, as well as Contra Costa County and the Contra Costa County Flood Control and Water Conservation District (CCCFCWCD), have joined together to form the Contra Costa Clean Water Program (CCCWP) to ensure consistency in implementing the requirements in the MS4 permit.

San Francisco Bay Conservation and Development Commission

The California Coastal Act carries out its mandate locally through the BCDC. BCDC's jurisdiction for San Francisco Bay includes all sloughs, marshlands between mean high tide and five feet above mean sea level, tidelands, submerged lands, and land within 100 feet of the shoreline. This includes the San Francisco Bay shorelines within the EIR Study Area.

The current BCDC policy allows for the protection of existing and planned development from flooding by the placement of fill, encourages innovative means of dealing with flood danger, and states that local governments will determine how best to deal with development projects beyond BCDC's jurisdiction, which extends 100 feet inland from the shoreline. The provisions of BCDC's *San Francisco Bay Plan* do not apply outside BCDC's jurisdiction for purposes of implementing the California Environmental Quality Act (CEQA) (BCDC 2020).

The new BCDC policies require sea-level rise risk assessments to be conducted when planning shoreline areas or designing large shoreline projects within BCDC's jurisdiction. Risk assessments are not required for repairs of existing facilities, interim projects, small projects that do not increase risks to public safety, and infill projects within existing urbanized areas. Projects within 100 feet of the shoreline need only address risks to public access.

As a permitting authority along the San Francisco Bay shoreline, BCDC is responsible for granting or denying permits for any proposed fill, extraction of materials, or change in the use of any water, land, or structure within BCDC's jurisdiction. Permits may be granted or denied only after public hearings and after the process for review and comment has been completed by the county or city. BCDC will approve the permit if it is determined that the project is in accordance with defined standards for use of the shoreline, provisions for public access, and advisory review of appearance.

Projects within BCDC jurisdiction that involve bay fill must be consistent with the policies of the BCDC's *San Francisco Bay Plan* on the safety of fills and shoreline protection. Land elevation changes caused by tectonic activity or consolidation/compaction of soft soils, such as bay muds, is variable around the San Francisco Bay. Consequently, some parts of the San Francisco Bay may experience a greater relative rise in sea level than other areas. According to BCDC policies, new projects built on fill or near the shoreline should be set back from the edge of the shore so that the project will not be subject to dynamic wave energy; be built so the bottom floor of structures will be above a 100-year flood elevation that takes future sea-level rise into account for the expected life of the project; be specifically designed to tolerate periodic flooding; or employ other effective means of addressing the impacts of future sea-level rise and storm activity.

Central Valley Regional Water Quality Control Board

Prior to 2019, the Central Valley RWQCB administered the MS4 Permit for East Contra Costa County, including unincorporated areas east of Pittsburg and the municipalities of Antioch, Oakley, and Brentwood. However, as of 2019, the San Francisco RWQCB and the Central Valley RWQCB have agreed to regulate all stormwater discharges from Contra Costa County under one MS4 permit issued by the San Francisco RWQCB (Order No. R2-2022-0018; NPDES Permit No. CAS612008). However, the Central Valley RWQCB has jurisdiction and issues waste discharge requirements for other activities in eastern Contra Costa County, excluding stormwater. The Central Valley RWQCB issues NPDES permits for wastewater treatment plants and water recycling facilities industrial waste discharges, and also issues cleanup abatement orders for areas of the county under its jurisdiction. The Central Valley RWQCB also prepared the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins* which establishes beneficial uses, water quality objectives, and a program of implementation for water bodies within its jurisdiction. The latest amendments to the Basin Plan were approved in February 2019.

Local

Contra Costa Clean Water Program

The CCCWP is a consortium of member agencies, including Contra Costa County, the CCCFCWCD, and 19 cities and towns within Contra Costa County. Members of the program are permittees under the San Francisco Bay MS4 permit. The CCCWP offices are in the County's Public Works Division and the CCCWP assists permittees by conducting some MS4-mandated activities on a countywide level, participating in funding for regional and statewide stormwater-related programs, and assisting in the preparation of annual reports to the RWQCB. The CCCWP also publishes the Stormwater C.3 Guidebook, which was revised in December 2022 for consistency with the latest MS4 permit. The Stormwater C.3 Guidebook provides the requirements for new development and redevelopment projects that create or replace more than 2,500 square feet of impervious surface to implement site design measures, source control measures, and stormwater treatment measures, depending on the size and regulatory status of the project. The CCCWP website also provides an updated Stormwater Control Plan (SCP) template that is consistent with the Stormwater C.3 Guidebook, 8th Edition (CCCWP, 2023).

Contra Costa County Watershed Program

The Contra Costa County Watershed Program (CWP) is responsible for ensuring that the County complies with the MS4 permit (CWP 2022b). The County complies with these requirements by implementing various stormwater pollution prevention activities in the unincorporated areas of Contra Costa County by:

- Ensuring that pollutants stay out of the storm drain system, creeks, the Delta and the Bay so that only "Rain (Goes) Down the Drain"
- Managing and enforcing the stormwater compliance program and Enforcement Response Plan to minimize stormwater impacts
- Requiring new development projects to mitigate impacts to stormwater quality and flow rates
- Promoting pollution prevention awareness and providing public outreach
- Supporting local non-profit creek groups
- Inspecting businesses to ensure responsible stormwater practices are implemented
- Investigating and responding to illicit discharges
- Sweeping streets to remove pollutants before they enter the storm drain

Contra Costa County Flood Control & Water Conservation District

The mission of the CCCFCWCD is to reduce flood risk, promote stormwater quality, and restore and enhance natural resources for communities throughout the county (CCCFCWCD, 2023a). The CCCFCWCD carries out its responsibility by planning and constructing the major storm drainage facilities in Flood Control Zones (entire watershed areas) and in Drainage Areas (sub-watershed areas). The CCCFCWCD uses Drainage Areas as the primary method of planning and implementing flood control facilities. Funding of Drainage Area projects is primarily through development fees. Most of the major storm drain facilities within the county are owned by the CCCFCWCD. The CCCFCWCD website provides documents and guidance for determining

facility design for storm events, stormwater runoff amounts and volumes, and storm drain capacity evaluation for new development and development projects (CCCFCWCD, 2023b).

The Hydrology Section of the CCCFCWCD collects, analyzes, and reports on rainfall and storm runoff data from a system of rain gauges and several stream flow meters. The Current Development Section reviews environmental reports and comments on the impacts of proposed projects to regional drainage and CCCFCWCD facilities.

Contra Costa Watersheds Stormwater Resources Plan

The Contra Costa Watersheds Stormwater Resources Plan (SWRP) identifies stormwater management projects and programs eligible for grant funds within Contra Costa County. The CCCWP led the development of the SWRP on behalf of CCCFCWCD, incorporated cities and towns in the county, unincorporated Contra Costa County, and other stakeholders (CCCWP 2019). The SWRP benefits of stormwater management projects include improved water quality, reduced local flooding, increased water supplies for beneficial uses, and other community and environmental enhancements (CCCWP 2019). The role of the SWRP is to characterize the county watersheds water quality and identify multiple goal benefit projects for subsequent Green Infrastructure Plans and reasonable assurance analyses, prepared by the County MS4 Permittees.

Contra Costa County Dewatering Permits

For new development in areas with shallow groundwater, construction dewatering may be required. Temporary dewatering wells are regulated under Section 414-4.801 of the Contra Costa County Well Ordinance. All dewatering wells must be constructed and abandoned by a licensed C-57 water well contractor. Prior to construction of a dewatering well, a permit must be obtained from Contra Costa County Environmental Health in accordance with the Contra Costa County Well Ordinance. The application, along with a fee submittal, must contain a dewatering well schematic, plot map showing setback distances from sources of contamination, the discharge location for the collected groundwater, and how long the wells will be active. Uncontaminated groundwater may be discharged to the sanitary sewer system, subject to water quality testing, sewer capacity calculations, and requirements of the municipalities within the county.

Contra Costa County Design Standards

The construction of storm drain systems within the county must conform to the County's General Drainage Design Standards for storm drain details and inlet design; the General Drainage – Flood Control Channels for rock slope protection and concrete "V" ditches; and the General Landscaping – Flood Control Channels for landscaping design and limits on creek and channel embankments (Contra Costa County Public Works, 2023).

Contra Costa County Ordinance Code

Chapter 74-6, Permits, Drainage and Streets

Chapter 74-6 of the County Ordinance Code provides drainage facility requirements and requires a drainage plan to be prepared for any building, structure, or improvement that requires a building permit and results in an impervious surface of 1,000 feet or more; involves grading or removal of vegetation of more than 10,000

square feet; is subject to local ponding; is in a special flood hazard area; or involves land disturbance or structure placement within 100 feet of the top bank of any watercourse.

Chapter 82-28, Floodplain Management

Chapter 82-28 of the County Ordinance Code provides the floodplain management regulations. The purpose of this ordinance is to promote the public health, safety, and general welfare of the public, and minimize public and private losses due to flood conditions in specific areas by implementing flood protection provisions. Specifically, Article 82-28.1002 provides the standards for construction in floodplains or special flood hazard areas. Article 82-28.14, *Flood Hazard Zones*, applies to all land in that portion of the Sacramento-San Joaquin Valley that is within the jurisdiction of Contra Costa County and states that projects within this area must comply with the federal floodplain regulations.

Chapter 414, Water Supply

Chapter 414-4 of the County Ordinance Code provides for the protection of the county's groundwater sources from construction activities. The purpose of this ordinance is to establish approval of water supply systems for any person proposing to subdivide or develop any property needing water for domestic purposes. (Ord. 81-56 Section 1).

Division 716, Grading

Article 716-8.6, *Drainage*, under Title 7, *Building Regulations*, describes the general requirements for storm drain structures, systems, and facilities. All drainage facilities must be designed to carry surface water to the nearest street, storm drain, or natural watercourse, as approved by the County building official. The article also contains criteria for site drainage, terrace drainage, overflow protection, and maintenance of the drainage facilities.

Division 914, Drainage

Division 914, *Drainage,* under Title 9, *Subdivisions*, provides the requirements for drainage facilities that are in subdivisions. Section 914-2.010 establishes the required design capacities for major drainage facilities (Four square miles or greater), secondary drainage facilities (between one and four square miles), and minor drainage facilities (less than one square mile). Chapter 914.4 pertains to natural watercourses, Chapter 914-6 provides design criteria for open channels and ditches, and Chapter 914-8 describes design criteria for closed conduits, piping, and storm drain inlets.

Division 1014, Stormwater Management and Discharge Control

Division 1014, *Stormwater Management and Discharge Control,* provides the conditions and requirements for compliance with the County's MS4 permit issued by the San Francisco Bay RWQCB. The goal of this ordinance is to eliminate illicit discharges to the stormwater system, minimize increase in non-point source pollution, reduce stormwater runoff rates and volumes through stormwater management controls for new development, and promote no adverse impact policies as developed by FEMA.

Contra Costa County Drainage Area Fee Ordinance

This ordinance is not codified in the County Ordinance Code but is enacted by the County Board of Supervisors as the governing body of the CCCFCWCD. It requires payment of Drainage Area fees before filing the final map for new subdivisions or prior to the issuance of a building permit on an existing lot. Fees are paid directly to the CCCFCWCD or via cities per fee collection agreements. Fees are based on the cost of the proposed Drainage Area improvements and the expected increase in impervious surfaces created by project. The purpose of the Drainage Area fees is to generate funds for the construction of storm drain infrastructure in a manner equitable to the land use's impact and to address current and future needs of the residents and businesses in the county. Developers can construct portions of the planned infrastructure as credit to their fee obligation as per the Drainage Area Credit and Reimbursement Policy.

Groundwater Sustainability Plans

There are eight groundwater basins within the county. However, five of the basins are designated as very low priority because they have very low groundwater usage, mainly from private groundwater wells. Three of the groundwater basins are designated as medium priority basins and require the preparation and submittal of groundwater sustainability plans (GSPs) to DWR. A groundwater sustainable agency (GSA) can submit an alternative plan instead of a GSP if the basin has operated within its sustainable yield for at least ten years. The Zone 7 Water Agency submitted an alternative plan for the Livermore Valley Groundwater Basin, which was approved by DWR. East Bay Municipal Utility District (EBMUD) and the City of Hayward submitted a GSP to DWR for the Santa Clara Valley – East Bay Plain groundwater basin. The San Joaquin Valley – East Contra Costa groundwater basin has seven GSAs, which are Bryon-Bethany Irrigation District, City of Antioch, Diablo Water District, East Contra Costa Irrigation District, Contra Costa County, Discovery Bay, and the City of Brentwood. They collectively submitted a GSP for this basin to DWR, which is currently under review.

Contra Costa County Hazard Mitigation Plan

The Contra Costa County Hazard Mitigation Plan (HMP), adopted in January 2018, is a guide to hazard mitigation within the county and serves as a tool to help more than three dozen local agencies and special purpose districts reduce their risks from a wide range of potential events, such as earthquakes, flooding, wildfires, or extreme heat (Contra Costa County 2018). The HMP evaluates historic events in terms of frequency, severity, and warning time; exposure to the population and critical facilities and infrastructure; and mitigation strategies to reduce exposure and vulnerability to the hazard. The potential events discussed in the HMP that pertain to hydrology and water quality include:

- Dam and Levee Failure
- Drought
- Flooding
- Severe Weather
- Tsunamis
- Climate Change

East Contra Costa Habitat Conservation Plan/Natural Community Conservation Plan

The East Contra Costa County Habitat Conservancy developed the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP), which provides regional conservation and development guidelines to protect natural resources, including wetlands, while improving and streamlining the permit process for take of State and federally listed species. The 30-year Plan was approved at the local level in 2006 and 2007, and permits were issued by CDFW and USFWS in 2007. The HCP/NCCP provides comprehensive species, wetlands, and ecosystem conservation and contributes to the recovery of endangered species in northern California. The East Contra Costa County HCP/NCCP allows projects that qualify as "covered activities" to obtain federal and State incidental take authorization for listed species. As part of receiving take authorization, East Contra Costa County HCP/NCCP participants can expedite their mitigation and compensation requirements through the East Contra Costa County HCP/NCCP, which would be consistent with federal and State recommendations and requirements. The East Contra Costa County HCP/NCCP implements a conservation strategy designed to achieve a comprehensive set of biological goals and objectives. Furthermore, as a Natural Community Conservation Plan, the Plan provides for broad-based planning to preserve natural communities at the ecosystem scale (East Contra Costa Habitat Conservancy 2018).

East Contra Costa County Integrated Regional Water Management Program

The East Contra Costa Integrated Regional Water Management (IRWM) planning effort is a collaborative process to support all aspects of regional water management in East Contra Costa County. This includes integrated planning for water supply, water quality, watershed and habitat protection, and flood and stormwater management. Members include the Cities of Antioch, Brentwood, and Pittsburg; several water purveyors that serve the area; and Contra Costa County. In 2019, the members of the East Contra Costa Integrated Regional Water Management (IRWM) prepared an update to the 2013 IRWM plan to include a discussion of the regional impacts of climate change to water supply and demand. Many of the water suppliers in the region are dependent on surface water supplies from the Delta. There is concern that climate change related to sea-level rise and extreme weather can impact access and the quality of surface water supplies from the Delta. Also, changes in seasonal runoff patterns can further reduce water supply reliability (East County Water Management Association 2019).

5.10.1.2 EXISTING CONDITIONS

Topography

Contra Costa County's geography and topography is dominated by the alluvial plains along San Francisco and San Pablo Bay, the Oakland-Berkeley Hills, several inland valleys, and Mount Diablo, an isolated 3,849-foot peak at the north end of the Diablo Range. Elevations range from sea level to 3,849 feet in the Diablo Range near the center of the county. Much of the land is rural and there is abundant open space. The San Joaquin-Sacramento River Delta provides boating, fishing, and other water recreation activities. The East Bay Regional Park District is one of the largest regional park districts in the United States, with over 96,000 acres in 65 area parks.

Climate and Precipitation

Contra Costa County has a Mediterranean climate with mild winters and hot dry summers. The cool waters of the Pacific Ocean and San Francisco Bay also influence the summer and winter temperatures, which moderate temperatures in the western portion of Contra Costa County. The county's topography also plays a role in regulating the climate. The hills east of Richmond and around Mount Diablo are above the cool, coastal fog in the summer and block cold air in the winter (Contra Costa County 2003). The average annual rainfall is approximately 18.4 inches but can vary greatly depending on elevation and drought conditions. The lowest annual recorded rainfall was 4.6 inches in 2013 and the highest was 38.4 inches in 1983 (USA Facts 2022). The average July high temperature is 85 degrees Fahrenheit, and the average December low temperature is 40 degrees Fahrenheit.

Regional Hydrology

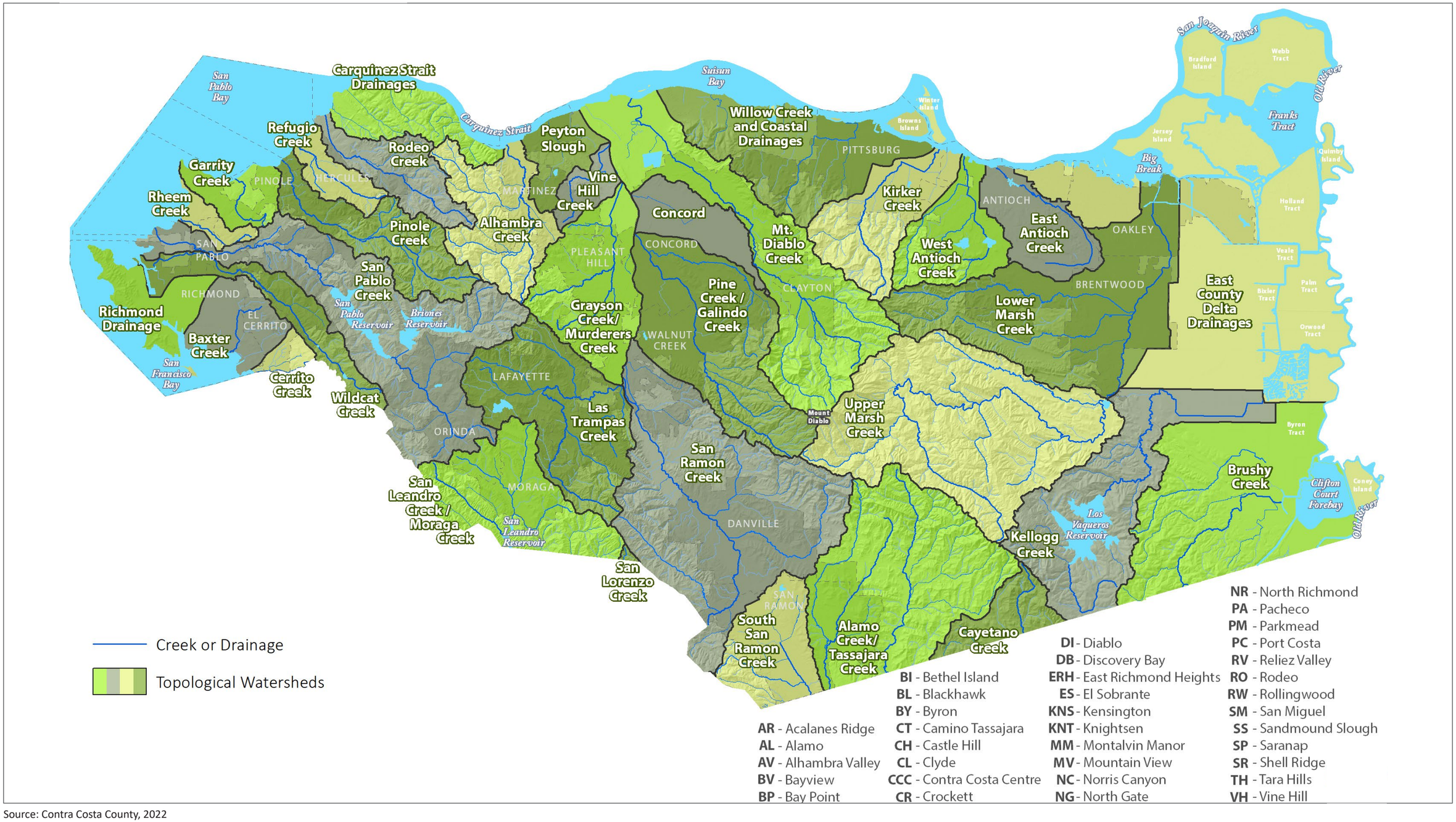
Contra Costa County is bounded by San Francisco Bay and San Pablo Bay to the west, by Suisun Bay and the San Joaquin River to the north, the Old River to the east and Alameda County to the south. Water from the urbanized western portion of the county drains directly to San Francisco Bay or San Pablo Bay, while the northern and eastern portions of the county drain into Suisun Bay and the Delta river channels, eventually flowing into San Francisco Bay or San Pablo Bay. The south-central portion of the county is within the Alameda Creek drainage basin; this area's water drains south to Alameda Creek, then west to San Francisco Bay.

Because of the Mediterranean climate and its characteristic lack of rainfall during the summer months, ephemeral and intermittent streams are the dominant hydrologic features within the county watersheds. The range of precipitation reflects variations in elevation and proximity to the coast. Surface flow in ephemeral streams is generally supplied by rainfall; these streams flow only during and immediately following rain events. Surface flow in intermittent or seasonal streams is supplied by a combination of rainfall runoff and groundwater; accordingly, these streams generally flow throughout the rainy season and into the late spring or early summer. Perennial streams in the county are also supported by rainfall runoff and groundwater, but unlike seasonal streams, they run year-round, with major dry-season inputs from both natural and artificial sources (e.g., upwelling springs and surface or subsurface flows from local irrigation, respectively).

The natural hydrology of many of the major creeks and streams in the urban areas has been altered to control flooding or convey irrigation water. Channels were made wider and deeper and lined with concrete or riprap. Creeks and streams were relocated and realigned to accommodate increased flows, then placed in conduits and culverts. Most creeks and streams have been disconnected from their historic floodplains by levees and channelization. Many of these streams are maintained as flood control channels, which support little or no riparian vegetation. Outside the urbanized areas, most drainages remain relatively natural and occupy at least a portion of their historic floodplains. Most of these features are ephemeral or intermittent, however, and generally support narrow floodplains with limited riparian habitat (ICF 2019).

There are 16 major watersheds and 31 sub-watersheds within Contra Costa County (CCCWP 2019). Additionally, Contra Costa County includes the headwaters of creeks that drain through other counties before reaching the Bay. Figure 5.10-1, *Watersheds of Contra Costa County*, shows the 31 sub-watersheds within Contra Costa County.

HYDROLOGY



Source: Contra Costa County, 2022

Figure 5.10-1
Watersheds of Contra Costa County

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Local Hydrology

Major storm drain infrastructure and flood control facilities within the county are managed by the CCCFCWCD. The CCCFCWCD covers all of Contra Costa County, including its cities, and manages approximately 79 miles of channels, creeks, and other drainage and 30 detention basins and dams. Many municipalities within Contra Costa County also maintain their own storm drain systems and have developed storm drain master plans and green infrastructure plans.

The CCCFCWCD was formed in 1951 and offers regional flood protection, primarily funded through property taxes and developer fees. There are several divisions within the CCCFCWCD that are involved in various aspects of stormwater and floodplain management (CCCFCWCD, 2023a):

- Watershed Planning & Engineering
  - Identify and plan for long range flood protection solutions.
  - Design and build regional drainage systems that encompass the county and cities.
  - Establish and update developer fees for regional drainage systems.
  - Collaborate with federal, State, and local partners on large flood control projects.
- Watershed Program (unincorporated county)
  - Design and manage programs to reduce stormwater pollution from sources such as sediment, trash, pesticides, and hydrocarbons.
  - Promote pollution prevention awareness.
  - Support local non-profit creek groups.
  - Promote community pride in creeks.
- Current Development
  - Review development applications and coordinate regional drainage systems in the county and cities.
  - Manage developer-financed drainage systems.
  - Issue drainage permits for work on Flood Control District property and County drainage systems.
  - Respond to drainage complaints in the unincorporated county.
- Maintenance
  - Maintain and repair Flood Control District channels, creeks, and detention basins.
- Hydrology
  - Collect and analyze rainfall and stream flow data,
  - Predict flood flows using computerized programs,
  - Review flood flow studies.

- Floodplain Management (unincorporated county; CCCFCWCD provides technical support to the County Floodplain Manager)
  - Ensure new development in flood-prone areas meets FEMA standards.
  - Participate in federal programs to reduce flood insurance premiums.
  - Promote the creation and preservation of natural floodways.

The county is divided into Flood Control Zones and smaller Drainage Areas. There are approximately 13 Flood Control Zones. The Flood Control Zones involve large, regional drainage infrastructure, which is typically built in partnership with federal or State agencies that provide partial funding, such as USACE. Every resident within a Flood Control Zone pays a small portion of their annual property tax for the CCCFCWCD to construct new projects and maintain existing infrastructure.

Water Quality

Water quality in Contra Costa County is monitored by the San Francisco RWQCB and the Central Valley RWQCB through implementation of their respective Basin Plans. The Basin Plans designate beneficial uses for surface water bodies and groundwater within Contra Costa County, water quality objectives, and strategies for achieving these objectives. Table 5.10-1, *Beneficial Uses for Surface Waters in Contra Costa County,* provides the designated beneficial uses for surface water in the county.

Table 5.10-1 Beneficial Uses for Surface Waters in Contra Costa County

Water Body		Beneficial Uses[1]														
		MUN	FRSH	IND	COM	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
San Francisco Bay Region																
Central Basin	Cerrito Creek											X	X	X	X	
	Baxter Creek											X	X	X	X	
	Richmond Inner Harbor				X		X						X	X	X	X
San Pablo Basin	Rodeo Creek					X					X	X	X	X	X	
	Refugio Creek											X	X	X	X	
	Pinole Creek					X			X	X	X	X	X	X	X	
	Garrity Creek											X	X	X	X	
	Rheem Creek											X	X	X	X	
	San Pablo Creek		X			X			X	X	X	X	X	X*	X	
	San Pablo Reservoir	X			X	X					X	X	X	X*	X	
	Lauterwasser Creek		X									X	X	X	X	
	Briones Reservoir	X				X					X	X	X	X*	P	
	Bear Creek (Contra Costa)		X							X		X	X	X	X	
	Wildcat Creek		X			X			X	X	X	X	X	X	X	

[1] Municipal and Domestic Supply (MUN) – Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Freshwater Replenishment (FRSH) – Uses of water for natural or artificial maintenance of surface water quantity or quality.
Industrial Service Supply (IND) – Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
Commercial and Sport Fishing (COM) – Includes uses of water for commercial or recreational collection of fish, shellfish, or other organisms, including, but not limited to, uses involving organisms intended for human consumption or bait purposes.
Cold Freshwater Habitat (COLD) – Includes uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Estuarine Habitat (EST) – Includes uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).
Marine Habitat (MAR) – Includes uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).
Migration of Aquatic Organisms (MIGR) – Includes uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.
Rare, Threatened or Endangered Species (RARE) - Waters that support the habitats necessary for the survival and successful maintenance of plant or animal species designated under State or federal law as rare, threatened, or endangered.
Fish Spawning (SPWN) – Includes uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.
Warm Freshwater Habitat (WARM) – Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat (WILD) – Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
Water Contact Recreation (REC-1) – Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, or use of natural hot springs.
Non-Contact Water Recreation (REC-2) – Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Navigation (NAV) – Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

5. Environmental Analysis

HYDROLOGY AND WATER QUALITY

Table 5.10-1 Beneficial Uses for Surface Waters in Contra Costa County

	Water Body	Beneficial Uses[1]														
		MUN	FRSH	IND	COM	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
	Jewel Lake					X						X	X	X	X	
	Lake Anza		X		X	X						X	X	X	X	
Suisun Basin	Alhambra Creek					X			X	X		X	X	X	X	
	Franklin Creek					X			X	X	X	X	X	X	X	
	Arroyo del Hambre					X						X	X	X	X	
	Peyton Slough			X	X		X	X		X			X	X	X	
	Pacheco Creek											X	X	X	X	
	Walnut Creek					X			X	X	X	X	X	X	X	
	Grayson Creek					X			X	X		X	X	X	X	
	Pine Creek					X			X	X	X	X	X	X	X	
	Galindo Creek					X						X	X	X	X	
	San Ramon Creek											X	X	X	X	
	Bollinger Canyon Creek					X					X	X	X	X	X	
	Las Trampas Creek					X				X		X	X	X	X	
	Tice Creek									X		X	X	X	X	
	Lafayette Creek					X						X	X	X	X	
	Lafayette Reservoir	X			X	X					X	X	X	X	X	
	Hastings Slough						X			X			X	X	X	
	Mt. Diablo Creek					X			X	X	X	X	X	X	X	
	Mitchell Creek					X			X	X	X	X	X	X	X	
	Donner Creek					X					X	X	X	X	X	
	Mallard Slough				X		X		X	X			X	X	X	
	Kicker Creek									X		X	X	X	X	
	New York Slough				X		X		X	X			X	X	X	X
Central Valley Basin Plan																
	Marsh Creek				X					X		X	X	P	P	
	Marsh Creek Reservoir									X		X	X	P	P	

Source: San Francisco Bay RWQCB 2022, Central Valley RWQCB 2019.
X designates an existing beneficial use for a given hydrologic area.
P designates a potential beneficial use for a given hydrological area.

Section 303(d) of the CWA requires states to identify the water bodies that do not meet established water quality standards under traditional point source controls. These water bodies are listed as impaired under Section 303(d) of the CWA. Once a water body has been placed on the 303(d) list, states are required to develop a TMDL threshold to address each pollutant causing impairment. A TMDL defines how much of a pollutant a water body can tolerate and still meet water quality standards. There are 23 waterbodies within Contra Costa County listed as impaired water bodies, as shown in Table 5.10-2, *Impaired Water Bodies in Contra Costa County*. The table also provides the TMDL status for each pollutant.

Table 5.10-2 Impaired Water Bodies in Contra Costa County

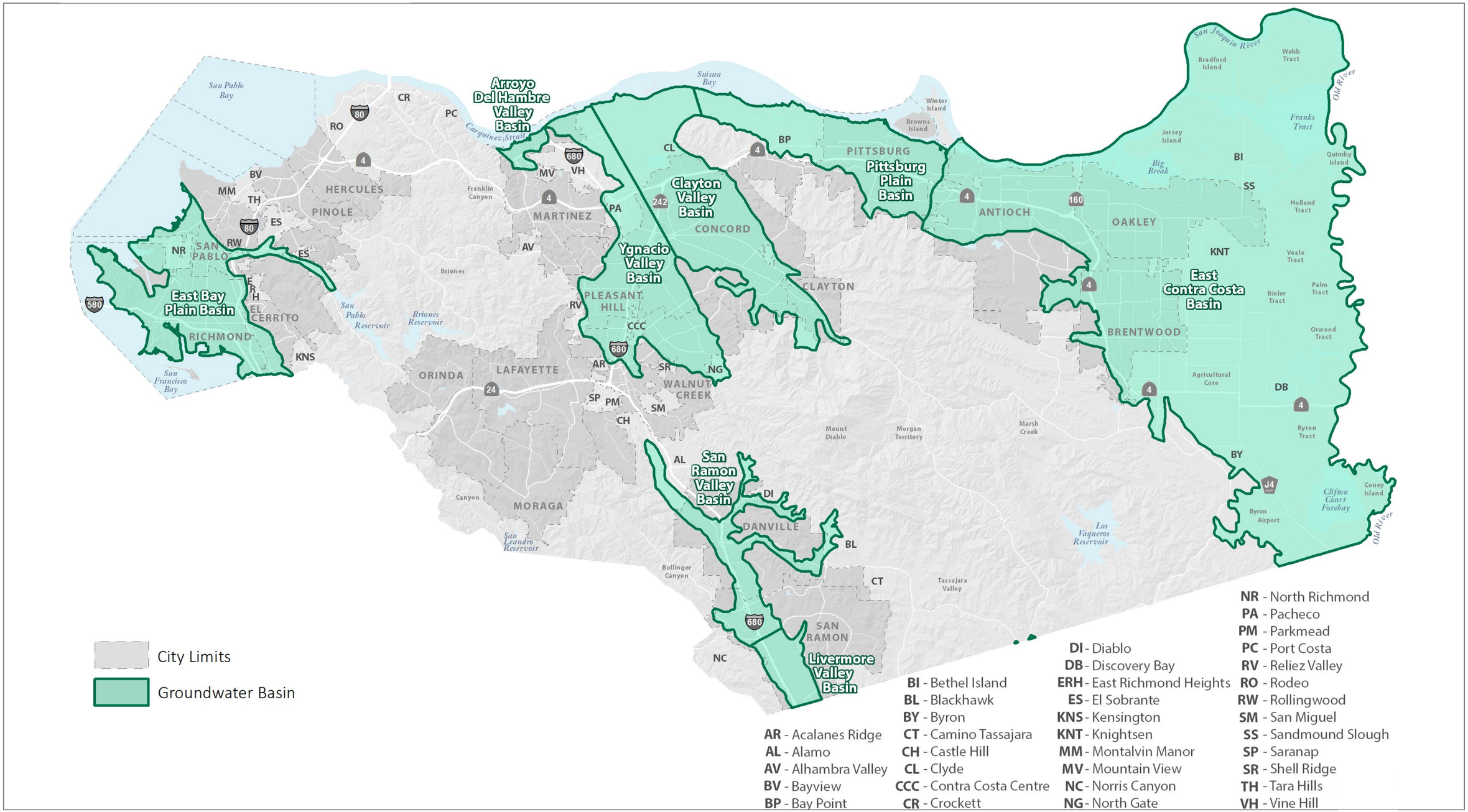
	Waterbody	303 (d) List Impairments	TMDL Status/Project
San Francisco Bay Region	Baxter Creek	Trash	2029 Attainment Date
	Briones Reservoir	Mercury	2029 Expected Completion
	Castro Cove, Richmond	Mercury, Polycyclic Aromatic Hydrocarbons (PAHs), Selenium, Dieldrin	2010 Attainment Date
	Cerrito Creek	Trash	2029 Attainment Date
	Kirker Creek	Toxicity	2021 Expected Completion
		Pyrethroids	San Francisco Bay Urban Creeks Diazinon
		Trash	2029 Attainment Date
	Lafayette Reservoir	Polychlorinated Biphenyls (PCBs)	2019 Expected Completion
		Mercury	2013 Expected Date Completion
	Mt. Diablo Creek	Pesticides, Toxicity	San Francisco Bay Urban Creeks Diazinon
		Toxicity	2021 Expected Completion
	Pine Creek sub watershed	Diazinon	San Francisco Bay Urban Creeks Diazinon
	Pinole Creek	Diazinon	San Francisco Bay Urban Creeks Diazinon
	Rodeo Creek	Diazinon	San Francisco Bay Urban Creeks Diazinon
	San Pablo Creek	Diazinon	San Francisco Bay Urban Creeks Diazinon
		Trash	2029 Attainment Date
	San Pablo Reservoir	Mercury, Pesticides, PCBs	2013 Expected Completion
		Pesticides	2019 Expected Completion
		PCBs	2020 Expected Completion
	Stege Marsh	Zinc, Pesticides, Copper, Mercury, PCBs	2019 Expected Attainment
	Walnut Creek	Diazinon	San Francisco Bay Urban Creeks Diazinon
Central Valley Region	Discovery Bay	Mercury	2029 Expected Completion
	Dune Creek	Mercury	2015 Expected Completion
		Metals	2027 Expected Completion
	Kellogg Creek	Salinity, Dissolved Oxygen, Indicator Bacteria	2021 Expected Completion
		Toxicity	2027 Expected Completion
	Grayson Creek	Trash	2029 Attainment Date
	Los Vaqueros Reservoir	Mercury	2027 Expected Completion
	Marsh Creek (Dune Creek to Marsh Creek Reservoir)	Metals	2020 Expected Completion
		Mercury	2015 Expected Completion
	Marsh Creek (Marsh Creek Reservoir to San Joaquin River; partly in Delta Waterways, western portion)	Pathogens	2023 Expected Completion
		Toxicity	2027 Expected Completion
		Mercury	Delta Methylmercury TMDL Project
	Marsh Creek Reservoir	Mercury	2025 Expected Completion

	Waterbody	303 (d) List Impairments	TMDL Status/Project
	Sand Creek	Diazinon	San Francisco Bay Urban Creeks Diazinon
		Salinity	2021 Expected Completion
		Chlorpyrifos	2026 Attainment Date
		Toxicity	2021 Expected Completion
		Pathogens	2021 Expected Completion
		Diazinon	2026 Attainment Date
		Pesticides	2021 Expected Completion

Source: SWRCB 2018.

Groundwater

Eight groundwater basins are in Contra Costa County, as shown on Figure 5.10-2, *Groundwater Basins in Contra Costa County*. The western end of Contra Costa County contains the northernmost end of the Santa Clara Valley East Bay Plain Subbasin. Proceeding east across the northern edge of the county are the Arroyo del Hambre Valley, Ygnacio Valley, Clayton Valley, Pittsburg Plain, and the San Joaquin Valley-East Contra Costa Subbasins. The San Ramon Valley Subbasin and a small portion of the Livermore Valley Subbasin are along Interstate 680 in the south-central portion of the county. Table 5.10-3*, Existing and Potential Beneficial Uses in Groundwater Basins in Contra Costa County,* lists the groundwater basins provided in the San Francisco Bay and Central Valley RWQCB Basin Plan and the existing and potential beneficial uses. All groundwater in the Central Valley Region is considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply (Central Valley RWQCB 2019).



Source: Contra Costa County, 2022; California Department of Water Resources (DWR) Bulletin 118 Groundwater Basins (2018)

Figure 5.10-2
Groundwater Basins in Contra Costa County

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Table 5.10-3 Existing and Potential Beneficial Uses in Groundwater Basins in Contra Costa County

Groundwater Basin Name	Beneficial Uses[1]			
	MUN	PRO	IND	AGR
Santa Clara Valley- East Bay Plain	X	X	X	X
Livermore Valley	X	X	X	X
Pittsburg Plain	P	P	P	P
Clayton Valley	X	P	P	P
Ygnacio Valley	P	P	P	P
San Ramon Valley	X	P	P	X
Arroyo del Hambre Valley	P	P	P	P
San Joaquin-East Contra Costa	X	X	X	X

Source: San Francisco Bay RWQB 2022, Central Valley RWQCB 2019.
Note: X = existing beneficial use; P = potential beneficial use.
[1] Municipal and Domestic Supply (MUN) – Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Industrial Process Supply (PRO) – Uses of water for industrial activities that depend primarily on water quality.
Industrial Service Supply (IND) – Uses of water for industrial activities that do not depend primarily on water quality, including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.
Agricultural Supply (AGR) – Uses of water for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

According to DWR's Basin Prioritization dashboard (DWR 2023b), groundwater is not extracted for municipal use in the Arroyo Del Hambre Valley, Ignacio Valley, Clayton Valley, and San Ramon Valley groundwater subbasins, which are characterized by DWR as very low priority. Groundwater use is limited by the effect of saltwater intrusion and pollutant contamination in the three subbasins that border the Carquinez Strait and Suisun Bay: Arroyo Del Hambre Valley, Ygnacio Valley, and Clayton Valley. Although there are a limited number of domestic wells in the San Ramon Valley Subbasin, there are no municipal supply wells that extract groundwater. Because of the very low priority designation from DWR, GSPs are not required for these four subbasins.

The Pittsburg Plain Subbasin is also characterized as a very low priority basin by DWR and thus a GSP is not required. The City of Pittsburg extracts groundwater from this subbasin using two wells. According to the 2020 Urban Water Management Plan (UWMP), the City pumped 1,480 acre-feet of water from this subbasin in 2020 (City of Pittsburg 2021). However, approximately 85 to 95 percent of the City's water supply is purchased from Contra Costa Water District (CCWD), which provides surface water from the Central Valley Project (CVP). The City prepared the Pittsburg Plain Groundwater Management Plan in 2012 to manage and protect groundwater resources within and underlying the city.

The northern tip of the Santa Clara Valley – East Bay Plain groundwater subbasin is within Contra Costa County. However, this portion of the subbasin is limited in terms of water supply because of saltwater intrusion and contamination in the shallow aquifer. The East Bay Plain Subbasin is characterized by DWR as medium priority and a GSP has been prepared by EBMUD and the City of Hayward as the GSAs. However, EBMUD and the City of Hayward are not currently pumping groundwater from this subbasin as a water supply source. They have implemented the Bayside Groundwater Project which injects drinking water into the deep aquifer in the southern portion of the groundwater subbasin with the possibility of extracting and treating the groundwater as a supplemental water supply source during times of drought. However, to date, no groundwater pumping from this facility has occurred (EBMUD 2022).

The San Joaquin Valley – East Contra Costa groundwater subbasin is in the eastern portion of Contra Costa County and is characterized as a medium priority basin by DWR. Eight local agencies that overlay the basin have collaborated to develop a GSP. The agencies are the Cities of Antioch and Brentwood, Bryon Bethany Irrigation District, Contra Costa County, CCWD, Diablo Water District, the Town of Discovery Bay Community Services District, and East Contra Costa Irrigation District. The East Contra Costa Subbasin GSP was submitted to DWR in October 2021 and provides sustainability goals and management principles to protect all beneficial uses and users of groundwater in the subbasin (ECC GSA 2021). The groundwater basin does not show any signs of over-pumping; however, its ranking as a medium priority basin is based on the importance of groundwater as a source of supply for domestic and agricultural uses. In addition, there are many disadvantaged communities that rely on groundwater as the sole source of supply.

The Livermore Valley Subbasin in the south-central portion of Contra Costa County is designated as a medium priority basin. Groundwater in this basin has been actively managed since 1974 by the Zone 7 Water Agency. This Agency submitted an Alternative GSP that was accepted by DWR. The groundwater basin is not in critical overdraft conditions, and the 2021 Alternative GSP demonstrates that the basin has continued to operate within its sustainable yield over a period of at least 10 years (Zone 7 Water Agency 2021).

Flood Zones

FEMA designates floodplain zones on FIRMs to assist cities and counties in mitigating flooding hazards through land use planning. FEMA also outlines specific regulations for any construction within a 100-year floodplain. The 100-year floodplain is defined as an area that has a 1 percent chance of being inundated during a 12-month period. FEMA also prepares maps for 500-year floods, which means that in any given year, the risk of flooding in the designated area is 0.2 percent.

In some locations, FEMA also provides measurements of base flood elevations for the 100-year flood, which is the minimum height of the flood waters during a 100-year event. Base flood elevation (BFE) is reported in feet above sea level. Depth of flooding is determined by subtracting the land's height above sea level from the base flood elevation. Areas within the 100-year flood hazard area that are financed by federally backed mortgages are subject to mandatory federal insurance requirements and building standards to reduce flood damage. This typically requires elevating the finished floor of the structure one to two feet above the BFE.

There are four primary types of flooding that occur in Contra Costa County (Contra Costa County 2018):

- **Stormwater Runoff Flooding.** This typically occurs during the rainy winter season, when runoff exceeds the capacity of the storm drain system. It is likely to occur when groundwater levels are high and there are high tides. It causes shallow street flooding and structure inundation and generally occurs in flat areas that are urbanized. However, severe weather storms can also cause landslides and mudflows in the mountainous areas.
- **Riverine Flooding.** This is defined as the overbank flooding of rivers and streams because of large-scale weather systems that generate prolonged rainfall. This causes not only the inundation of floodwater and debris but also the river and stream channels can be eroded by flowing water, resulting in a shift in channel location.

- **Flash Floods.** These are defined as a rapid and extremely high flow of water into a normally dry area or a rapid water level rise in a stream or creek. It typically occurs with little or no warning. The risk is increased in urban areas when vegetation and ground cover has been removed and replaced with roads and impervious surfaces.
- **Tidal Floods.** These floods are characterized as the inundation of normally dry land by bay waters, often caused by extreme tide events called "king tides." These events normally occur once or twice a year and are the leading cause of flooding for locations that border the Bay. Tidal flooding is exacerbated by sea-level rise due to climate change.

Figure 5.10-3, *FEMA 100-Year and 500-Year Flood Zones,* shows the locations within Contra Costa County that are within the 100-year or 500-year floodplains. Some of the coastal areas of the county that border San Francisco Bay, San Pablo Bay, Carquinez Strait, and Suisun Bay to the west and north are designated as within Zone VE, which is defined as coastal high hazard areas. Zone VE extends offshore to the inland limit that is subject to high-velocity wave action. The boundary of Zone VE is generally based on wave heights (3 feet or greater) or wave run-up depths (3 feet or greater).

Figure 5.10-3 also shows areas DWR identifies as 100-year flood plains. DWR is in the process of developing "best available maps" (BAM) that display 100-year, 200-year, and 500-year floodplains for all counties in the state. Different than the FEMA maps, which are used to support the NFIP, the BAMs are provided for informational purposes, and the 100-year floodplains are a composite of multiple mapping sources from FEMA, USACE, and DWR. This provides the community and residents with an additional tool for understanding potential flood hazards that are not currently mapped as a regulated floodplain. The BAMs for the EIR Study Area are still in the process of development, and only the 100-year floodplains are currently mapped (DWR 2023c).

Levees constantly hold back water and protect many areas that are at or below sea level from water inundation, and protect critical infrastructure, including EBMUD's water aqueducts, highways, railroads, gas wells, gas storage facilities, and electric lines, and more. Levee stability and effectiveness is increasingly threatened by sea-level rise, increased storm frequencies and intensities, and higher flows from greater rainfall and less snow due to climate change. Levees also protect land that may be settling due to subsidence, rendering the levees less stable. Many of the levees and drainage facilities in the Delta region of the county are privately owned and operated. There are over 1,100 miles of earthen levees and revetments managed by the CCCFCWCD and 13 reclamation districts in the county. There are also levees on many smaller rivers, streams, and creeks that protect small areas of land.

Although the eastern Delta portion of Contra Costa County is protected by levees, this area has often been subject to flooding due to the overtopping or failure of the levees. Figure 5.10-4, *Levees of Contra Costa County,* shows the levee centerline locations within Contra Costa County. High tides combined with large river inflow and rain-soaked levees have caused significant damage to agricultural land and private dwellings. Other areas within Contra Costa County that are within the 100-year floodplain are adjacent to various streams and rivers.

Sea-Level Rise

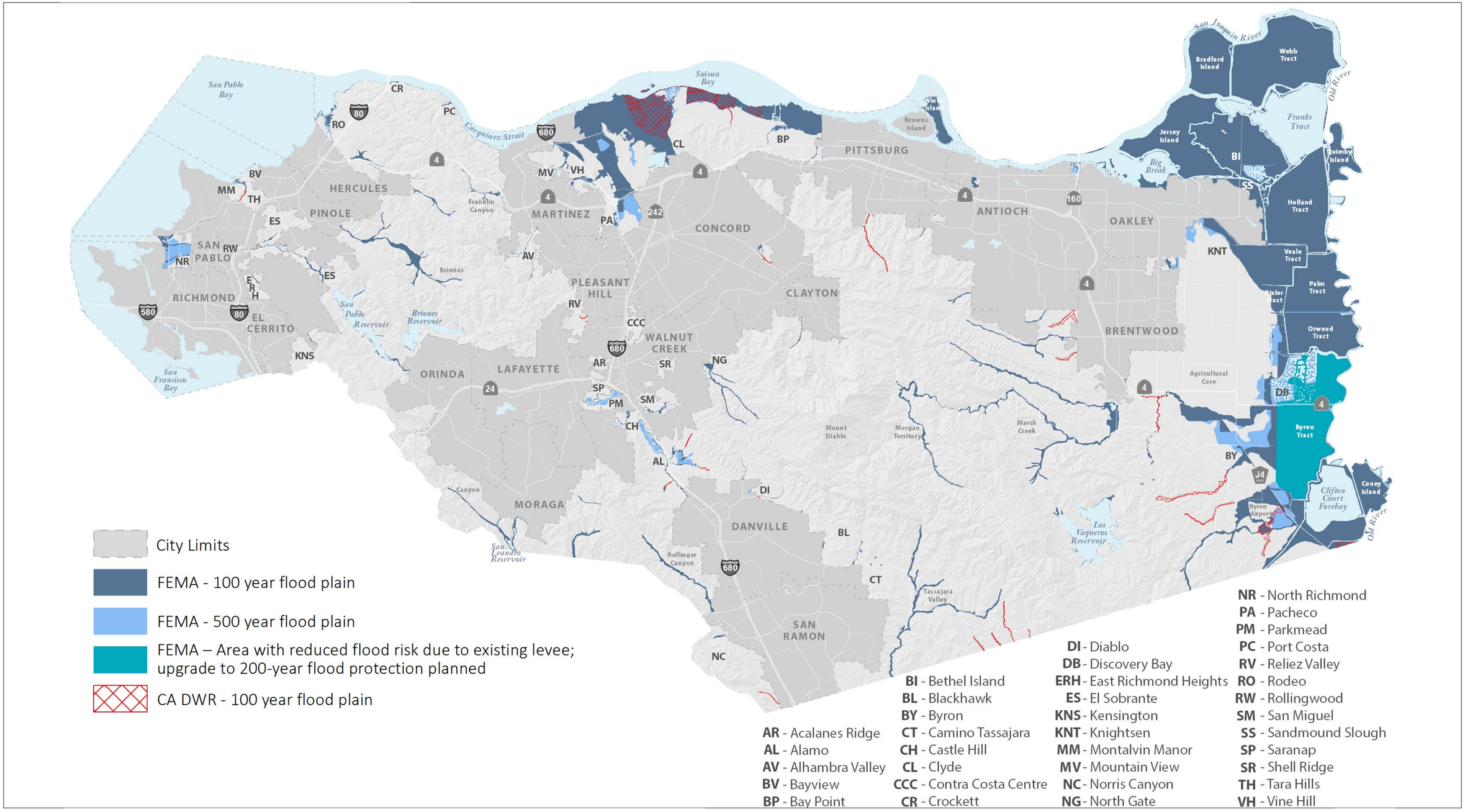
Rising sea levels can also cause the shoreline to flood more frequently and severely during storms or king tide events. King tides are abnormally high, predictable astronomical tides that occur about twice per year, with the highest tides occurring when the earth, moon, and sun are aligned. Because sea-level rise will cause ocean levels to be higher during normal conditions, shoreline floods can reach further onto land. For example, a storm that has a one in five chance of occurring in a given year (known as a five-year storm) can create a temporary increase in sea levels of approximately 24 inches. The goals, policies, and actions in the proposed General Plan call for planning for a medium- to high-risk aversion scenario in 2100. This scenario uses a 1 in 200 chance for sea-level rise projections, providing a precautionary projection that can be used for less adaptive (i.e., less able to make changes that reduce harm in response to hazards), more vulnerable developments or populations that will experience moderate to high consequences if actions are not taken to address sea-level rise in these areas.

Along the Contra Costa County shoreline, sea levels are projected to rise by up to about 24 inches by 2050 and 84 inches by 2100. However, it is possible that sea levels could rise faster than these projections. Figures 5.10-5, *Sea Level Rise 2050,* and Figure 5.10-6, *Sea Level Rise 2100,* display the expected sea-level rise in Contra Costa County in 2050 and 2100 featuring both East Contra Costa and Bay models from the Adapting to Rising Tides data. Figures 5.10-7, *Sea Level Rise 2050 with Bayshore/Extreme Tide Flooding,* and Figure 5.10-8, *Sea Level Rise 2100 with Bayshore/Extreme Tide Flooding*, display the sea-level rise projections in 2050 and 2100 with shoreline flooding.

Rising seas increase the risk of flooding, storm surge inundation, erosion and shoreline retreat, and wetland loss. Rising sea levels also threaten a significant portion of prime agricultural land in the county, as low-lying agricultural lands could be subject to more frequent shoreline flooding and saltwater intrusion into groundwater basins could disrupt agricultural water supplies. Meanwhile, rising tides may increase groundwater levels, inundating contaminated soil. Given that some contaminated sites in Contra Costa County sit near the shoreline, rising groundwater may cause contaminated soils to leach into adjacent areas.

Natural ecosystems in the Bay and Delta regions will be disrupted by the higher tide levels and intrusion of saltwater into freshwater systems. Historically, marshes have adapted to changes in sea level by building up sediment, increasing the height of the marsh to keep pace with the tide levels of the San Francisco Bay, and by moving inland. However, sea-level rise is expected to outpace the rate of marsh-level rise and development near wetlands will likely prevent marsh migration inland. Without substantial intervention, most tidal marshes in Contra Costa County are expected to convert to another habitat type, a process called "downshifting," which will lead to the establishment of different plant and animal species. Some wetlands may be altered or lost. The use of nature-based solutions, which combine natural buffers like wetlands or bluffs with traditional infrastructure to mitigate flooding risks, could be an opportunity to preserve existing ecological communities and protect natural habitats.

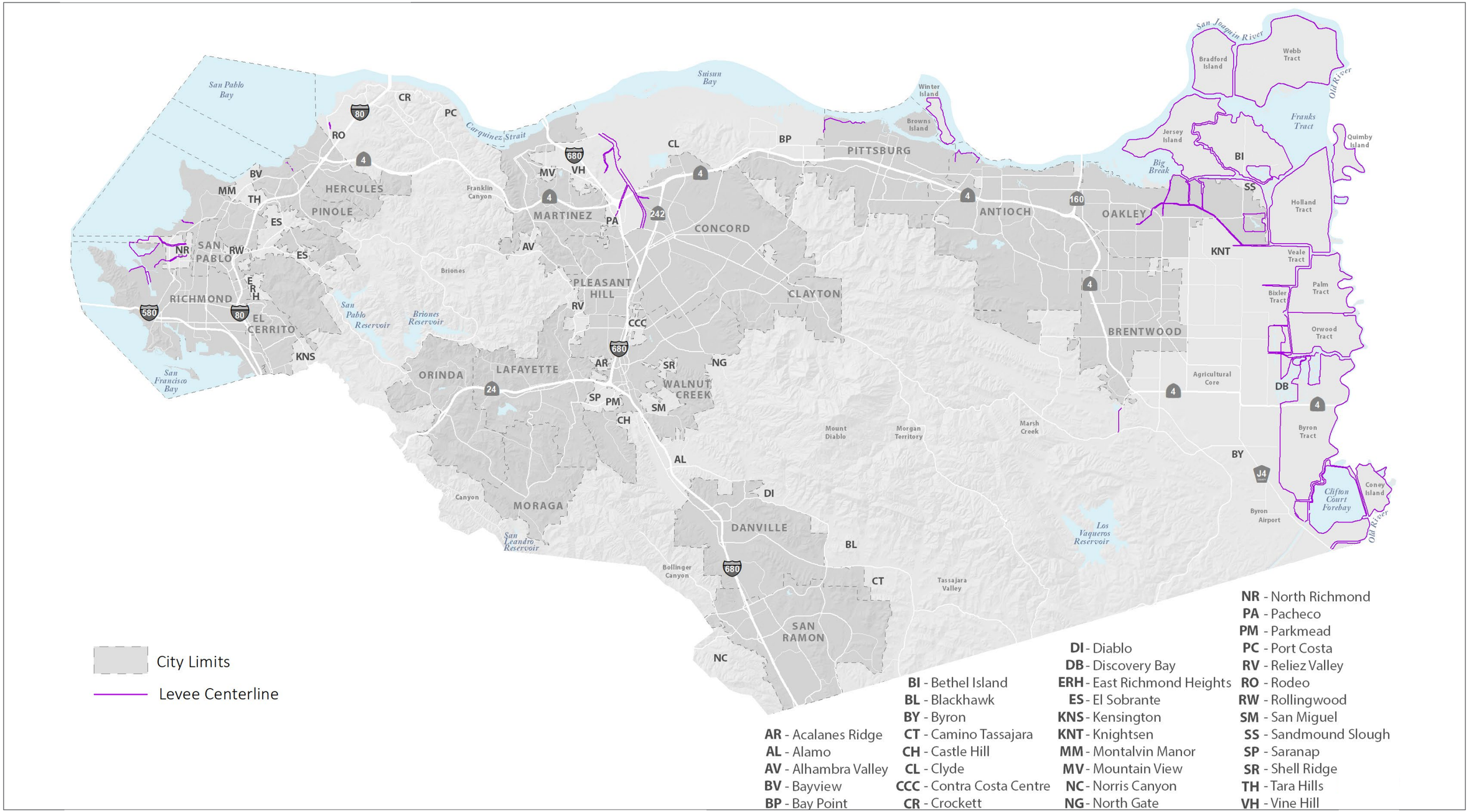
HYDROLOGY



Source: Federal Emergency Management Agency (FEMA) - National Flood Hazard Layer (NFHL) and California Department of Water Resources (DWR) 'Awareness' 100 year flood plains

Figure 5.10-3
FEMA 100-Year and 500-Year Flood Zones

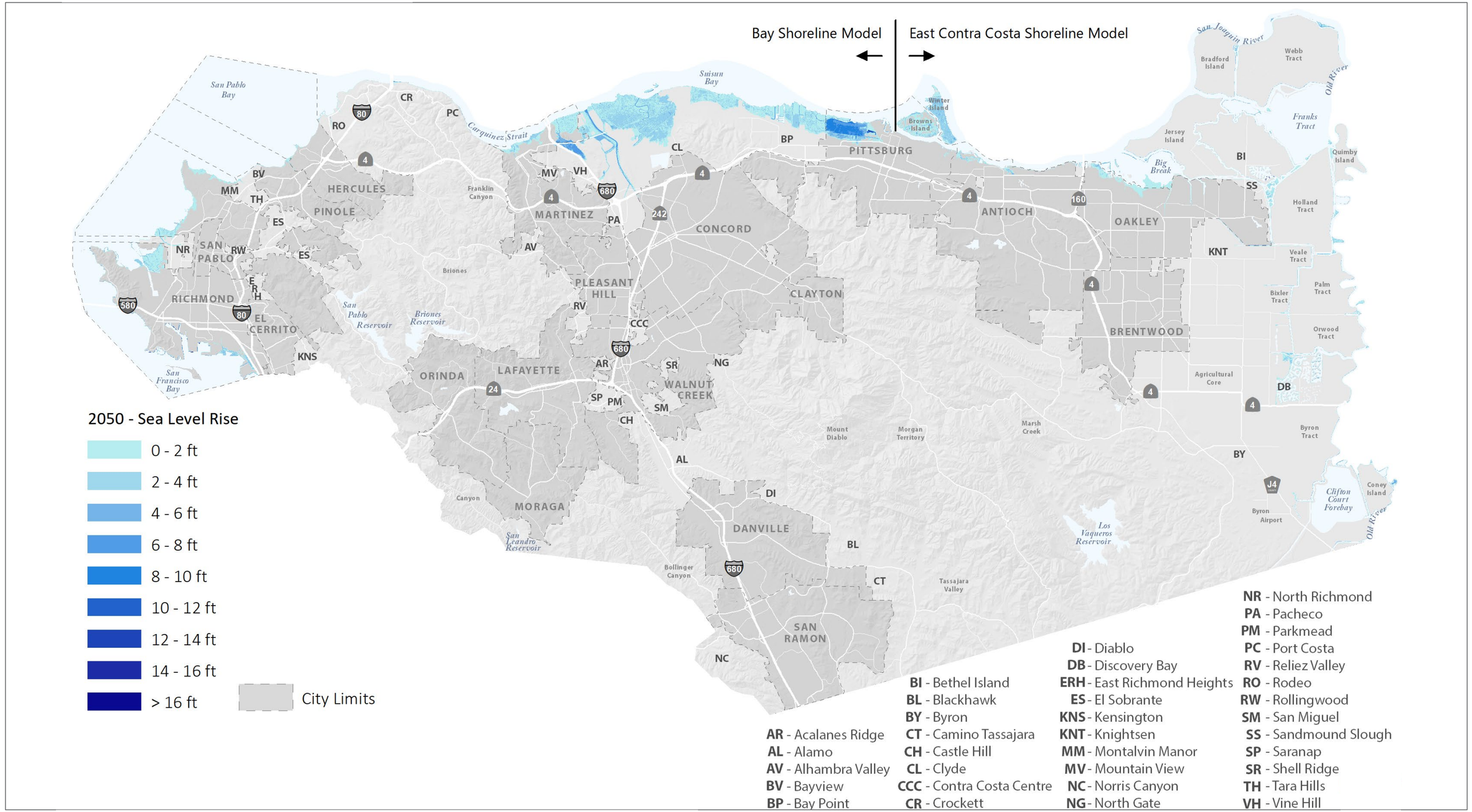
HYDROLOGY



Source: Contra Costa County, 2022

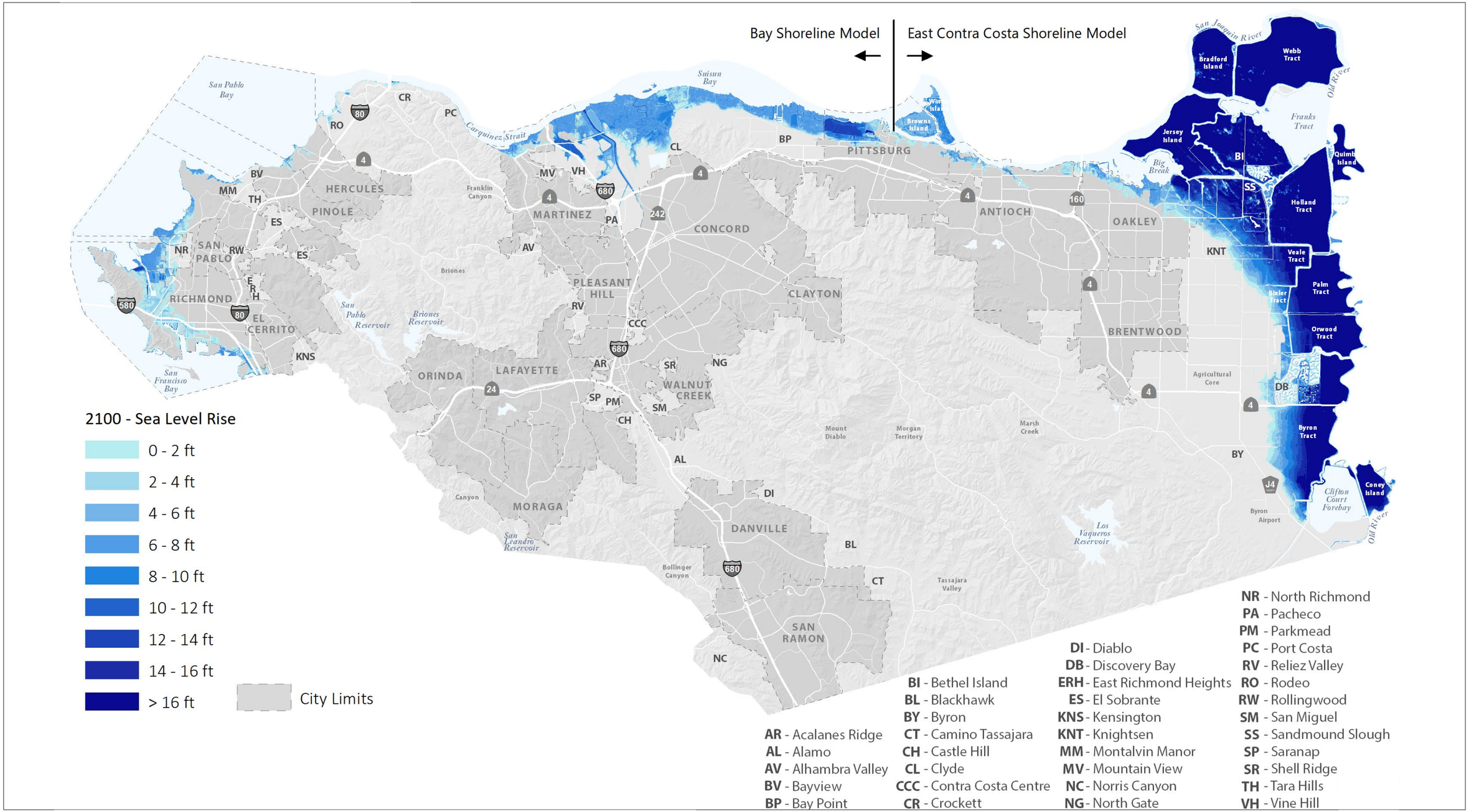
0 3.5
Scale (Miles)

Figure 5.10-4
Levees of Contra Costa County



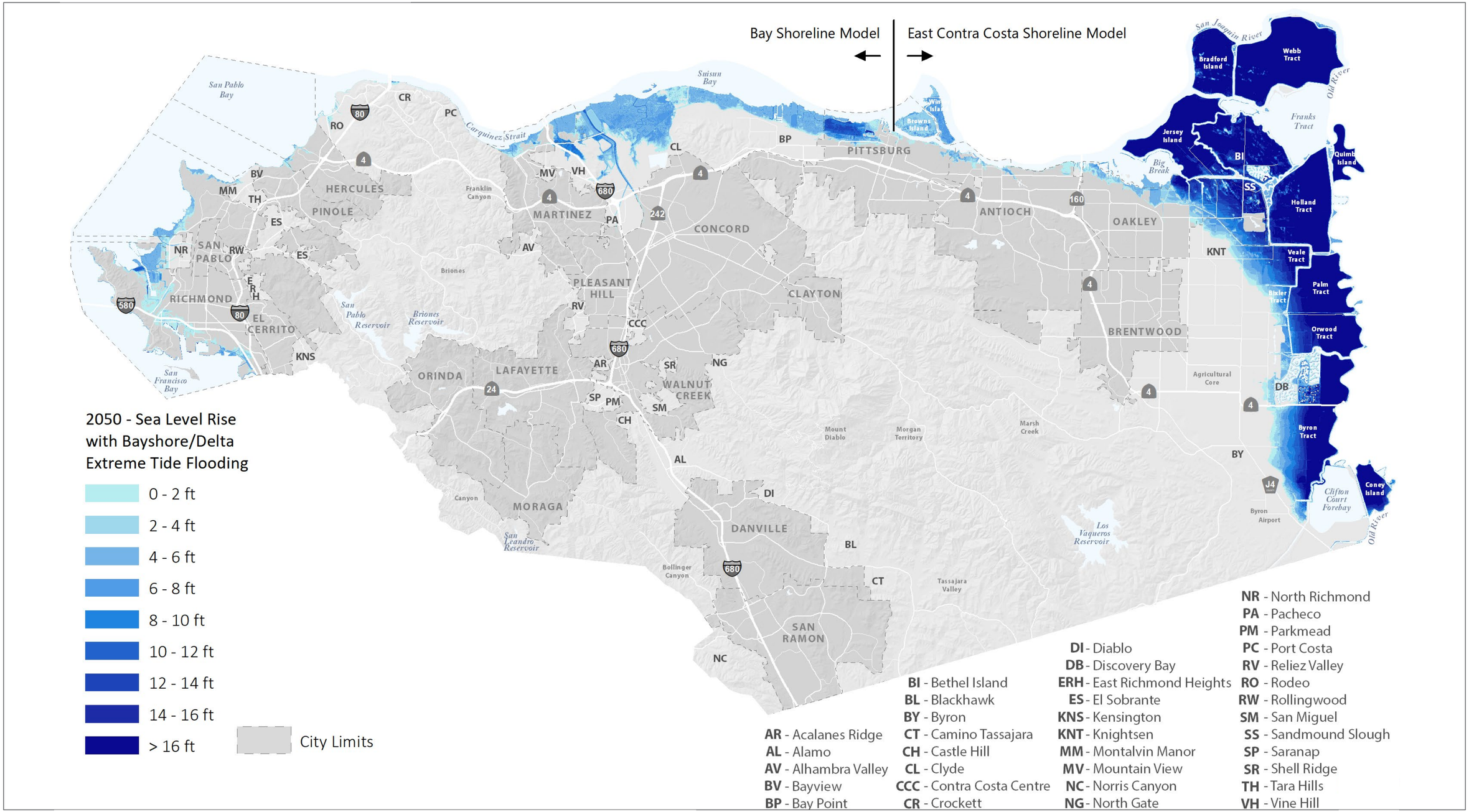
Source: Contra Costa County, 2022; San Francisco Bay Conservation and Development Commission (BCDC) Adapting to Rising Tides (ART) Program, Delta Stewardship Council

Figure 5.10-5
Sea-Level Rise 2050



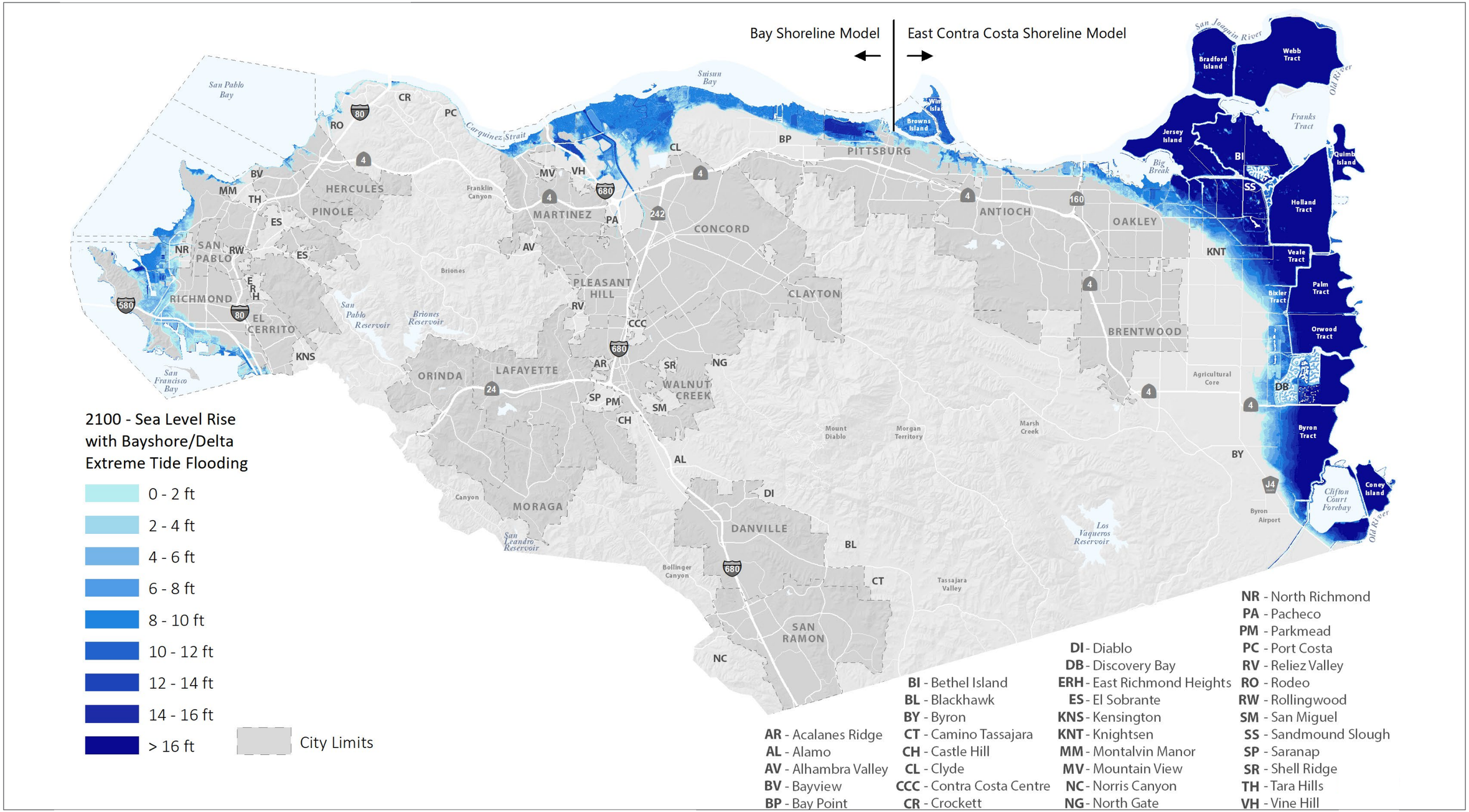
Source: Contra Costa County, 2022; San Francisco Bay Conservation and Development Commission (BCDC) Adapting to Rising Tides (ART) Program, Delta Stewardship Council

Figure 5.10-6
Sea-Level Rise 2100



Source: Contra Costa County, 2022; San Francisco Bay Conservation and Development Commission (BCDC) Adapting to Rising Tides (ART) Program, Delta Stewardship Council

Figure 5.10-7
Sea-Level Rise 2050 with Bayshore/Delta Extreme Tide Flooding



Source: Contra Costa County, 2022; San Francisco Bay Conservation and Development Commission (BCDC) Adapting to Rising Tides (ART) Program, Delta Stewardship Council

Figure 5.10-8
Sea-Level Rise 2100 with Bayshore/Delta Extreme Tide Flooding

Dam Inundation Zones

Partial or complete dam failures can occur from one or more of the following causes (Contra Costa County 2018):

- Overtopping, which accounts for 34 percent of all dam failures, due to inadequate spillway capacity, settlement of the dam crest, blockage of spillways, and other factors.
- Foundation defects, which account for 30 percent of all dam failures, due to differential settlement, slides, slope instability, uplift pressures, and foundation seepage.
- Failure due to piping and seepage, accounting for 20 percent of all failures, caused by internal erosion, erosion along hydraulic structures such as spillways, erosion due to animal burrows, and cracks in the dam structure.
- Failure due to problems with conduits and valves, accounting for 10 percent of all failures, typically caused by piping of embankment material into conducts through joints or cracks.

The remaining six percent of U.S. dam failures are due to miscellaneous causes and are often the secondary result of other hazards, such as earthquakes, landslides, extreme storms, massive snowmelt, equipment malfunctions, structural damage, foundation failures, and sabotage. The most likely disaster-related causes of dam failure in Contra Costa County are earthquakes, excessive rainfall, and landslides (Contra Costa County 2018).

The California Water Code requires owners of all dams under California Division of Safety of Dams (DSOD) jurisdiction (except dams classified as low downstream hazard) to prepare dam inundation maps. These maps must be updated every 10 years or when there are changes to downstream development or terrain. The dam inundation maps are submitted to DSOD for review and approval. Once the maps are approved, the dam owner must submit the map with the Emergency Action Plan to the California Office of Emergency Services (Cal OES) for review and approval.

For federally owned and maintained dams, USACE and the U.S. Bureau of Reclamation each have Dam Safety Programs that recognize the catastrophic nature of potential dam failure and operate a comprehensive dam safety program, which include:

- Periodic special engineering studies
- Surveillance and monitoring programs
- Routine inspections and maintenance activities
- Maintaining an emergency response and preparedness plan

There are 27 dams in Contra Costa County and five dams outside the county that have inundation areas that extend into the county. The dam inundation areas for most of these dams are shown on Figure 5.10-9, *Dam Inundation Zones* (some dam inundation data is not publicly available). All of the dams that are under DSOD jurisdiction within Contra Costa County are designated as either high hazard or extremely high hazard dams and are labeled as 'dams of significant concern' on Figure 5.10-9. The hazard classifications are based on potential downstream impacts to life and property should the dam fail when operating at full capacity. This hazard is not related to the condition of the dam. High hazard indicates that the dam failure could result in the loss of at least one human life and extremely high hazard indicates that the dam failure is expected to cause

considerable loss of human life or would result in an inundation area with a population of 1,000 or more (DSOD, 2023).

There has never been a reported dam failure in Contra Costa County (Contra Costa County 2018). There are no State or local restrictions for development in dam inundation zones; however, each dam owner is required to prepare an emergency action plan (EAP) and coordinate its response to a dam incident with local authorities. The Contra Costa County Office of Emergency Services maintains copies of the most recent EAPs and inundation maps and uses this information to notify downstream areas in the event of a dam failure.

Tsunamis and Seiches

A tsunami is a series of traveling ocean waves generated by a rare, catastrophic event, including earthquakes, submarine landslides, and submarine or shoreline volcanic eruptions. Tsunamis can travel over the ocean surface at speeds of 400 to 500 miles per hour or more, and wave heights at the shore can range from inches to 50 feet. Factors influencing the size and speed of a tsunami include the source and magnitude of the triggering event, as well as off-shore and on-shore topography. As tsunamis reach the shoreline, they may manifest as a fast-rising tide, a cresting wave, or a bore (i.e., a large turbulent wall-like wave).

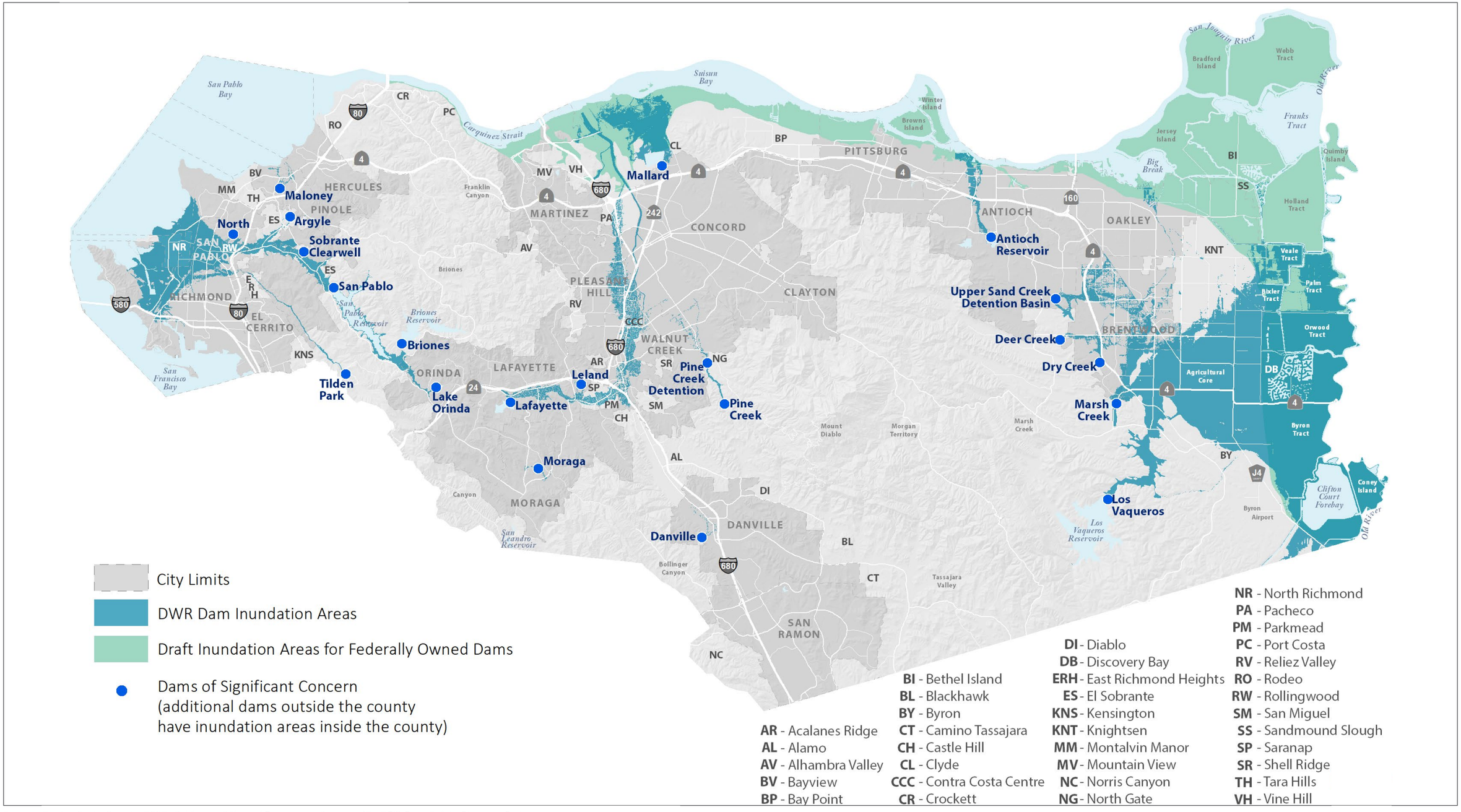
Contra Costa County has never been impacted by a tsunami. The closest tsunami to the area was in 2011 when an earthquake in Japan traveled across the Pacific Ocean and created wave surges that damaged coastal areas in nearby Santa Cruz and Monterey Counties.

Figure 5.10-10, *Tsunami Inundation Zones*, shows the coastal locations within Contra Costa County that are within tsunami inundation zones. The map was updated in 2021 and includes portions of the Cities of Richmond, El Cerrito, San Pablo, and Martinez. The map is based on inundation limits corresponding to a 975-year average return period and represents areas that could be exposed to tsunami hazards during an event (State of California 2021). Tsunami impacts would most likely be along San Pablo Bay and would result from a rise in floodwater from a San Francisco Bay tsunami caused by a local earthquake (Contra Costa County 2018). There also is a small area along the Carquinez Strait in the City of Martinez that is in a tsunami hazard zone.

A seiche is an oscillation wave generated in a closed or partially closed body of water, which can be compared to the back-and-forth sloshing in a bathtub. Seiches can be caused by winds, changes in atmospheric pressure, underwater earthquakes, tsunamis, or landslides into the water body. Bodies of water such as bays, harbors, reservoirs, ponds, and swimming pools can experience seiche waves up to several feet in height during a strong earthquake. However, for a seiche to occur in San Pablo or San Francisco Bay, the wave frequency of a tsunami would have to match the resonance frequency of the Bay. The typical frequency of a tsunami is ten minutes to an hour, and the resonance frequency of San Pablo and San Francisco Bay is somewhere between one to ten hours. Therefore, tsunamis have frequencies too short to resonate within San Pablo Bay and San Francisco Bay and a seiche is unlikely.

Seiches associated with large bodies of water, such as dams and reservoirs, typically create waves that are one foot high or less. Dams are designed to have a freeboard height below the top of the dam that accounts for wave action on the surface of the reservoir. Therefore, it is unlikely that a seiche would occur and cause overtopping of a dam, resulting in downstream flooding.

HYDROLOGY

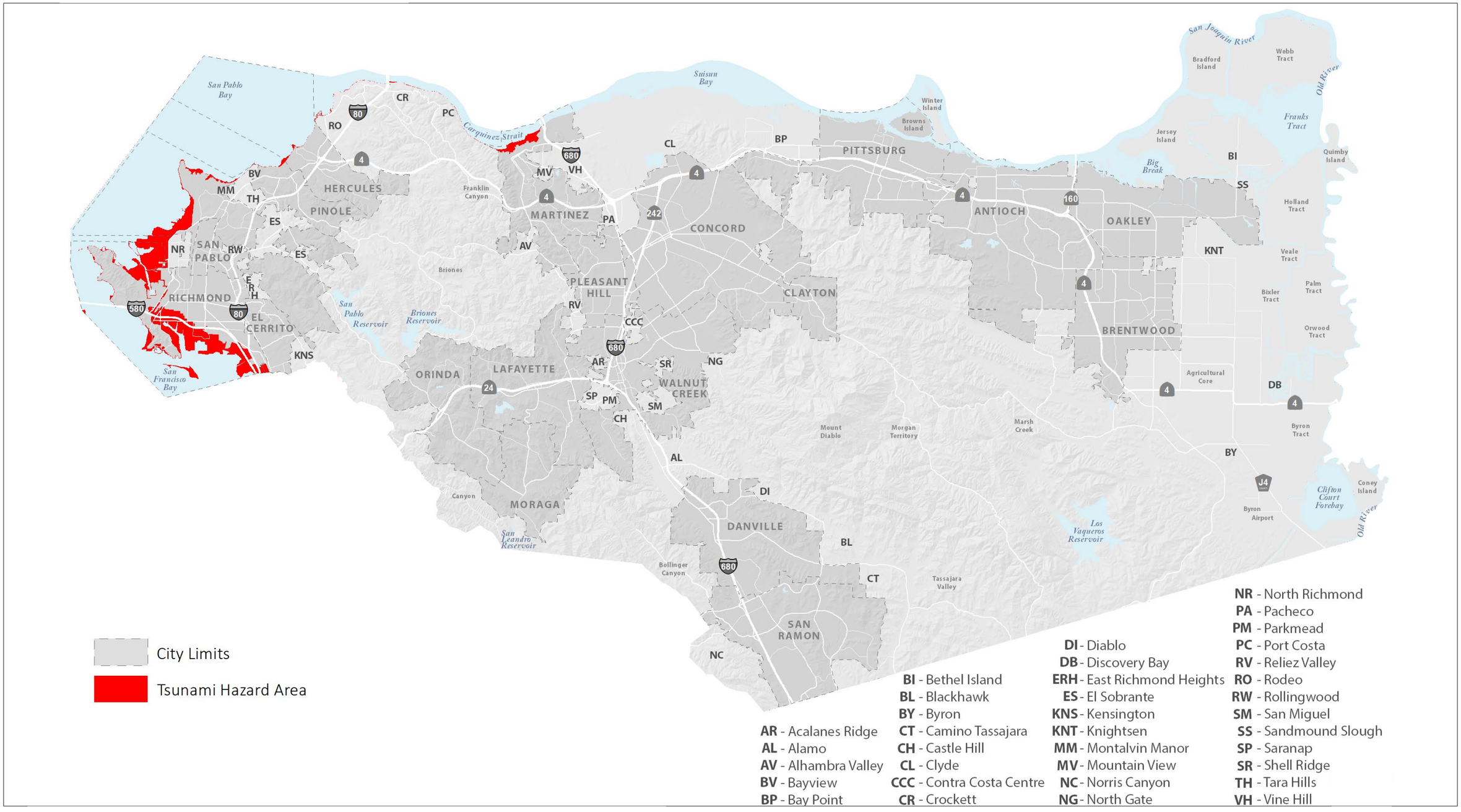


Source: Contra Costa County, 2022; California Office of Emergency Services (CalOES) Dam Safety Planning Division

0 3.5
Scale (Miles)

Figure 5.10-9
Dam Inundation Zones

HYDROLOGY



Source: Contra Costa County, 2022; California Department of Conservation - California Geological Survey (CGS) and California Office of Emergency Services (CalOES) Earthquake, Tsunami, and Volcano Program

Figure 5.10-10
Tsunami Inundation Zones

5.10.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

HYD-1 Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.

HYD-2 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

HYD-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) Result in substantial erosion or siltation on- or off-site.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite.

iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

iv) Impede or redirect flood flows.

HYD-4 In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

HYD-5 Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

5.10.3 Programs, Plans, and Policies

5.10.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to hydrology and water quality. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Action LU-A2.1:** Amend the County Ordinance Code to require the following prior to approval of a tentative map for subdivision in areas designated Agricultural Lands or Agricultural Core:
  a) Evidence of adequate groundwater supply to support intended uses, considering the cumulative, long-term demand.
  b) Demonstration that each parcel is suitable for an on-site wastewater treatment system.
  c) Satisfactory road and street access, particularly for emergency vehicles.
  d) Adequate regional drainage capacity, including downstream natural watercourses.

e) Detailed site plans for each lot indicating building locations, driveways, well and leach field locations, energy-efficient and -conserving features, location of hazards such as landslides and floodplains, necessary flood and stormwater management improvements, and fencing.

f) Other information that may be required to confirm the safe use of each lot for its intended purpose.

- **Policy LU-P8.9**: Plan land uses and activities in the vicinity of harbors to optimize their use for commerce and recreation while accounting for forecasted sea-level rise by 2100 under a medium-high risk aversion scenario, subsidence, and groundwater threats.

Conservation, Open Space, and Working Land Element

- **Goal COS-5**: Protected and restored natural watercourses, riparian corridors, and wetland areas that improve habitat, water quality, wildlife diversity, stormwater flows, and scenic values.
  - **Policy COS-P5.1**: Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
  - **Policy COS-P5.2**: *Require new public infrastructure and private development projects to preserve, and whenever possible enhance, natural watercourses, floodplains, and riparian habitat.*
  - **Policy COS-P5.3**: Require avoidance, minimization, and/or compensatory mitigation for development that would impact a wetland, wetland species, or adjacent upland habitat areas. Where feasible, compensation shall be in-kind (i.e., the same type of habitat), provided on-site, and based on a ratio that provides a margin of safety reflecting the expected degree of success and accounting for the relative functions and values of the lost and created wetlands.
  - **Policy COS-P5.4**: *Require new buildings and structures on private property be set back at least 75 feet from the edge of any wetland area, unless a peer-reviewed, site-specific evaluation indicates that a different setback is appropriate for protecting the wetland and adjacent upland habitat areas. Allow encroachment into a required wetland setback area only when a parcel would otherwise be rendered unbuildable or impacts have been adequately mitigated.*
  - **Policy COS-P5.8**: *Prohibit direct runoff of pollutants and siltation into marsh, creek, and wetland areas from outfalls serving urban development.*
  - **Action COS-A5.2**: Amend the County Ordinance Code to include the wetland setback requirement described in Policy COS-P5.4.
  - **Action COS-A5.3:** Amend the County Ordinance Code to apply the creek setback requirements in Title 9 - Subdivisions to all projects, including those that are not part of a subdivision.
- **Goal COS-7:** Sustainable surface and groundwater resource management.
  - **Policy COS-P7.1**: Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and recycled water, where available.
  - **Policy COS-P7.2**: Partner with water and wastewater service providers, GSAs, irrigation districts, and private well owners to increase participation in water conservation programs countywide.

- **Policy COS-P7.3**: *Consult applicable GSPs and local GSAs before making land use decisions that could impact groundwater resources*.
- **Policy COS-P7.4**: *For projects in areas without a water service provider, require proof of adequate on-site groundwater during the development review process. In addition to requiring compliance with the County's well regulations related to water quality and flow rate, require documentation that the proposed project will not have a significant cumulative impact on the aquifer or negatively affect development that already relies on the same groundwater supply*.
- **Policy COS-P7.5**: *Prohibit new development that would create or significantly aggravate groundwater overdraft conditions, land subsidence, or other "undesirable results," as defined in Section 354.26 of the California Water Code*.
- **Policy COS-P7.6:** Support multipurpose water storage options that incorporate water supply, flood control, surface and groundwater storage, groundwater management, and ecosystem components.
- **Policy COS-P7.7:** *Require landscaping for new development to be drought-tolerant, filter and retain runoff, and support flood management and groundwater recharge*.
- ***Action COS-A7.1**: Update County Ordinance Code Chapter 414-4, Water Supply, to be consistent with adopted GSPs.*
- **Action COS-A7.2:** For areas that are not covered by an adopted GSP, amend the County Ordinance Code to include sustainability indicators, defined by the SGMA, as a guide for development to maintain and protect the quality and quantity of groundwater supplies within the county.
- **Action COS-A7.3:** Evaluate the feasibility and necessity of amending the County Ordinance Code to promote rainwater harvesting, installation of dual plumbing, and water reuse.

- **Goal COS-8**: Protected quality of surface water and groundwater resources.
  - **Policy COS-P8.1:** *Protect public water supplies by denying applications for projects that would introduce significant new pollution sources in groundwater basins and watersheds feeding major reservoirs, and support efforts to acquire and permanently protect reservoir watersheds*.
  - **Policy COS-P8.2:** *Coordinate with other agencies to control point and non-point sources of water pollution and maintain water quality standards*.
  - **Policy COS-P8.3:** Support development and implementation of a long-term, area-wide integrated vegetation management program to control invasive weeds in a way that reduces pesticide use and preserves water quality.
  - **Policy COS-P8.4:** *Require new development to retain natural vegetation and topography whenever feasible and require projects involving erosion-inducing activities to use best management practices to minimize erosion*.
  - **Policy COS-P8.5:** Require groundwater monitoring programs for all large-scale commercial and industrial facilities that use wells and prohibit discharge of hazardous materials through injection wells.

- **Goal COS-9**: Protected, preserved, and enhanced scenic quality, recreational value, and natural resources of the San Francisco Bay/Sacramento-San Joaquin Delta estuary system and shoreline.
  - **Policy COS-P9.1:** Advocate for increased freshwater flow into, through, and from the Delta into San Francisco Bay, and support other efforts to protect and improve Delta water quality.
  - **Policy COS-P9.2:** Support continued maintenance and improvement of Delta levees to protect water quality, ecosystems, agricultural land, and at-risk communities.

- **Policy COS-P9.3:** Oppose all efforts to construct an isolated conveyance (e.g., peripheral canal, tunnel) or any other water diversion system that reduces Delta water flows unless and until it can be conclusively demonstrated that such a system would protect, preserve, and enhance water quality and fisheries of the San Francisco Bay/Delta estuary system.
- **Policy COS-P9.4:** Plan for land uses along shorelines that do not pose a threat to Bay or Delta resources, including water quality and shoreline and marshland habitats.
- **Policy COS-P9.6:** Prohibit development on tule islands, sand dunes, and levee remnants.

Public Facilities and Services Element

- **Goal PFS-5**: Natural systems and flood-risk management infrastructure that can handle stormwater year-round and adapt to new and changing conditions.
  - **Policy PFS-P5.1**: Support public and private efforts to improve protection against flooding, subsidence, and inundation, especially projects that achieve 200-year flood protection or better, factoring in sea-level rise, in areas of the county covered by the Central Valley Flood Protection Plan.
  - **Policy PFS-P5.2:** *Partner with responsible parties, public and private, to ensure ongoing funding exists for maintenance and rehabilitation of flood management facilities and structures (e.g., levees, pump stations, canals, channels, and dams), particularly those that do not meet adopted State or federal flood-protection standards.*
  - **Policy PFS-P5.3:** Allow for future height increases to private levees protecting inland areas from tidal flooding and sea-level rise by requiring rights-of-way and setbacks to be sufficiently wide on the levee's upland side and prohibiting new structures from being constructed on top of or immediately adjacent to the levee.
  - **Policy PFS-P5.4:** Support material stockpiling and equipment staging for emergency levee repair, especially in the western Delta.
  - **Policy PFS-P5.5:** Encourage new development to participate in programs that ensure ongoing maintenance of natural watercourses to maintain their flood-carrying capacity and habitat values.
  - **Policy PFS-P5.6:** *When developing new or revised regional drainage and flood management plans, including plans to protect against sea-level rise, incorporate adequate setbacks and alternative drainage system improvements that provide aesthetic, recreational, and environmental benefits. Improvements should avoid structural modifications to watercourses and preserve riparian habitat and floodplains, and convert engineered drainage systems to more natural systems, when and where possible. In areas at risk of temporary or permanent inundation from sea-level rise, ensure that improvements can continue to provide adequate protection for the projected level of inundation by 2100 or the expected operational life of the project, whichever is later.*
  - **Policy PFS-P5.7:** *Incorporate green infrastructure into new and retrofitted flood-control and streetscaping projects, including replacing existing asphalt and other hardscapes with green infrastructure, as feasible.*
  - **Policy PFS-P5.8:** Encourage developers of properties along transit corridors and in commercial areas to combine their private stormwater treatment facilities with green infrastructure on the adjoining street frontage.
  - **Policy PFS-P5.9:** Encourage public participation in the design of major flood-control and sea-level resiliency projects to ensure that these facilities are context-sensitive and provide multiple public benefits whenever possible.

- ***Action PFS-A5.1****: Identify existing developed areas where drainage maintenance issues exist and coordinate with each affected community to consider creating a benefit assessment district or similar local funding mechanism to pay for improvement and maintenance needs.*
- **Action PFS-A5.2**: Coordinate with responsible parties, public and private, to develop a flood risk management plan for the levee systems protecting the unincorporated county that:
  a) Identifies the entities responsible for operation and maintenance of the levees.
  b) Determines the anticipated flood levels in the adjacent waterways and the level of protection offered by the existing levees along the waterways.
  c) Establishes a long-term plan to upgrade the system as necessary to provide at least a 100-year level of flood protection, and 200-year level of flood protection where required.
  d) Considers the worst-case situations of high tides coupled with sea-level rise and storm-driven waves.
  e) Protects beneficial uses of San Francisco Bay and the Delta and their water.
  f) Prioritizes designs that foster riparian habitat while containing floodwaters, such as by using more natural materials, landforms, and vegetation, rather than concrete channels and other conventional flood-control infrastructure.
  g) Encourages multipurpose flood-management projects that, where feasible, incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of waterways.
  h) Takes a holistic approach to flood-risk management so that new infrastructure does not simply transfer flooding impacts from one property or location to another.
  i) Considers flood and tidal impacts to existing brownfields, especially adjacent to shorelines.
  j) Includes provisions for updates to reflect future State- or federally mandated levels of flood protection.
- ***Action PFS-A5.3****: Develop watershed management plans incorporating best management practices that slow, spread, and sink water runoff to flatten the hydrograph (i.e., water flow over time) where erosion is a concern, while also enhancing wildlife habitat and recreation opportunities where feasible.*
- ***Action PFS-A5.4****: Establish programs for development projects alongside natural watercourses that ensure regular maintenance of the waterway, including debris removal, erosion control, and conservation and restoration of native species.*

Health and Safety Element

- **Goal HS-5**: Minimized risk of loss of life, injury, damage to property, and economic or social dislocations resulting from flood hazards.
  - **Policy HS-P5.1**: *Prohibit urban development in areas designated 100- or 200-year (or 500-year when used as a proxy for the 200-year) floodplain, as shown on Figure HS-2, or in areas subject to increased flood hazards due to subsidence or other changes, unless appropriate mitigations to reduce flood risk to the standard of the Flood Disaster Protection Act of 1973 or above are implemented.*
  - **Policy HS-P5.2**: *Require flood-proofing of new and expanded buildings and structures in any area subject to flooding. Flood-proofing methods will be determined on a project-by-project basis by the Floodplain Manager, and may include, but not be limited to:*
    a) Anchoring to prevent flotation, collapse, or lateral movement.
    b) Using flood-resistant construction materials.

c) Elevating building pads and habitable building floors above the base flood elevation plus required freeboard.

d) Providing adequate venting to allow for equalization of hydrostatic forces.

e) Employing any other construction methods and practices appropriate to minimize flood damage.

- **Policy HS-P5.3**: *For any development project in a FEMA- or DWR-designated floodplain, require review by the Floodplain Manager to consider potential downstream flood damage that may result from the project.*
- **Policy HS-P5.4**: Evaluate development within the Sacramento-San Joaquin Valley for consistency with DWR's Urban Level of Flood Protection Criteria. Prohibit new single-family residences, density increases, subdivision maps, or development agreements for any property within a 200-year floodplain in an urban or urbanizing area, unless an adequate finding can be made pursuant to California Water Code Sections 9600 to 9603.
- **Policy HS-P5.5**: Prohibit permanent buildings and structures in designated floodways where such impediments could increase risks to human life or restrict the floodway's carrying capacity.
- **Policy HS-P5.6**: Prohibit construction of critical infrastructure in areas subject to flooding or sea-level rise unless no feasible alternative exists.
- **Policy HS-P5.7**: Require new subdivisions within the inundation area of a levee or dam, as shown in Figure HS-4, to include a deed notification explaining to future owners that the property may be subject to flooding if the levee or dam were to fail or be overwhelmed.
- **Policy HS-P5.8**: Require new development in designated tsunami hazard zones to be designed to withstand anticipated tsunami forces, based on County-prepared studies conducted pursuant to Action HS-A5.4.
- **Action HS-A5.2**: Establish countywide protection priorities for vulnerable communities and their populations identified to be at high risk of displacement from future flooding and sea-level rise in the Contra Costa County Vulnerability Assessment or the best-available climate science data and use regional funding mechanisms to plan and implement protection measures in these locations or for these populations.
- **Action HS-A5.3**: Amend the Floodplain Management Ordinance to address hazardous material storage.
- ***Action HS-A5.4****: Conduct a study of existing development within designated tsunami hazard zones to determine evacuation and emergency response needs prior to and during a tsunami event.*

- **Goal HS-6**: Resilient and thriving Bayshore and Delta communities that are safeguarded and adaptively managed for rising sea levels.
  - **Policy HS-P6.1**: *Require new development to locate habitable areas of buildings above the highest water level expected, based on Figures HS-6 through HS-9, accounting for sea-level rise and other changes in flood conditions, or construct natural and nature-based features, or a levee if necessary, adequately designed to protect the project for its expected life.*
  - **Policy HS-P6.3**: Require new industrial development in areas subject to sea-level rise, emergent groundwater flooding, or tsunami inundation to provide plans for prevention and remediation of any contaminant releases induced by these hazards, along with bonds that guarantee remediation plans are implemented. Remediation should meet standards that protect people and the environment in the event of future permanent inundation.

- **Policy HS-P6.5**: *Work with property owners in areas prone to emergent groundwater flooding to pre-emptively harden properties using methods that minimize erosion, subsidence, and structural damage from rising waters*.
- ***Action HS-A6.1:*** *Amend the Floodplain Management Ordinance to apply to areas subject to sea-level rise under at least a medium-high risk aversion scenario by 2100, in accordance with State and regional guidance.*
- **Action HS-A6.2:** Adopt a Sea-Level Rise Overlay Zone with associated land use regulations for site planning and minimum construction elevations that reflects sea-level rise data under at least a medium-high risk aversion scenario by 2100. Refer to BCDC policy guidance when developing this overlay zone.
- **Action HS-A6.3:** Coordinate with BCDC, cities, and other agencies, organizations, and stakeholders to prepare and adopt a community-driven countywide sea-level rise adaptation plan addressing increased flooding and sea-level rise that provides unique adaptation options for the entire county shoreline and identifies funding mechanisms for implementation. Use Figures HS-6 through HS-9 or the best-available climate science data to identify where sea-level rise hazards are likely to occur and lead efforts to:
  a) Maximize awareness and disclosure to property owners and the public.
  b) Assess and address impacts to future development, including promoting the Adaptation Pathways model to respond to uncertainty and evolving conditions.
  c) Plan for resiliency projects and adaptation measures to protect existing development and infrastructure, emphasizing nature-based solutions.
  d) Partner with the Adapting to Rising Tides Program, Delta Stewardship Council, property owners, and community-based organizations to conduct a study of opportunities and costs for shifting development away from areas at risk from inundation.
  e) Inform funding and financing decisions about short-term and long-term resiliency and adaptation projects.
  f) Ensure that the disproportionate impacts on vulnerable populations and Impacted Communities are addressed.
- **Action HS-A6.4:** Coordinate with the BCDC, Delta Stewardship Council, cities, and other involved agencies and stakeholders to create a joint-powers authority or a public-private partnership to develop, fund, and implement relevant, regionally coordinated sea-level rise adaptation measures that leverage the results of Adapting to Rising Tides, Bay Adapt, Delta Adapts, and other studies and programs.
- **Action HS-A6.5:** Partner with cities and CCTA to develop and fund a countywide plan to increase the resiliency of roads that will be impacted by sea-level rise and tsunamis to ensure emergency responders can get to those in need and that community members, including those that rely on public transit, can continue to reach services.
- **Action HS-A6.6:** Work with State and regional agencies to conduct improved modeling of the areas at risk from emergent groundwater flooding to better understand the threat this hazard poses to Contra Costa County.

- **Goal HS-9**: Communities that are protected from hazards associated with use, manufacture, transport, storage, treatment, and disposal of hazardous materials and hazardous waste, including from fossil fuels, chemical refining, and power plants, as well as pipelines, rail lines, and truck transportation.

- **Policy HS-P9.5**: *Require facilities that manage hazardous materials or hazardous waste in stationary or fixed storage tanks and that are in areas at risk of inundation from sea-level rise and flooding to conduct sea-level rise studies to address the risk of hazardous materials release from rising water levels, including rising groundwater. Require these facilities to incorporate best management practices to reduce the risk of release.*
- **Policy HS-P9.10**: *Prohibit new hazardous waste facilities in the following areas:*
  a) *Watersheds of an existing or planned drinking water reservoir.*
  b) Ecologically significant resource areas.
  c) Within 200 feet of an active or potentially active fault.
  d) *Within a 100-year floodplain.*
  e) Within a setback distance determined in accordance with DTSC guidance under SB 673, once final.
- **Action HS-A9.2:** Update the Oil Spill Contingency Plan to protect the Bay and Delta shoreline areas in the event of an oil or other hazardous materials spill.

5.10.3.2 PROPOSED CAP STRATEGIES AND ACTIONS

The following strategies and actions from the proposed Climate Action Plan (CAP) are applicable to hydrology and water quality:

Strategy DR-2: Ensure sustainable and diverse water supplies.

Strategy DR-2 Actions:

- Encourage Contra Costa Health to work with Groundwater Sustainability Agencies to ensure that new well permit applications are in accordance with County ordinances and State construction standards and require a hydrogeological evaluation in areas with known water shortages to ensure that the sustainable yield goals can be met.
- Require new development to demonstrate the availability of a safe, sanitary, and environmentally sound water delivery and wastewater treatment systems with adequate capacity. (PFS-P4.5, PFS-P4.6)
- Discourage new development that may reasonably lead to groundwater overdraft, subsidence, or other negative impacts, or which may reasonably depend on the import of unsustainable quantities of water from outside the county.
- Require the use of permeable surfaces for new or reconstructed hardscaped areas.
- In coordination with Groundwater Sustainability Agencies, expand opportunities for groundwater recharge.
- Work with water suppliers to expand recycled water systems as feasible, including considering additional treatment to allow for additional recycled water uses.

Strategy NI-1: Protect against and adapt to changes in sea levels and other shoreline flooding conditions.

Strategy NI-1 Actions:

- Require new development to locate habitable areas of buildings above the highest water level expected accounting for sea level rise and other changes in flood conditions, or construct natural and nature-based features, or a levee, if necessary, adequately designed to protect the project for its expected life. (HS-P6.1)
- Support the use of natural infrastructure, including ecosystem restoration and green infrastructure, to protect against sea level rise and associated shoreline flooding.
- Coordinate with State and regional agencies, neighboring jurisdictions, property owners, utilities, and others to prepare a sea level rise adaptation plan.
- Seek funding and pursue implementation of wetland restoration and other adaptation efforts for sea level rise.
- Convene a working group that includes local jurisdictions, local shoreline communities, community-based organizations, property owners, businesses, and other stakeholders to collaborate on shoreline flooding adaptation strategies.
- Identify opportunities for employing natural areas as buffers against rising sea levels.

5.10.4 Environmental Impacts

Impact 5.10-1: Implementation of the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. [Threshold HYD-1]

Proposed General Plan

New development that could occur under the proposed General Plan would involve soil disturbance during the construction phases and changes in land uses during the operational phases that could generate pollutants and affect water quality. Stormwater runoff would discharge into storm drains which ultimately flow into creeks, rivers, and San Francisco Bay, San Pablo Bay, Suisun Bay, and the Delta.

Construction Impacts

Clearing, grading, excavation, and other construction activities have the potential to impact water quality due to soil erosion and increases in the amount of silt and debris carried in runoff. Additionally, the use of construction materials such as fuels, solvents, and paints may present a risk to surface water quality. The refueling and parking of construction vehicles and other equipment on-site during construction may result in oil, grease, or related pollutant leaks and spills that could discharge into the storm drain system.

To minimize these potential impacts, future development that disturbs one acre or more of land would require compliance with the Construction General Permit (CGP) Order WQ 2022-0057-DWQ, which includes the preparation and implementation of a SWPPP. A SWPPP requires the incorporation of BMPs to control sediment, erosion, and hazardous materials contamination of runoff during construction and prevent contaminants from reaching receiving water bodies. The CGP also requires that prior to the start of construction activities, the project applicant must file PRDs with the SWRCB, which includes a Notice of

Intent, risk assessment, site map, annual fee, signed certification statement, and SWPPP. The construction contractor is required to maintain a copy of the SWPPP at the site and implement all construction BMPs identified in the SWPPP during construction activities. Prior to the issuance of a grading permit, the project applicant is required to provide proof of filing of the PRDs with the SWRCB and Contra Costa County.

Submittal of the PRDs and implementation of the SWPPP throughout the construction phase of the future development through implementation of the proposed General Plan would address anticipated and expected pollutants of concern from construction activities. As a result, water quality impacts associated with construction activities would be less than significant.

Operational Impacts

Future development has the potential to generate pollutants, such as nutrients, pesticides, sediment, trash and debris, oxygen demanding substances, oil and grease, and pathogens. These pollutants could eventually end up in stormwater discharged from the site and impact downstream watercourses. However, development under the proposed General Plan would be subject to the MS4 permit issued by the San Francisco Bay RWQCB, which was recently updated and reissued in December 2022. Project applicants would also need to comply with the requirements outlined in the CCCWP's *Stormwater C.3 Guidebook*. The Guidebook is updated periodically to reflect the latest MS4 permit requirements; therefore, future development under the proposed General Plan would need to comply with the latest thresholds listed for the area and the reissuance of the MS4 permit.

All projects that create or replace between 2,500 and 5,000 square feet of impervious surface must submit a Stormwater Control Plan for a Small Land Development Project, as described in CCCWP's *Stormwater C.3 Guidebook*. The project applicant also must incorporate at least one of the control measures listed in the guidebook:

- Disperse runoff from the roof or paved area to a vegetated area.
- Incorporate some amount of permeable pavement.
- Include a cistern or rain barrel, if allowed by the municipality.
- Incorporate a bioretention facility or planter box.

The 2022 revised MS4 permit has new stricter criteria for what constitutes a Regulated Project. Prior to July 1, 2023, approved projects that created or replaced more than 10,000 square feet of impervious surface were considered Regulated Projects. Effective July 1, 2023, approved projects that meet the following thresholds are considered Regulated Projects:

- A single-family home that is not part of a larger development that creates and/or replaces 10,000 square feet or more.
- All other projects that create and/or replace between 5,000 square feet and one acre of impervious surface. This now includes road and sidewalk repair projects that are greater than 5,000 contiguous square feet and road reconstruction and pavement widening that is greater than one contiguous acre.

These Regulated Projects are required to prepare a SCP that incorporates low impact design (LID) features. The SCP must include site design features that protect natural resources, source control measures that reduce pollutants in stormwater, and stormwater treatment measures that temporarily retain and treat stormwater on-

site prior to discharge to the storm drain system. The project applicant must also prepare an Operation and Maintenance Plan that details how the stormwater treatment measures will be inspected and maintained and provide a maintenance agreement that "runs with the land" for perpetuity.

The SCP would demonstrate that runoff from impervious areas is either dispersed to landscape or routed to a properly designed LID treatment facility. LID is an approach to land development (or redevelopment) that works with nature to manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features and minimizing impervious surfaces. There are many options for LID features, including bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements. By implementing LID principles and practices, water can be managed in a way that reduces the impact of built areas and directs runoff to natural landscape features. Applied on a broad scale, LID can maintain or restore a watershed's hydrologic and ecological function.

In addition, projects that create and/or replace one acre or more of impervious surfaces currently must comply with the hydromodification requirements of the MS4 permit, unless exempted. This requires the design and construction of stormwater treatment measures so that post-project runoff rates and durations match the pre-project runoff rates and durations for ten percent of the 2-year peak flow up to the pre-project 10-year peak flow. Since the proposed General Plan does not include specific or detailed development plans, SCPs are not required at this time. New development and redevelopment projects within the EIR Study Area will be required to prepare SCPs consistent with the guidance in the CCCWP Stormwater C.3 Guidebook and the MS4 permit at the time of project application.

As part of the statewide mandate to reduce trash within receiving waters, the County is required to adhere to the requirements of the California Trash Amendments and is also required to adhere to Provision C.10 of the San Francisco Bay MS4 permit. This includes the installation and maintenance of trash screening devices at all public curb inlets, grate inlets, and catch basin inlets or control measures for full trash capture equivalency. The trash screening devices must be approved by the SWRCB. Additionally, all development that discharges storm water associated with industrial activity must also comply with the requirements of the General Industrial Permit (Order No. 2014-0057-DWQ, last amended in 2018).

As described above in Section 5.10.3.1, *Proposed General Plan Goals, Policies, and Actions,* the proposed Conservation, Open Space, and Working Lands and Public Services and Facilities Elements of the proposed General Plan contain goals, policies, and actions that require local planning and development decisions to consider impacts to water quality. Compliance with and implementation of these proposed General Plan goals, policies, and actions, in conjunction with the CCCWP and MS4 permit requirements, would ensure that development pursuant to the proposed General Plan would not violate any water quality standards or waste discharge requirements for both construction and operational phases, and impacts would be less than significant.

Proposed CAP

The proposed CAP focuses on reducing GHG emissions and helping the County adapt to changing climate conditions. As part of the proposed CAP's strategies to reduce water use and increase drought resilience (DR), provisions which ensure sustainable and diverse water supply are encouraged. For example, Strategy DR-2 includes actions that encourage the County Environmental Health Division to work with GSAs to ensure

sustainable yield goals are met through hydrogeological evaluations in areas with known water shortages and that discourage new development that may lead to negative groundwater quality impacts. Therefore, implementation of the proposed CAP would likely be beneficial and would result in a less than significant effect on water quality.

Level of Significance Before Mitigation: Impact 5.10-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.10-1 would be less than significant.

Impact 5.10-2: Implementation of the proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. [Threshold HYD-2]

Proposed General Plan

Implementation of the proposed project would result in a significant environmental impact if it would substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. New development under the proposed General Plan could result in an increase in impervious surfaces, thus reducing groundwater recharge. Also, new projects that involve construction dewatering could have a temporary impact on the shallow groundwater aquifer.

Groundwater Use

Five of the eight groundwater basins within Contra Costa County are categorized as very low priority basins and there is no groundwater withdrawal from these basins for municipal water supply. EBMUD and CCWD are the main water purveyors in Contra Costa County. EBMUD's service area is generally in the western portion of the county and CCWD's service area includes most of central and northeastern Contra Costa County.

Although EBMUD does pump groundwater from the Santa Clara Valley – East Bay Plain groundwater basin, most of its water supply (i.e., over 90 percent) is from surface water sources (EBMUD 2021). Because of saltwater intrusion issues, there are no municipal groundwater wells in the northern portion of this groundwater basin that is within the county. Therefore, implementation of the proposed General Plan would not have a significant impact on groundwater supply in this basin. CCWD's water supply is surface water from the CVP and CCWD does not use groundwater to meet its demands.

The Diablo Water District obtains approximately 20 percent of its total water supply from groundwater wells that are in the San Joaquin Valley-East Contra Costa groundwater basin (Diablo Water District 2021). This has been designated as a medium priority basin by DWR and is not in overdraft. The Diablo Water District is one of the GSAs for the East Contra Costa Subbasin GSP. The GSP states that there are no signs of over pumping in this groundwater sub-basin and groundwater conditions reflect stability over the past 30 years (ECC GSA 2021). In addition, the Diablo Water District passed Regulation No. 10, Groundwater Sustainability and

Protection, in 2021, which requires new residential developments and non-residential groundwater wells to install groundwater monitoring wells, connect to a recycled water system (f developed), provide access to groundwater elevation data, and perform regular water quality testing (Diablo Water District 2021). Although Diablo Water District plans to install additional groundwater wells to supplement its surface water supply with future growth, compliance with the provisions of the GSP and Regulation No. 10 will ensure that there are no substantial decreases in groundwater supplies or interferences with sustainable groundwater management of the basin.

Bay Point, Discovery Bay, and Byron in eastern Contra Costa County have small community systems that rely on groundwater provided by Golden State Water Company and the Town of Discovery Bay Community Services District. These water agencies pump a total of 2,000 and 3,224 acre-feet per year of groundwater (Golden State Water Company 2021; Town of Discovery Bay Community Services District 2021). Golden State Water Company pumps groundwater from the Pittsburg Plain Basin, which is a very low priority basin because of minimal groundwater use and the availability of surface water supplies. Therefore, a GSP is not required for this basin. The Town of Discovery Bay Community Services District relies solely on groundwater, but it is a GSA with the East Contra Costa Subbasin GSP. As stated previously, the GSP indicates that the East Contra Costa Subbasin is being operated within its sustainable yield and projected future growth in this area is modest. Therefore, additional development in these areas would not substantially impact groundwater supplies. In addition, the Contra Costa County Ordinance Code 81-56 Section 1 states that any property needing water for domestic purposes must demonstrate an approved water supply and obtain written approval from the health officer for such development.

Additionally, future development pursuant to the proposed General Plan would be required to implement the water-efficient requirements specified in the CALGreen and California Plumbing Codes and the MWELO requirements for water efficient landscaping. Future projects that meet the criteria under California Water Code Section 10912 would be required to prepare a Water Supply Assessment (WSA) that demonstrates that project water demands would not exceed water supplies. In addition, residential, commercial, and industrial water usage can be expected to decrease in the future as a result of the implementation of water conservation practices.

Groundwater Recharge

Although new projects pursuant to the proposed General Plan would increase the number of impervious surfaces and could potentially impact groundwater recharge, these projects would be required to implement BMPs and LID measures, which include on-site infiltration, where feasible. The MS4 permit and the CCCWP *Stormwater C.3 Guidebook* require site design measures, source control measures, stormwater treatment measures, and hydromodification measures to be included in a SCP that must be submitted and approved by the County. These measures minimize the impact of impervious surfaces by including permeable pavement, drainage to landscape areas and bioretention areas, and the collection of rooftop runoff in rain barrels or cisterns. These measures would increase the potential for groundwater recharge and have a less than significant impact on groundwater levels.

If construction dewatering is required with future development within the EIR Study Area, a permit would need to be obtained from the County's Environmental Health Division for the construction of dewatering wells. An application and permit fee are required and the water discharge location, whether it is the sewer system or storm drain, must be approved by the local Building Department. The applicant must also evaluate the

impact of the dewatering system on neighboring wells or the potential of spreading contamination if near a cleanup site. Construction dewatering could have a temporary effect on the shallow groundwater aquifer, but this effect would be limited in terms of the quantity of water withdrawn and the duration of the withdrawal. Therefore, construction dewatering would not result in a significant impact in terms of groundwater recharge.

As described above in Section 5.10.3.1, *Proposed General Plan Goals, Policies, and Actions,* the proposed Conservation, Open Space, and Working Lands Land Use, and Public Services and Facilities Elements of the proposed General Plan contain goals, policies, and actions that require local planning and development decisions to consider impacts to water quality and groundwater supply. Compliance with and implementation of these proposed General Plan goals, policies, and actions would serve to minimize potential adverse impacts on groundwater.

Therefore, the proposed project would not significantly interfere with groundwater recharge and would not substantially deplete groundwater supplies. Thus, impacts would be less than significant.

Proposed CAP

The proposed CAP focuses on strategies to reduce GHG emissions and foster a sustainable community. As part of the CAP's strategies to reduce water use and increase drought resilience (DR), provisions which ensure sustainable and diverse water supply are encouraged. For example, Strategy DR-2 includes actions that encourage the County Environmental Health Division to work with GSAs to ensure sustainable yield goals are met through hydrogeological evaluations in areas with known water shortages and coordination with GSAs to expand opportunities for groundwater recharge. The CAP also provides reduction strategies to minimize this increase in GHG emissions through water conservation, water efficient retrofits, water-wise landscaping, and graywater and recycled water programs. Implementation of the proposed CAP would further reduce water demand as compared to the analysis provided above (and provided in Section 5.17, *Utilities and Service Systems*). Therefore, impacts to groundwater supply and recharge are less than significant.

Level of Significance Before Mitigation: Impact 5.10-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.10-2 would be less than significant.

Impact 5.10-3: Implementation of the proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off-site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows. [Threshold HYD-3]

Proposed General Plan

Erosion and Siltation

New development or redevelopment within the EIR Study Area and changes in land use would likely result in an increase in impervious surfaces. This, in turn, could result in an increase in stormwater runoff, higher peak discharges to storm drainage channels, and the potential to exacerbate creek bank erosion or cause destabilizing channel incision.

All potential new development pursuant to the proposed General Plan would be required to implement construction-phase BMPs as well as post-construction site design, source control measures, and treatment controls in accordance with the requirements of the CGP, the MS4 Permit, and the CCCWP *Stormwater C.3 Guidebook*. Typical construction BMPs include silt fences, fiber rolls, catch basin inlet protection, water trucks, street sweeping, and stabilization of truck entrances and exits. Each new development or redevelopment project that disturbs one or more acre of land would also be required to prepare and submit a SWPPP to the SWRCB that describes the measures to control discharges from construction sites. The SWPPP must list BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources.

Once potential future development projects have been constructed, there are C.3 requirements in the MS4 permit for new development or redevelopment projects that must be implemented and include site design measures, source control measures, LID, and stormwater treatment measures that address stormwater runoff and would reduce the potential for erosion and siltation. Site design measures include minimizing impervious surfaces, conserving the natural areas of the site as much as possible, and protecting slopes and channels from erosion. LID measures include the use of permeable pavements, directing runoff to pervious areas, and the construction of bioretention areas. The SCP must also include operation and maintenance procedures and an agreement to maintain any stormwater treatment facilities for perpetuity. Adherence to the streambed alteration agreement process under Sections 1601 to 1606 of the California Fish and Game Code would further reduce erosion and siltation impacts that may occur due to streambed alterations. Projects that create or replace one acre or more of impervious surface and are subject to hydromodification may not increase the erosion potential of the receiving stream over pre-project conditions. Compliance with these regional and local regulatory requirements will ensure that erosion and siltation impacts from implementation of the proposed General Plan would be less than significant.

Flooding On- or Off-Site

New development and/or redevelopment and changes in land uses could result in increases in impervious surfaces, which in turn could result in an increase in stormwater runoff, higher peak discharges to drainage channels, and the potential to cause nuisance flooding in areas without adequate drainage facilities. However, all potential future development must comply with the requirements of the MS4 Permit and the CCCWP *Stormwater C.3 Guidebook*. Regulated projects must implement BMPs, including LID BMPs and site design BMPs, which effectively minimize imperviousness, temporarily detain stormwater on-site, decrease surface water flows, and slow runoff rates. Projects that create and/or replace one acre or more of impervious surface must also adhere to the hydromodification requirements of the CCCWP *Stormwater C.3 Guidebook* to ensure that post project runoff does not exceed pre-project runoff for 10 percent of the pre-project 2-year peak flow rate up to the pre-project 10-year peak flow rate. Adherence to these regulatory requirements would minimize the amount of stormwater runoff from new development and redevelopment within the EIR Study Area. Therefore, the projects pursuant to the proposed General Plan would not result in flooding on- or off-site and impacts would be less than significant.

Stormwater Drainage System Capacity

As stated in the impact discussions above, an increase in impervious surfaces with new development or redevelopment could result in increases in stormwater runoff, which in turn could exceed the capacity of existing or planned stormwater drainage systems. However, municipalities within the county have storm drain master plans, green infrastructure plans, and capital improvement programs that account for future development and expansion of the storm drain system, as needed. Also, the CCCFCWCD has detailed Flood Control Zone and Drainage Area maps that are used to evaluate future development plans within each zone or area and determine if the existing storm drainage infrastructure is adequate to accommodate the proposed projects.

All potential future development and redevelopment projects would be required to comply with the MS4 permit requirements and follow the CCCWP *Stormwater C.3 Guidebook* when designing on-site stormwater treatment facilities. Hydrology studies and SCPs are subject to County review for projects in the unincorporated areas to verify that the on-site storm drain systems and treatment facilities can accommodate stormwater runoff from the site and would not exceed the capacity of downstream drainage systems at the point of connection. Also, implementation of the C.3 provisions for new development, which include LID design and bioretention areas, would minimize increases in peak flow rates and runoff volumes, thus reducing stormwater runoff to the storm drain system. In addition, the County requires the payment of drainage area fees before filing the final map for new subdivisions or prior to the issuance of a building permit. These fees are paid directly to the CCCFCWCD or via cities per fee collection agreements and the funds are used to construct new storm drain infrastructure and/or maintain or repair existing storm drain infrastructure, as needed. With implementation of these regulatory requirements, there would not be a significant increase in stormwater runoff to the existing storm drain systems.

Also, new development pursuant to the proposed General Plan would not create substantial additional sources of polluted runoff. During the construction phase, projects would be required to prepare SWPPPs, thus limiting the discharge of pollutants from the site. During operation, projects must implement BMPs and LID measures that minimize the amount of stormwater runoff and associated pollutants.

With implementation of these control measures and regulatory provisions to limit runoff from new development sites, the proposed General Plan would not result in significant increases in runoff that would exceed the capacity of existing or planned storm drain facilities, and the impact is less than significant.

Redirecting Flood Flows

The discussion above regarding on- and off-side flooding is also applicable to the analysis of impeding or redirecting flood flows. Since new development projects are required to comply with MS4 permit requirements, implement the procedures in the CCCWP *Stormwater C.3 Guidebook,* and retain stormwater on-site via the use of LID design and bioretention facilities, any flood flows would also be retained for a period of time on-site, which would minimize the potential for flooding impacts. Impact Discussion 5.10-4 discusses the potential for impeding or redirecting flood flows with development in areas within the 100-year floodplain. Based on these discussions, impacts related to impeding or redirecting flood flows would be less than significant.

As described above in Section 5.10.3.1, *Proposed General Plan Goals, Policies, and Actions,* the proposed Conservation, Open Space, and Working Lands, Health and Safety, Land Use , and Public Services and Facilities Elements of the proposed General Plan contain goals, policies, and actions that require local planning and development decisions to consider impacts of future development and redevelopment on erosion and siltation, surface drainage, and flooding. Compliance with and implementation of these proposed General Plan goals, policies, and actions, in conjunction with State and local requirements, would not result in substantial erosion or siltation and would not substantially increase the rate of surface runoff that would result in flooding, impede or redirect flood flows, or exceed the capacity of the drainage system. Impacts would be less than significant.

Proposed CAP

The proposed CAP focuses on the reduction of GHG emissions and includes strategies and actions for reducing these emissions in the water and wastewater sectors. As part of the proposed CAP's strategies related to resilient communities and natural infrastructure (NI), provisions protect against and adapt to changes in sea levels and other shoreline flooding conditions. For example, Strategy NI-1 includes actions that establish requirements for new development to locate habitable areas above the highest expected water level for the lifetime of the project, support natural infrastructure that protects against sea-level rise and shoreline flooding, coordinate with State and regional agencies to prepare for sea-level rise adaptation, and identify opportunities for employing natural area buffers against sea levels. Therefore, implementation of the proposed CAP would have a less than significant effect on erosion or siltation, storm drain capacity, flooding on- or off-site, or impeding or redirecting flood flows.

Level of Significance Before Mitigation: Impact 5.10-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.10-13 would be less than significant.

Impact 5.10-4: Implementation of the proposed project would not risk release of pollutants due to project inundation if in a flood hazard, tsunami, or seiche zones. [Threshold HYD-4]

Proposed General Plan

Flood Hazard Zones

Implementation of the proposed General Plan could involve development of some projects in FEMA 100-year flood zones. As shown in Figure 5.10-3, *FEMA 100-Year and 500-Year Flood Zones,* large areas around the north and the eastern portion of Contra Costa County are within the 100-year floodplain, as well as inland areas adjacent to creeks and streams.

Future development in these areas would be subject to Contra Costa County's Floodplain Management Ordinance. Prior to the start of construction or development within a Flood Hazard Area (i.e., 100-year floodplain or coastal high hazard area), the County requires project applicants to apply for a Floodplain Permit from the Public Works Department and construct new development in accordance with the standards of construction in Article 82-28.1002. The standards of construction vary depending on where the proposed structure is located, but typically the finished floor must be elevated at least one to two feet above the base flood elevation. Prior to occupancy of any building, proof that a Letter of Map Revision (LOMR) and an elevation certificate have been submitted to FEMA must be provided to the County. Compliance with FEMA's NFIP requirements and the County's floodplain requirements would reduce potential flood hazards and ensure that pollutants are not released during flood inundation.

Sea-Level Rise

Similar to flood hazard zones, implementation of the proposed General Plan could involve development of some projects in areas that will be inundated by sea-level rise and associated coastal flooding. As shown on Figures 5.10-5 through Figure 5.10-8, many areas along the western, northern, and eastern portions of the county will be impacted by sea-level rise by 2050 and 2100.

Future development under the proposed project within 100 feet of the San Francisco, San Pablo, or Suisan Bay shoreline would be subject to review and approval by BCDC. Future large shoreline projects, including shoreline protection projects, would be required to conduct a sea-level rise risk assessment and be designed to be resilient to a midcentury sea-level rise projection. BCDC requires that, if it is likely that the project will remain in place longer than midcentury, an adaptive management plan be developed to address the long-term impacts that will arise, based on the risk assessment.

Sea-level rise is also expected to raise groundwater levels, inundating areas with contaminated soils. Given that some contaminated sites in the county are near the shoreline, rising groundwater associated with sea-level rise may cause the release of pollutants. Sea-level rise and associated groundwater rise are considered to be an effect of the environment on the project.

As explained in Chapter 5, *Environmental Analysis,* of this Draft EIR, the California Supreme Court has determined that the evaluation of the significance of project impacts under CEQA should focus on the potential impacts of the proposed project on the environment, including whether the proposed project may exacerbate any existing environmental hazards. Sea-level rise is an existing environmental hazard in Contra

Costa County. The discussion in this section explains the potential of the proposed project to exacerbate impacts from sea-level rise. However, the effects of sea-level rise on the proposed project are not subject to CEQA review following the *California Building Industry Association vs. Bay Area Air Quality Management District* (CBIA vs. BAAQMD) case.[2] Therefore, this EIR does not make a finding regarding level of impact from sea-level rise.

Dam Inundation

There are several portions of the county that are impacted by dam inundation zones, as shown in Figure 5.10-9, *Dam Inundation Zones*. The probability of dam failure is low and there has never been a reported dam failure in Contra Costa County (Contra Costa County 2018). In addition, dam owners are required to maintain EAPs that include procedures for damage assessment and emergency warnings. An EAP identifies potential emergency conditions at a dam and specifies preplanned actions to help minimize property damage and loss of life should those conditions occur. The Contra Costa County Office of Emergency Services maintains copies of the most recent dam EAPs and inundation maps and uses this information to notify downstream areas in the event of a dam failure. The likelihood of catastrophic dam failure is very low.

Tsunami and Seiches

Given that Contra Costa County has never been impacted by a tsunami, the risk of flooding and the release of pollutants due to a tsunami event is unlikely. The probability that tsunamis would impact San Francisco Bay and San Pablo Bay is much smaller than areas along the Pacific Coast because the bays are enclosed bodies of water. Due to the infrequent nature of tsunamis and relatively low predicted tsunami wave heights in the area, the county is reasonably safe from tsunami hazards. Also, the County's Floodplain Ordinance includes requirements for development within coastal high-hazard areas, which include tsunami zones. In addition, there are various precautions and warning systems that would be implemented by the County in the event of a tsunami. As discussed previously, seiches are unlikely to occur because tsunamis have frequencies too short to resonate within San Pablo and San Francisco Bay.

Summary

As described above in Section 5.10.3.1, *Proposed General Plan Goals, Policies, and Actions,* the proposed Conservation, Open Space, and Working Lands, Health and Safety, Land Use, and Public Services and Facilities Elements of the proposed General Plan contain goals, policies, and actions that require local planning and development decisions to address the potential for flooding, dam inundation, and tsunamis. Compliance with and implementation of these proposed General Plan goals, policies, and actions, in conjunction with FEMA and County regulatory requirements regarding construction in 100-year floodplains, the potential impact that there would be a release of pollutants from flooding, dam inundation, tsunamis, or seiches would be less than significant.

[2] *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369.

Proposed CAP

The proposed CAP focuses on the reduction of GHG emissions and includes strategies and actions for reducing these emissions in the water and wastewater sectors. As part of the CAP's strategies related to resilient communities and natural infrastructure (NI), provisions protect against and adapt to changes in sea levels and other shoreline flooding conditions. For example, Strategy NI-1 includes actions that establish requirements for new development to locate habitable areas above the highest expected water level for the lifetime of the project, support natural infrastructure that protects against sea-level rise and shoreline flooding, coordinate with State and regional agencies to prepare for sea-level rise adaptation, and identify opportunities for employing natural area buffers against sea levels. Therefore, implementation of the proposed CAP would not result in any issues related to flooding and would have a less than significant impact on flood hazards.

Level of Significance Before Mitigation: Impact 5.10-4 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.10-13 would be less than significant.

Impact 5.10-5: The proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. [Threshold HYD-5]

Proposed General Plan

Adherence to the Construction General Permit, the MS4 permit, and the CCCWP *Stormwater C.3 Guidebook* would ensure that surface and groundwater quality are not adversely impacted during construction and operation of future development pursuant to the proposed General Plan. As a result, site development would not obstruct or conflict with implementation of the San Francisco Bay RWQCB's and the Central Valley RWQCB's Water Quality Control Plans (Basin Plans).

There are three groundwater basins within Contra Costa County that have GSPs. No water agencies are using groundwater from the Santa Clara Valley – East Bay Plain Subbasin as a municipal water supply source. The Livermore Valley Subbasin is managed by the Zone 7 Water Agency, which submitted an Alternative GSP. The groundwater basin is not in critical overdraft condition and the 2021 Alternative GSP demonstrates that the basin has continued to operate within its sustainable yield over a period of at least 10 years. The San Joaquin Valley – East Contra Costa Subbasin is not in critical overdraft and does not show any signs of over-pumping. In addition, the water purveyors within the Contra Costa County service area rely primarily on surface water, which accounts for more than 85 percent of their water supply.

As described above in Section 5.10.3.1, *Proposed General Plan Goals, Policies, and Actions,* the proposed Conservation, Open Space, and Working Lands, Land Use, and Public Services and Facilities Elements of the proposed General Plan contain goals, policies, and actions that require local planning and development decisions to consider impacts to groundwater supply and groundwater management. Therefore, future development and redevelopment as a result of the proposed project would not obstruct or conflict with any groundwater management plans, and the impact would be less than significant.

Proposed CAP

The proposed CAP focuses on strategies to reduce GHG emissions and foster a sustainable community. It provides reduction strategies to minimize increases in GHG emissions through water conservation, water efficient retrofits, water efficient landscaping, and graywater and recycled water programs. Proposed CAP Strategy DR-2 includes actions that encourage the County Environmental Health Division to work with GSAs to ensure sustainable yield goals are met through hydrogeological evaluations in areas with known water shortages and coordination with GSAs to expand opportunities for groundwater recharge. The CAP also provides reduction strategies to minimize this increase in GHG emissions through water conservation, water efficient retrofits, water-wise landscaping, and graywater and recycled water programs. Therefore, implementation of the proposed CAP would not conflict or obstruct implementation of the Basin Plan or GSP, and impacts are considered less than significant.

Level of Significance Before Mitigation: Impact 5.10-5 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.10-4 would be less than significant.

5.10.5 Cumulative Impacts

The geographic context used for the cumulative assessment to hydrology and water quality encompasses the watersheds within Contra Costa County (see Figure 5.10-1, *Watersheds of Contra Costa County)*. New development in these watersheds could increase impervious areas, thus increasing runoff and flows into the storm drainage systems. All future development would be required to comply with the MS4 Permit and the CCCWP *Stormwater C.3 Guidebook* and implement BMPs that direct drainage to landscaped areas and incorporate bioretention facilities that reduce stormwater runoff into the site design. Implementation of these BMPs on a regional basis would reduce cumulative impacts to hydrology and drainage to a less than significant level.

All projects would be required to comply with various County ordinances and policies as well as numerous water quality regulations that control construction-related and operational discharge of pollutants into stormwater. The water quality regulations implemented by the San Francisco Bay RWQCB and the Central Valley RWQCB take a basin-wide approach and consider water quality impairment in a regional context. For example, the NPDES Construction General Permit ties receiving water limitations and Basin Plan objectives to terms and conditions of the permit, and the MS4 Permit requires all permittees to manage stormwater systems and be collectively protective of water quality. Projects in these watersheds would implement structural and nonstructural source-control BMPs that reduce the potential for pollutants to enter runoff and treatment control BMPs that remove pollutants from stormwater. Therefore, cumulative water quality impacts would be less than significant after compliance with these permit requirements, and impacts would not be cumulatively considerable.

Projects in the watersheds may be constructed within 100-year flood zones, areas of sea-level rise, dam inundation zones, or tsunami inundation zones. Such projects would be mandated to comply with NFIP requirements. In addition, other jurisdictions within these watersheds regulate development within flood zones

in a similar manner as the County Ordinance Code and in compliance with FEMA standards to limit cumulative flood hazard impacts. Therefore, cumulative impacts to hydrology, drainage, and flooding would be less than significant, and impacts of the proposed project would not be cumulatively considerable.

5.10.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.10.7 Mitigation Measures

No mitigation measures are required.

5.10.8 Level of Significance After Mitigation

Impacts would be less than significant.

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5. Environmental Analysis
HYDROLOGY AND WATER QUALITY

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5.11 LAND USE AND PLANNING

This section describes the regulatory framework and existing conditions of the Environmental Impact Report (EIR) Study Area and evaluates the potential land use and planning impacts from future development that could occur by adopting and implementing the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project.

5.11.1 Environmental Setting

5.11.1.1 REGULATORY BACKGROUND

Regional

Plan Bay Area 2050

Plan Bay Area 2050 is the regional transportation plan/sustainable community strategy, as mandated by the Sustainable Communities and Climate Protection Act (Senate Bill [SB] 375). Plan Bay Area lays out a development scenario for the nine-county Bay Area region that works to align transportation and land use planning in order to reduce vehicle miles traveled (VMT) through modified land use patterns. The current Plan Bay Area projects growth and development patterns through 2050 and was recently adopted in October 2021 (ABAG/MTC 2021). Plan Bay Area is prepared and regularly updated by the Metropolitan Transportation Commission (MTC) in partnership with the Association of Bay Area Governments (ABAG), Bay Area Air Quality District (BAAQMD), and Bay Conservation and Development Commission (BCDC). Each of the agencies has a different role in regional governance. ABAG primarily does regional land use planning, housing, environmental quality, and economic development; MTC is tasked with regional transportation planning, coordinating, and financing; BAAQMD is responsible for regional air pollution regulation; and BCDC's focus is to preserve, enhance, and ensure responsible use of the San Francisco Bay.

Delta Plan

The Delta Plan, adopted by the Delta Stewardship Council on May 16, 2013, is a comprehensive long-term management plan for the Sacramento-San Joaquin River Delta. The Delta Plan includes rules and recommendations that support the State's goals for the Delta to: (1) improve water supply; (2) protect and restore a vibrant and healthy Delta ecosystem; and (3) preserve, protect, and enhance the unique agricultural, cultural, and recreational characteristic of the Delta. The 14 regulatory policies in the Delta Plan are enforceable through regulatory authority included in the Delta Reform Act, enacted as part of SB X7. These policies include a requirement for Delta Plan consistency findings for "covered actions," which include the proposed General Plan. The Delta Plan covers the Legal Delta, which is shown in Figure 5.11-1, *Sacramento-San Joaquin Delta*, of this EIR and encompasses the northeastern part of the county.

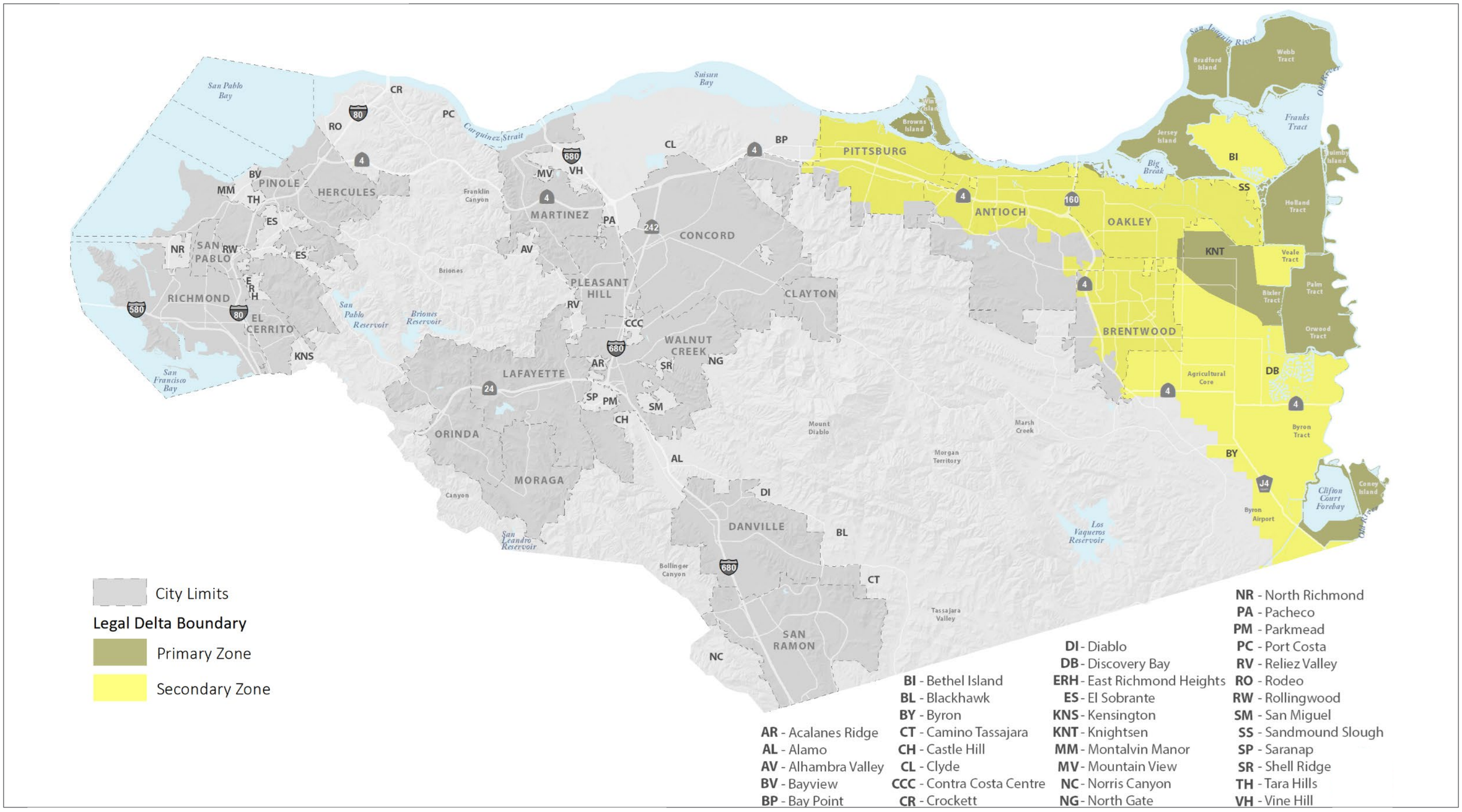
Land Use and Resource Management Plan for the Primary Zone of the Delta

The Delta Protection Act of 1992 established the Delta Protection Commission to manage the conservation and enhancement of the Delta's natural resources, sustain agriculture, and meet recreational demands. The Act defines a Primary Zone as the principal jurisdiction, while the Secondary Zone is outside the Primary Zone and within the Legal Delta (see Figure 5.11-1). The Primary Zone of the Delta includes approximately 500,000 acres of waterways, levees, and farmed lands extending over portions of five counties: Solano, Yolo, Sacramento, San Joaquin, and Contra Costa.

The Commission must prepare and adopt a Land Use and Resource Management Plan for the Primary Zone, meeting specific goals. The Land Use and Resource Management Plan guides local land use decisions related to agriculture, flood protection, Delta communities, natural resources, recreation, and utilities and infrastructure. General plans and projects in the five Delta counties listed above must be consistent with the Land Use and Resource Management Plan and are subject to review by the Commission (DPC 2010).

The San Francisco Bay Plan

The San Francisco Bay Plan, prepared over three years by the San Francisco Bay Conservation and Development Commission, involved extensive consultations and support from various agencies, university faculties, and business organizations. The Plan resulted in 23 technical reports and was completed in 1968. It was transmitted to the California Legislature and Governor in 1969, fulfilling the original mandate of the McAteer-Petris Act of 1965. The Plan consists of two essential parts: policies for future Bay and shoreline use and maps that apply these policies to the present Bay and shoreline. The San Francisco Bay Plan defines the San Francisco Bay as all the open water and slough areas from the Golden Gate and the southern end of the Bay to the eastern end of Suisun Bay and Montezuma Slough, including submerged lands, tidelands, and marshlands (SFBCDC 2024).



Source: California Delta Protection Commission - Delta Protection Act of 1992.

Figure 5.11-1
Sacramento-San Joaquin Delta

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Local

Contra Costa County Airport Land Use Compatibility Plan

The Contra Costa County Airport Land Use Combability Plan (ALUCP) is a planning document that is used to promote compatibility between the airports in Contra Costa County and the land uses that surround them. As adopted by the Contra Costa County Airport Land Use Commission, it serves as a tool for use by the Commission in fulfilling its duty to review airport and adjacent land use development proposals. Additionally, the Plan sets compatibility criteria applicable to local agencies in their preparation or amendment of land use plans and ordinances and to landowners in their design of new development.

The Contra Costa County ALUCP was adopted by the Contra Costa County Airport Land Use Commission in 2000. Recently, to promote economic development, the County amended its ALUCP with regard to Byron Airport to substantially broaden the range of uses allowed by-right on the airport property. The Byron Airport Development Program was adopted by the Board of Supervisors on June 7, 2022. This included adoption of a County-initiated General Plan amendment and approval of a development plan modification that established development standards, such as maximum building heights, maximum floor area, and landscaping requirements. Additionally, the ALUCP was updated with new policies and maps specific to Byron Airport that reflect the 2017 Airport Layout Plan for Byron Airport, the 2005 Byron Airport Master Plan, and guidance set forth in the most recent version of the Caltrans California Airport Land Use Planning Handbook.

Byron Airport Master Plan

The Master Plan for Byron Airport was last updated in 2005 and involves a 20-year planning period, with 2003 as the base year. In addition to an assessment of the airport's existing facilities, the Plan provides forecasts of aviation activity and includes individual airport improvement recommendations for 5-, 10-, and 20-year planning horizons. The intent of the Byron Airport Master Plan is to provide Contra Costa County with guidance concerning how the airport should develop over the planning period (Contra Costa County 2005b).

Buchanan Field Airport Master Plan

The Master Plan for Buchanan Field Airport was last updated in 2008 and addresses a variety of concerns with the formulation of a long-range physical development plan for the airport. The primary goal of the Plan is the continued improvement of the airport in a manner that is financially realistic and that is appropriate in consideration of its surroundings. Like the Byron Airport Master Plan, the Buchanan Field Airport Master Plan assesses and directs improvements that will likely be necessary to accommodate future aviation needs (Contra Costa 2008).

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)

The East Contra Costa County Habitat Conservancy developed the East Contra Costa County HCP/NCCP, which provides regional conservation and development guidelines to protect natural resources, including wetlands, while improving and streamlining the permit process for take of State and federally listed species. The 30-year Plan was approved at the local level in 2006 and 2007, and permits were issued by CDFW and USFWS in 2007. The Plan allows Contra Costa County, the Contra Costa County Flood Control and Water

Conservation District, the East Bay Regional Park District (EBRPD), and the Cities of Brentwood, Clayton, Oakley, and Pittsburg—a group collectively referred to as the Permittees—to authorize endangered species permitting for activities and projects in the region, performed or approved by the Permittees, while providing comprehensive species, wetlands, and ecosystem conservation and contributing to the recovery of endangered species in Northern California.

Contra Costa County Ordinance Code

Chapter 82-1, 65/35 Land Preservation Plan

This chapter states that urban development in the county shall be limited to no more than 35 percent of the land in the county. At least 65 percent of all land in the county shall be preserved for agriculture, open space, wetlands, parks, and other nonurban use. The County's Urban Limit Line (ULL) was established in 1990 to facilitate enforcement of the 65/35 Plan.

5.11.1.2 EXISTING CONDITIONS

Ranging from urban to rural, land in Contra Costa County is used for many purposes. In the West and Central County, primary uses in suburban cities and towns are residential, commercial, and industrial. In the East County, land is still primarily used for agriculture and general open space. To a large extent the county is made up of "bedroom communities" populated by a commuter workforce. Over the years, development pressure has steadily moved eastward from the flat Baylands, to the valleys near Mount Diablo, and now to the communities in East County. The elongated corridors of cities and towns are connected by a network of major transportation routes linking the county directly to employment centers in San Francisco and Alameda Counties. As a whole, the county remains relatively undeveloped.

Land use designations represent the intended future use of each parcel of land and are intended to provide a vision of the future organization of uses, while maintaining a flexible structure to allow for changes in economic conditions, community visions, and environmental conditions. As described in Chapter 3, *Project Description*, the proposed project would amend the land use designations in the existing General Plan to consolidate the designations into a range that encompasses the land use vision for the county's future. The proposed General Plan would also change the land use map to better reflect existing uses on the ground today and to increase the allowed density and intensity of development in community cores. Section 3.6.1.5, *Major Changes from the Existing General Plan*, in Chapter 3 of this Draft EIR describes the proposed changes to the land use designations from the existing General Plan.

5.11.2 Thresholds of Significance

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project would normally have a significant effect on the environment if the project would:

LU-1 Physically divide an established community.

LU-2 Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

5.11.3 Programs, Plans, and Policies

5.11.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to land use and planning. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Goal LU-1**: Coordinated and effective planning over the life of this General Plan.
  - **Policy LU-P1.1**: The General Plan Update Environmental Impact Report (EIR) assumes the following maximum development projections for the year 2045:
    a) 23,200 new dwelling units
    b) 1.2 million square feet of new commercial and office space
    c) 5 million square feet of new industrial space

    If new development approved within the unincorporated county reaches the maximum number of residential units and commercial/office and industrial square feet projected in the General Plan EIR, require that environmental review conducted for any subsequent development project address growth impacts that would occur from development exceeding the General Plan EIR's projections.
  - **Action LU-A1.1**: Track growth to ensure it does not exceed the development projections analyzed in the General Plan EIR and described in Policy LU-P1.1 without subsequent environmental review.
  - **Action LU-A1.3**: Biennially review and update the General Plan Land Use Map to ensure major land use changes, such public land acquisitions, are accurately reflected.

- **Goal LU-2:** Growth and conservation that are balanced to preserve and enhance the quality of life, protect the environment and public safety, and benefit all those who live or work in Contra Costa County.
  - **Policy LU-P2.1**: Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.
  - **Policy LU-P2.2**: Enhance the ULL's effectiveness by supporting efforts to acquire and permanently protect land along the ULL boundary.
  - ***Policy LU-P2.3****: Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.*
  - ***Policy LU-P2.4****: Prohibit major subdivisions outside the ULL as well as successive minor subdivisions of lots outside the ULL that were created through previous subdivisions.*
  - **Policy LU-P2.5**: Encourage infill development.
  - **Policy LU-P2.6**: Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).

- **Policy LU-P2.7**: In areas with a Residential land use designation, relate single-family residential density to the availability of utility services as follows:
  a) Require a 5-acre minimum lot size where no public water or sanitary sewer service is available.
  b) Require a 1-acre minimum lot size where either public water or sanitary sewer service is available, but not both.

  Where public water and sanitary sewer services are available, allowable density will be based on the General Plan Land Use Map designation, as well as drainage, health, safety, and other applicable standards.
- **Policy LU-P2.8**: Discourage extension of water and sanitary sewer lines into areas outside the ULL, except to serve public and semi-public uses that are not growth inducing, or when such extension is necessary to address a declared public health emergency. When lines are extended outside the ULL, they should be designated to service the intended use only, and not allow for additional future service connections.
- **Policy LU-P2.9**: Consistently advise the Contra Costa County Local Agency Formation Commission (LAFCO) to support the 65/35 Land Preservation Standard and County ULL when considering requests for annexation to water and wastewater districts and extension of services.

- **Goal LU-3**: A range and distribution of compatible and sustainable land uses that meet the county's social and economic needs and allow for balanced housing and job growth.
  - **Policy LU-P3.1:** Support regional efforts to achieve a jobs-housing balance within the county and within subregions of the county by maintaining an adequate supply of developable land designated for job-generating uses. For any General Plan amendment proposing to convert commercial, industrial, or office land uses to residential or non-urban land uses, evaluate the project's effect on the local and countywide jobs-housing balance.
  - **Policy LU-P3.2:** Encourage residential development in or near existing employment centers, and development of job-generating uses near areas that are primarily residential. Where large-scale residential or commercial development is planned, encourage a mix of housing and employment opportunities unless doing so would exacerbate a severe jobs-housing imbalance in the area.
  - **Policy LU-P3.3**: Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.
  - **Policy LU-P3.6**: Encourage incorporation of childcare, adult daycare, and similar beneficial uses into new development. To maximize accessibility, encourage childcare facilities in residential neighborhoods, employment centers, schools, public libraries, hospitals, religious facilities, and parks, as well as near transit stops.

- **Policy LU-P3.7**: Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.

- **Goal LU-4**: Sustainable and high-quality design.
  - ***Policy LU-4.2****: Continuously improve community appearance by requiring high-quality designs and materials that complement their surroundings, with emphasis on enhancing public spaces and historic and cultural resources.*
  - **Policy LU-4.3**: Encourage smooth transitions between new and existing development.
  - **Policy LU-4.4**: Require site and building reconfigurations, setback increases, landscaping enhancements, screening, or other design solutions wherever necessary to minimize potential conflicts between uses.
  - **Policy LU-4.6**: Require commercial and mixed-use projects to create inviting, pedestrian-oriented streetscapes wherever possible.
  - **Policy LU-4.7**: Encourage residential and mixed-use buildings over four stories tall to incorporate setbacks or other massing changes on upper floors to create more human-scale and comfortable pedestrian environments.

- **Goal LU-5**: Coordinated land use, transportation, and infrastructure decisions so that growth occurs in locations where capacity and services are available or committed.
  - **Policy LU-P5.1**: Allow development only where requisite community services, facilities, and infrastructure can be provided.
  - **Policy LU-P5.2**: Consider the potential locations of planned public infrastructure projects (e.g., transit lines, major roadways, drainage improvements) when evaluating development proposals and deny development applications that would interfere with implementation of such projects.
  - **Action LU-A5.1:** In 2025 and at least once every five years thereafter, evaluate the County's off-street parking standards to ensure their continued applicability in light of changing conditions, trends, and technology. Each evaluation should assess the appropriateness of reducing or eliminating parking minimums, taking off-site impacts into account, and recommend strategies for reducing parking demand.
  - **Action LU-A5.2**: Work with LAFCO and utility service providers to:
    a) Annex lands planned for urban development by this General Plan into their service areas.
    b) Detach private lands, especially agricultural or rural lands, from district boundaries if they are not planned for urban development and are not currently served.

- **Goal LU-6:** Effective coordination with other agencies to ensure orderly planning and consistent service delivery.
  - **Policy LU-P6.1**: Ensure that County projects and decisions on private development and land use activities within the Legal Delta are consistent with:

a) The Land Use and Resource Management Plan for the Primary Zone of the Delta adopted by the Delta Protection Commission
b) The Delta Plan adopted by the Delta Stewardship Council

- **Policy LU-P6.2**: Work collaboratively with cities and special districts (e.g., East Bay Regional Park District and utility service providers) to address regional issues of mutual concern and coordinate on decisions and actions that affect residents of nearby unincorporated areas.
- **Policy LU-P6.3**: When a project is within the sphere of influence of a city within Contra Costa County, or adjacent to a city located in a neighboring county, refer the project to the city for review and comment.
- **Policy LU-P6.4**: Coordinate with LAFCO to ensure that city annexations and related land use decisions do not:
  a) Interfere with attainment of the County's land use goals as expressed in this General Plan. Include Housing Element inventory sites unless provisions have been made to transfer the site's assigned units to the receiving city's Regional Housing Needs Allocation (RHNA).
  b) Create new unincorporated "islands" (i.e., isolated areas substantially surrounded by incorporated cities).

- **Goal LU-7**: A variety of residential neighborhood types that provide housing opportunities and desirable living environments for all residents.
  - **Policy LU-P7.1**: Plan for a variety of housing types. Encourage innovative, nontraditional designs and layouts in response to evolving housing trends and needs.
  - **Policy LU-P7.2**: Provide housing opportunities for all economic segments of the population, ensuring that affordable housing is distributed throughout the county and is not concentrated in traditionally lower-income areas. Promote development of affordable housing near public transit and essential services whenever possible.
  - **Policy LU-P7.5:** Require new residential projects to provide convenient access/connections to public transit, local destinations, and multi-use trails whenever possible.

- **Goal LU-8**: A variety of well-located commercial and mixed-use areas that provide jobs and services, create civic gathering places and community focal points, accommodate higher-density housing, and contribute to the tax base of the County.
  - **Policy LU-P8.1**: Plan for a sufficient quantity, variety, and distribution of commercial uses to meet the basic daily needs of residents in communities throughout the county.
  - **Policy LU-P8.2**: Support development of neighborhood-serving commercial services in and adjacent to residential areas where they can be accessed easily using multiple modes of transportation.
  - **Policy LU-P8.3**: Encourage adaptive reuse of aging commercial buildings and sites.
  - **Policy LU-P8.4:** Support rehabilitation of commercial centers, encouraging improvements that enhance appearance, sustainability, and non-motorized (pedestrian, bicycle, etc.) access and safety.

- **Policy LU-P8.6**: Discourage new strip commercial development, allowing it only when alternative layouts are infeasible at the proposed site.
- **Policy LU-P8.8**: Accommodate a variety of land uses at Buchanan Field and Byron Airports, consistent with the master plan for each facility. A range of commercial aviation functions, including fixed-base operators, aviation businesses, and passenger facilities and services, should be allowed, as well as ancillary uses that support the economic viability of each airport.

- **Goal LU-9**: Industrial areas that support advanced manufacturing, research and development, production, and distribution, repair, and other sectors that anchor the county's economy.
  - **Policy LU-P9.1**: Welcome industries that create living-wage jobs and career advancement opportunities for county residents while minimizing environmental degradation.
  - **Policy LU-P9.2**: Welcome new business that improve supply chains for core local industries, including agriculture and food.
  - **Policy LU-P9.3**: Designate industrial land adjacent to major transportation infrastructure (i.e., freeways, rail lines, ports) and in other locations where impacts of industrial traffic on neighborhoods and commercial areas can be minimized.
  - **Policy LU-P9.4**: Prioritize industrial land along the Bay and Delta shoreline for uses requiring deep-water access or large quantities of raw water for their processes (e.g., cooling), and discourage siting of other industrial uses that could be accommodated elsewhere. Continue partnering with regional agencies to ensure reliable deep-water access to industrial sites.

- **Goal LU-10**: Rural, agricultural, and open space areas that provide scenic value, support Delta ecosystem health, and meet the needs of the agricultural industry.
  - **Policy LU-P10.2**: Ensure all former Williamson Act parcels are rezoned from Agricultural Preserve District to an agricultural zoning district appropriate for the area.
  - **Policy LU-P10.3**: Preserve the rural character of the following areas, which are displayed in Figure LU-5:
    a) Alhambra Valley/Briones;
    b) Tassajara Valley;
    c) Agricultural Core between Brentwood and Discovery Bay
    d) Crockett Hills between Crockett and State Route 4
    e) Franklin Canyon/State Route 4 corridor between Hercules and Martinez
    f) Bollinger Canyon Road corridor between Las Trampas Regional Wilderness and Crow Canyon Road
    g) Norris Canyon Road corridor between San Ramon and the Alameda County line
    h) Marsh Creek Road corridor between Clayton and Byron Highway
    i) Kirker Pass Road corridor
    j) Morgan Territory Road corridor
    k) Deer Valley Road corridor

Pay special attention to potential aesthetic impacts in these areas and ensure such impacts are adequately mitigated.

- **Policy LU-P10.4**: Maintain agricultural preserves in the Briones Hills and Tassajara Valley areas through agreements with adjacent cities to retain these areas for agricultural, open space, and other non-urban uses.

Conservation, Open Space, and Working Lands Element

- **Goal COS-1.** Preserved open space for environmental protection, resource management and production, recreation, scenic value, and climate resilience and adaptation.
    - **Policy COS-P1.1:** Support efforts by public agencies and nonprofit organizations to acquire and permanently protect open space areas containing important ecological or scenic resources and areas that connect protected lands to form a cohesive system of open space. Plan infrastructure to avoid interfering with such acquisitions whenever possible.
    - **Policy COS-P1.2:** Pursue opportunities for permanent open space dedication for habitat, scenic, or passive recreation benefits as part of future development approvals and major capital improvement projects.
    - ***Policy COS-P1.3:*** *Discourage conversion of land designated Resource Conservation or Parks and Recreation to urban uses. If such conversion occurs, require mitigation through permanent protection of other open space or park lands for habitat, scenic, or recreation benefits at a ratio to be determined based on the biological, scenic, or recreational value of the land, but not less than 3:1.*
    - **Action COS-A1.1:** Convene an annual staff-level meeting with involved agencies (e.g., East Contra Costa County Habitat Conservancy, EBRPD), land trusts, and conservation groups to review current and planned efforts to protect and maintain open space.
- **Goal COS-4.** Preserved and enhanced ecological resources and wildlife habitat.
    - ***Policy COS-P4.1:*** *Maintain ecologically significant resource areas in their natural state to the greatest extent possible. Limit development in and near these areas to compatible low-intensity uses with adequate provisions to protect sensitive resources, including setbacks around resource areas. Prohibit projects that would lead to fragmentation of ecologically significant resource areas.*
    - **Policy COS-P4.2:** Support land conservation and restoration consistent with the HCP/NCCP and discourage development in areas where such conservation is planned, as shown on Figure COS-3. Support actions to preserve land and resources within PCAs mapped by ABAG, as shown on Figure COS-4.
- **Goal COS-7:** Sustainable surface and groundwater resource management.
    - ***Policy COS-P7.1:*** *Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and recycled water, where available.*

- ***Policy COS-P7.4:*** *For projects in areas without a water service provider, require proof of adequate on-site groundwater during the development review process. In addition to requiring compliance with the County's well regulations related to water quality and flow rate, require documentation that the proposed project will not have a significant cumulative impact on the aquifer or negatively affect development that already relies on the same groundwater supply.*
- ***Policy COS-P7.5:*** *Prohibit new development that would create or significantly aggravate groundwater overdraft conditions, land subsidence, or other "undesirable results," as defined in Section 354.26 of the California Water Code.*
- **Policy COS-P7.6:** Support the multipurpose water storage options that incorporate water supply, flood control, surface and groundwater storage, groundwater management, and ecosystem components.

- **Goal COS-8:** Protected quality of surface water and groundwater resources.
  - **Policy COS-P8.1:** Protect public water supplies by denying applications for projects that would introduce significant new pollution sources in groundwater basins and watersheds feeding major reservoirs, and support efforts to acquire and permanently protect reservoir watersheds.
  - ***Policy COS-P8.5:*** *Require groundwater monitoring programs for all large-scale commercial and industrial facilities that use wells and prohibit discharge of hazardous materials through injection wells.*

- **Goal COS-9:** Protected, preserved, and enhanced scenic quality, recreational value, and natural resources of the San Francisco Bay/Sacramento-San Joaquin Delta estuary system and shoreline.
  - **Policy COS-P9.1**: Advocate for increased freshwater flow into, through, and from the Delta into San Francisco Bay, and support other efforts to protect and improve Delta water quality.
  - **Policy COS-9.2:** Support continued maintenance and improvement of Delta levees to protect water quality, ecosystems, agricultural land, and at-risk communities.
  - **Policy COS-P9.3:** Oppose all efforts to construct an isolated conveyance (e.g., peripheral canal, tunnel) or any other water diversion system that reduces Delta water flows unless and until it can be conclusively demonstrated that such a system would protect, preserve, and enhance water quality and fisheries of the San Francisco Bay/Delta estuary system.
  - ***Policy COS-P9.4:*** *Plan for land uses near shorelines that do not pose a threat to Bay or Delta resources, including water quality and shoreline and marshland habitats.*

Transportation Element

- **Policy TR-P7.4**: Protect the County's airports from encroachment by incompatible uses and minimize the public's exposure to safety hazards and excessive noise by ensuring that all future development within each Airport Influence Area is consistent with the Contra Costa County ALUCP.
- **Policy TR-P7.5**: Partner with the cities of Concord and Pleasant Hill in making land use decisions that support Buchanan Field Airport's ongoing viability while protecting public safety, consistent with the Airport Master Plan and ALUCP.
- **Policy TR-P7.6**: Enhance Byron Airport's viability by protecting it from incompatible urban encroachment, such as large-scale residential development, and providing infrastructure that supports existing and planned airport activities, consistent with the Airport Master Plan and ALUCP.

5.11.3.2 PROPOSED CAP UPDATE STRATEGIES AND ACTIONS

There are no strategies or actions in the proposed Climate Action Plan (CAP) update that are applicable to land use and planning thresholds of significance.

5.11.4 Environmental Impacts

Impact 5.11-1: Project implementation would not divide an established community. [Threshold LU-1]

Proposed General Plan

Division of an established community commonly occurs as a result of development and construction of physical features that constitute a barrier to frequent travel between two or more parts of a community. For example, a large freeway structure with few crossings could effectively split a community. Likewise, geographic features could similarly affect the community, such as the development of a large residential project on the opposite side of a river from the existing community.

The project does not propose project-specific development. The design direction for the proposed General Plan is to improve access and mobility for existing and future residents by providing vehicular connections and non-motorized transportation options. The land use pattern proposed in the General Plan would increase development density and intensity in established community cores. The county provides access through these community cores and throughout the county via major roadways and transit and pedestrian pathways. Overall, the land uses in the proposed General Plan are largely consistent with existing development patterns.

No aspect of the proposed General Plan would divide existing communities in the county. In addition, the proposed General Plan includes provisions that directly address land use connectivity, compatibility, and encroachment of new development on existing neighborhoods and land uses. Specifically, the proposed General Plan includes the following policies aimed at improving connectivity and ensuring compatibility between land uses:

- **Policy LU-P2.5**: Encourage infill development.
- **Policy LU-P2.6:** Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).
- **Policy LU-P3.3:** Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.
- **Policy LU-P3.7:** Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.

- **Policy LU-4.2:** Continuously improve community appearance by requiring high-quality designs and materials that complement their surroundings, with emphasis on enhancing public spaces and historic and cultural resource.
- **Policy LU-4.3:** Encourage smooth transitions between new and existing development.
- **Policy LU-4.4:** Require site and building reconfigurations, setback increases, landscaping enhancements, screening, or other design solutions wherever necessary to minimize potential conflicts between uses.
- **Policy LU-P5.1:** Allow development only where requisite community services, facilities, and infrastructure can be provided.
- **Policy LU-P5.2:** Consider the potential locations of planned public infrastructure projects (e.g., transit lines, roadways, drainage improvements) when evaluating development proposals and deny development applications that would interfere with implementation of such projects.
- **Policy LU-P8.8:** Accommodate a variety of land uses at Buchanan Field and Byron airports, consistent with the master plan for each facility. A range of commercial aviation functions, including fixed-base operators, aviation businesses, and passenger facilities and services, should be allowed, as well as ancillary uses that support the economic viability of each airport.
- **Policy LU-P9.3:** Designate industrial land adjacent to major transportation infrastructure (i.e., freeways, rail lines, ports) and in other locations where impacts of industrial traffic on neighborhoods and commercial areas can be minimized.

Because implementation of the proposed General Plan would not divide established communities and it includes policies and a land use plan that improve connectivity, the impact would be less than significant.

Proposed CAP

The proposed CAP aims to reduce GHG emissions and improve resiliency to future climate conditions. The proposed CAP does not involve any land use changes. As this is a policy document with no land use changes, the proposed CAP would not have any significant physical environmental effects related to land use and planning. No impact would occur.

Level of Significance Before Mitigation: Impact 5.11-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.11-1 would be less than significant.

Impact 5.11-2: Project implementation would not conflict with applicable plans adopted for the purpose of avoiding or mitigating an environmental effect. [Threshold LU-2]

Proposed General Plan

While the proposed General Plan is the primary planning document for Contra Costa County and the proposed update is in part intended to ensure consistency between the General Plan and updated State laws, implementation of the proposed project has the potential to conflict with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. For the purposes of this EIR a land use plan is a policy or regulation that addresses how land is used. The following discusses the proposed General Plan and its relationship to the land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect, as listed in Section 5.11.1.1, *Regulatory Background*.

Plan Bay Area 2050

Plan Bay Area 2050 is a 30-year plan that charts a course for a Bay Area that is affordable, connected, diverse, healthy, and vibrant for all residents through 2050 and beyond (ABAG/MTC 2021). While Plan Bay Area 2050 does not override local land use control, it provides guidance to local jurisdictions, including Contra Costa County, on how future development can be consistent with the State's GHG and VMT reduction goals. This includes constructing more infill development in downtowns and centers in close proximity to jobs and services.

The Land Use Element of the proposed General Plan sets the foundation for future growth, change, and preservation in the EIR Study Area. In addition to the policies identified in Impact Discussion 5.11-1, the following proposed General Plan goals and policies would serve to support the concepts in Plan Bay Area by encouraging infill and limiting the extent of development (Goal LU-2 and associated policies), supporting a sustainable development pattern that places a mix of jobs and housing in close proximity to each other and to transit (Goal LU-3 and associated policies), directing development to where there is already infrastructure and services (Goal LU-5 and associated policies, plus Policy LU-P7.5), and promoting mixed-use development (Goal LU-8 and associated policies):

- **Goal LU-2:** Growth and conservation that are balanced to preserve and enhance the quality of life, protect the environment and public safety, and benefit all those who live or work in Contra Costa County.
    - **Policy LU-P2.1:** Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.
    - **Policy LU-P2.3:** Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.
    - **Policy LU-P2.4:** Prohibit major subdivisions outside the ULL as well as successive minor subdivisions of lots outside the ULL that were created through previous subdivisions.
    - **Policy LU-P2.5:** Encourage infill development.

- **Policy LU-P2.6:** Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).
- **Policy LU-P2.8:** Discourage extension of water and sanitary sewer lines into areas outside the ULL, except to serve public and semi-public uses that are not growth inducing, or when such extension is necessary to address a declared public health emergency. When lines are extended outside the ULL, they should be designed to service the intended use only, and not allow for additional future service connections.

- **Goal LU-3:** A range and distribution of compatible and sustainable land uses that meet the county's social and economic needs and allow for balanced housing and job growth.
  - **Policy LU-P3.2:** Encourage residential development in or near existing employment centers, and development of job-generating uses near areas that are primarily residential. Where large-scale residential or commercial development is planned, encourage a mix of housing and employment opportunities unless doing so would exacerbate a severe jobs-housing imbalance in the area.
  - **Policy LU-P3.3:** Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.
  - **Policy LU-P3.6:** Encourage incorporation of childcare, adult daycare, and similar beneficial uses into new development. To maximize accessibility, encourage childcare facilities in residential neighborhoods, employment centers, schools, public libraries, hospitals, religious facilities, and parks, as well as near transit stops.
  - **Policy LU-P3.7:** Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.

- **Goal LU-5:** Coordinated land use, transportation, and infrastructure decisions so that growth occurs in locations where capacity and services are available or committed.
  - **Policy LU-P5.1:** Allow development only where requisite community services, facilities, and infrastructure can be provided.
  - **Policy LU-P5.2:** Consider the potential locations of planned public infrastructure projects (e.g., transit lines, major roadways, drainage improvements) when evaluating development proposals and deny development applications that would interfere with implementation of such projects.
  - **Policy LU-P7.5:** Require new residential projects to provide convenient access/connections to public transit, local destinations, and multi-use trails whenever possible.

- **Goal LU-8:** A variety of well-located commercial and mixed-use areas that provide jobs and services, create civic gathering places and community focal points, accommodate higher-density housing, and contribute to the tax base of the County.

- **Policy LU-P8.2:** Support development of neighborhood-serving commercial services in and adjacent to residential areas where they can be accessed easily using multiple modes of transportation.
- **Policy LU-P8.3:** Encourage adaptive reuse of aging commercial buildings and sites.
- **Policy LU-P8.4:** Support rehabilitation of commercial centers, encouraging improvements that enhance appearance, sustainability, and non-motorized (pedestrian, bicycle, etc.) access and safety.

The proposed General Plan goals and policies listed would support the goals of Plan Bay Area. Accordingly, the proposed project would not conflict with or be inconsistent with Plan Bay Area 2050, resulting in a less-than-significant impact.

Airport Land Use Compatibility Plan

Areas within the unincorporated county and several cities are in Buchanan Field and Byron Airports' Safety Compatibility Zones, as shown in Figure 5.9-3, *Buchanan Field Airport and Byron Airport Safety Zones,* in Section 5.9*, Hazards and Hazardous Materials,* in this Draft EIR. These zones restrict certain land uses and heights of structures pursuant to Federal Aviation Administration Part 77 Regulations protecting airspace near the airport. All potential development within each airport's Safety Zones would be required to comply with the provisions for development in the ALUCP and FAA Part 77 regulations.

In addition, the following proposed General Plan policies would serve to minimize impacts from development in close proximity to the airports:

- **Policy TR-P7.4:** Protect the County's airports from encroachment by incompatible uses and minimize the public's exposure to safety hazards and excessive noise by ensuring that all future development within each Airport Influence Area is consistent with the Contra Costa County ALUCP.
- **Policy TR-P7.5:** Partner with the cities of Concord and Pleasant Hill in making land use decisions that support Buchanan Field Airport's ongoing viability while protecting public safety, consistent with the Airport Master Plan and ALUCP.
- **Policy TR-P7.6:** Enhance Byron Airport's viability by protecting it from incompatible urban encroachment, such as large-scale residential development, and providing infrastructure that supports existing and planned airport activities, consistent with the Airport Master Plan and ALUCP.

Accordingly, the County will coordinate with agencies and jurisdictions regarding development in close proximity to the airports and ensure that future development is consistent with the ALUCP. Future development within airport influence areas would also be subject to review by the ALUC for a determination of consistency with the ALUCP. Therefore, the proposed project would not conflict with or be inconsistent with the ALUCP, resulting in a less-than-significant impact.

Delta Plan

As described previously, the Delta Plan is a comprehensive long-term management plan for the Sacramento-San Joaquin River Delta. The Delta Plan includes rules and recommendations that support the State's goals for the Delta to: (1) improve water supply; (2) protect and restore a vibrant and healthy Delta ecosystem; and (3)

preserve, protect, and enhance the unique agricultural, cultural, and recreational characteristic of the Delta. As listed below, the proposed General Plan includes goals and policies that support these goals of the Delta Plan.

- **Goal COS-7:** Sustainable surface and groundwater resource management.
  - **Policy COS-P7.1:** Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and recycled water, where available.
  - **Policy COS-P7.4:** For projects in areas without a water service provider, require proof of adequate on-site groundwater during the development review process. In addition to requiring compliance with the County's well regulations related to water quality and flow rate, require documentation that the proposed project will not have a significant cumulative impact on the aquifer or negatively affect development that already relies on the same groundwater supply.
  - **Policy COS-P7.5:** Prohibit new development that would create or significantly aggravate groundwater overdraft conditions, land subsidence, or other "undesirable results," as defined in Section 354.26 of the California Water Code.
  - **Policy COS-P7.6:** Support multipurpose water storage options that incorporate water supply, flood control, surface and groundwater storage, groundwater management, and ecosystem components.
- **Goal COS-8:** Protected quality of surface water and groundwater resources.
  - **Policy COS-P8.1:** Protect public water supplies by denying applications for projects that would introduce significant new pollution sources in groundwater basins and watersheds feeding major reservoirs, and support efforts to acquire and permanently protect reservoir watersheds.
  - **Policy COS-P8.5:** Require groundwater monitoring programs for all large-scale commercial and industrial facilities using wells and prohibit discharge of hazardous materials through injection wells.
- **Goal COS-9:** Protected, preserved, and enhanced scenic quality, recreational value, and natural resources of the San Francisco Bay/Sacramento-San Joaquin Delta estuary system and shoreline.
  - **Policy COS-P9.1:** Advocate for increased freshwater flow into, through, and from the Delta into San Francisco Bay, and support other efforts to protect and improve Delta water quality.
  - **Policy COS-9.2:** Support continued maintenance and improvement of Delta levees to protect water quality, ecosystems, agricultural land, and at-risk communities.
  - **Policy COS-P9.3:** Oppose all efforts to construct an isolated conveyance (e.g., peripheral canal, tunnel) or any other water diversion system that reduces Delta water flows unless and until it can be conclusively demonstrated that such a system would protect, preserve, and enhance water quality and fisheries of the San Francisco Bay/Delta estuary system.
  - **Policy COS-P9.4:** Plan for land uses along shorelines that do not pose a threat to Bay or Delta resources, including water quality and shoreline and marshland habitats.

In addition, Delta Plan Policy DP P1 requires that any new residential, commercial, or industrial development must be limited to areas within the ULL, and also specifies that no new residential, commercial, or industrial development may occur on Bethel Island, even though it is inside the ULL unless it is consistent with the existing General Plan. Although the proposed General Plan would redistribute some of the existing General Plan development capacity on Bethel Island by expanding commercial uses and reducing residential uses, the proposed General Plan does not allow a net increase in allowed development on the island. Therefore, the proposed General Plan is consistent with this key Delta Plan policy.

Furthermore, proposed Policy LU-P6.1 directs the County to ensure that County projects and decisions on private development and land use activities in the Legal Delta are consistent with the Delta Plan. Overall, the proposed General Plan goals, policies, and land use map support the goals of the Delta Plan, and the impact is less than significant.

Land Use and Resource Management Plan for the Primary Zone of the Delta

As mentioned in Section 5.11.1.1, *Regulatory Background*, the Land Use and Resource Management Plan guides local decisions related to agriculture, flood protection, Delta communities, natural resources, recreation, and utilities and infrastructure within the Primary Zone of the Delta. General plans and projects within the Primary Zone must align with the Plan and are subject to review by the Commission. As shown in Figure 5.11-1, the Primary Zone extends into the eastern portion of the county, including the unincorporated areas of Winter Island, Jersey Island, Bradford Island, Web Tract, Quimby Island, Holland Tract, a portion of Knightsen, Veale Tract, Palm Tract, Orwood Tract, and Coney Island. The proposed General Plan would designate these areas as Public/Semi-Public, Parks and Recreation, Resource Conservation, Agriculture Core, and Agriculture Lands. These designations would maintain the primarily agricultural, natural resource, recreation, and public service uses in these areas, which are consistent with the Land Use and Resource Management Plan. In addition, proposed Policy LU-P6.1 directs the County to ensure that County projects and decisions on private development and land use activities in the Legal Delta are consistent with the Land Use and Resource Management Plan. Therefore, the impact would be less than significant.

San Francisco Bay Plan

The San Francisco Bay Plan provides a formula for developing the Bay and shoreline to their highest potential while protecting the Bay as an irreplaceable natural resource. General plans and projects within the Bay Area must align with the San Francisco Bay Plan. The portions of the EIR Study Area that are covered by the San Francisco Bay Plan include the west and northwest portions of the unincorporated county along Suisun Bay and San Francisco Bay. The proposed General Plan includes policies aimed at protecting these areas and Bayshore resources. In particular, Policy COS-P9.3 directs the County to oppose all efforts to construct an isolated conveyance or any other water diversion system that reduces Delta water flows unless and until it can be conclusively demonstrated that such a system would protect, preserve, and enhance water quality and fisheries of the San Francisco Bay/Delta estuary system. In addition, Policy COS-P9.4 directs the County to plan for land uses along shorelines that do not pose a threat to Bay or Delta resources, including water quality and shoreline and marshland habitats. Furthermore, Policy LU-P9.4 directs the County to prioritize industrial land along the Bay and Delta for uses requiring deep-water access or large quantities of raw water and

discourages the siting of other industrial uses at these locations. This would help to ensure the area along the Bay in the EIR Study Area is developed to its highest potential, as called for in the Bay Plan. Therefore, the proposed General Plan would be consistent with the Bay Plan and the impact would be less than significant.

East Contra Costa HCP/NCCP

As discussed in Section 5.4, Biological Resources, the East Contra Costa County HCP/NCCP is intended to provide regional conservation and development guidelines to protect natural resources while improving and streamlining the permit process for take of State and federally listed species. The HCP/NCCP was developed by a team of scientists and planners with input from independent panels of reviewers and stakeholders. The proposed General Plan discourages conversion of land designated Resource Conservation or Parks and Recreation to urban uses and requires mitigation through the replacement of land with equal biologic, scenic, or recreational value if conversion occurs, per Policy COS-P1.3. Additionally, Policy COS-P4.2 encourages consistency with the HCP/NCCP by directing the County to support land conservation and restoration consistent with the HCP/NCCP and discourage development in areas where conservation is planned. Policies COS-P1.1 and COS-P1.2 also support the goals of the HCP/NCCP to protect open space and ecologically sensitive areas. As such, the proposed General Plan is consistent with the adopted HCP/NCCP in terms of land uses and habitat protection. Implementation of the General Plan would not conflict with the provisions of the East Contra Costa HCP/NCCP.

Summary

In summary, the proposed General Plan is the primary planning document for Contra Costa County. The proposed General Plan is intended in part to ensure consistency between the General Plan and updated State laws. As described above, it would support applicable land use plans adopted for the purpose of avoiding or mitigating an environmental impact. The proposed General Plan is the overriding planning document for the county, and it would replace the current General Plan. Therefore, the impact would be less than significant.

Proposed CAP

The proposed CAP aims to reduce GHG emissions and improve resiliency to future climate conditions. The proposed CAP does not involve any land use changes. As this is a policy document with no land use changes, the proposed CAP would not have any significant physical environmental effects related to conflicts with land use plans adopted for the purpose of avoiding or mitigating an environmental impact. No impact would occur.

Level of Significance Before Mitigation: Impact 5.11-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.11-2 would be less than significant.

5.11.5 Cumulative Impacts

As discussed in Impact Discussions LU-1 and LU-2, the proposed project would not divide an established community or conflict with established plans, policies, and regulations. The proposed project would not conflict with any State, regional, or local land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. Future development that would be allowed under the proposed project would not create substantial land use impacts. Development would largely be taking place in already urbanized areas and would not require development or demolition that would create land use conflicts or divide established communities. Therefore, the proposed project would not result in a cumulatively considerable contribution to cumulative impacts related to land use changes, and cumulative impacts would be less than significant.

5.11.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.11.7 Mitigation Measures

No mitigation measures are required.

5.11.8 Level of Significance After Mitigation

Impacts would be less than significant.

5.11.9 References

Association of Bay Area Governments and Metropolitan Transportation Commission (ABAG/MTC). 2021, October. *Plan Bay Area 2050*. https://www.planbayarea.org/sites/default/files/documents/Plan_Bay_Area_2050_October_2021.pdf.

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5. Environmental Analysis
LAND USE AND PLANNING

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5.12 MINERAL RESOURCES

This section describes the regulatory framework and existing conditions of the Environmental Impact Report (EIR) Study Area and evaluates the potential impacts to mineral resources from future development that could occur by adopting and implementing the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project.

5.12.1 Environmental Setting

5.12.1.1 REGULATORY BACKGROUND

State

California Surface Mining and Reclamation Act of 1975

The California Surface Mining and Reclamation Act (SMARA) was enacted in 1975 and updated in January 2007 to limit new development in areas with significant mineral deposits. Through SMARA, the California Geological Survey identifies geologic deposits of valuable minerals used in manufacturing processes and the production of construction materials. Requirements for SMARA are codified under Public Resources Code Section 2710 et seq. Under State law, all mining operations are required to obtain permits prior to commencing operations and abide by local and State operating requirements. Mining operations are also required to have appropriate reclamation plans in place, provide financial assurances, and abide by State and local environmental laws. SMARA classifies lands into mineral resource zones (MRZs) according to the known or inferred mineral potential. The criteria for establishing the zones are based on four general categories, discussed below:

- MRZ 1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ 2: Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- MRZ 3: Areas containing mineral deposits, the significance of which cannot be evaluated.
- MRZ 4: Areas where available information is inadequate for assignment to any other MRZ zone.

Local

Contra Costa County Ordinance Code

Chapter 88-11, *Surface Mining and Reclamation*, of the County Ordinance Code regulates the extraction of mineral resources in the county. It is intended to implement the requirements of SMARA and the policies within the General Plan. It also discusses the protection of these resources, stating that mine development is encouraged in compatible areas before encroachment of conflicting uses. Mineral resources areas that have been classified by the State Department of Conservation's Division of Mines and Geology or designated by the State Mining and Geology Board, as well as existing surface mining operations, are required to be protected from intrusion

by incompatible land uses that may impede or preclude mineral extraction or processing, to the extent possible, for consistency with the County's General Plan.

Chapter 88-14, *Oil and Gas Drilling and Production,* of the County Ordinance Code is intended to ensure that oil and gas drilling and production activity in the county is developed to be compatible with existing and planned surface uses. Under this provision of the Code, oil and gas drilling and production activity is allowed within the General Agricultural (A-2), Heavy Agricultural (A-3), Agricultural Preserve (A-4) and Exclusive Agricultural (A-20, A-40, and A-80) zoning districts. It is restricted within 1,000 feet of a city boundary, within an urban General Plan land use designation, or within 1,000 feet of an urban land use designation.

5.12.1.2 EXISTING CONDITIONS

Mineral resources in Contra Costa County include aggregate and stone for commercial, industrial, and construction uses. The most important mineral resources mined in the county include a regionally significant deposit of diabase near Mount Zion and Clayton. Diabase is an intrusive igneous rock that is used extensively for road base and as rip-rap to prevent streambank erosion. Both Lone Star and Kaiser quarries utilize this resource. A geological deposit of domengine sandstone is on the north side of Mount Diablo, just south of Camino Diablo and east of Vasco Road. This is the sole deposit of this material in the State of California. Domengine sandstone is used by Pacific Gas & Electric Company as trench backfill and is a primary ingredient in the manufacture of heat resistant glass used in the national space program. An additional area in the county with a long history of mineral resource production is near Port Costa. Mining in this area began at the turn of the century to support a brick manufacturing operation, which is unique in the county, and one of only a few in the entire state. Mining and brick production have been continuous from 1905 to the present, under several different ownerships. In 1966, a lightweight shale aggregate facility was constructed. Furthermore, sand and sandstone deposits are mined from several locations in the county, focused mainly in the Byron area. Figure 5.12-1, *County-Designated Mineral Resource Areas*, shows the county's deposits of diabase in Central County and domengine sandstone in East County.

Based on the Mineral Land Classification prepared by the Division of Mine Reclamation (DMR) in the California Department of Conservation (DOC), the county contains several additional regionally significant mineral resources deposits, including exposures of basalt and andesite near Moraga, the northern end of the Berkeley Hills, and a small ridge southwest of Orinda. Sandstone and shale deposits consisting of three parcels are also on the west side of Richmond (DMR 1996). There are several other mapped areas classified as MRZ-2 and MRZ-3 in the county as well, as shown on Figure 5.12-2, *Mineral Resource Zones and Resource Sectors*. Contra Costa County contains two present or potential sources of Portland cement concrete aggregate: the diabase deposit near Clayton and the sandstone deposit in Richmond (DMR 1987).

The U.S. Geological Survey (USGS) identifies a total of 231 mineral resource sites in the county, including operating or closed mines, mineral prospects, and processing plants (USGS 2022). USGS reports that there are 39 currently operating mines in the county and 127 sites that contain mineral resources but have not yet been mined (USGS 2022). Per the DMR, four of these mines are within the unincorporated county and include two rock quarries near Clayton and two sand-gravel pits near Byron, as shown in Figure 5.12-3, *Operating Mines in the Unincorporated County* (DMR 2020).

MINERAL RESOURCES

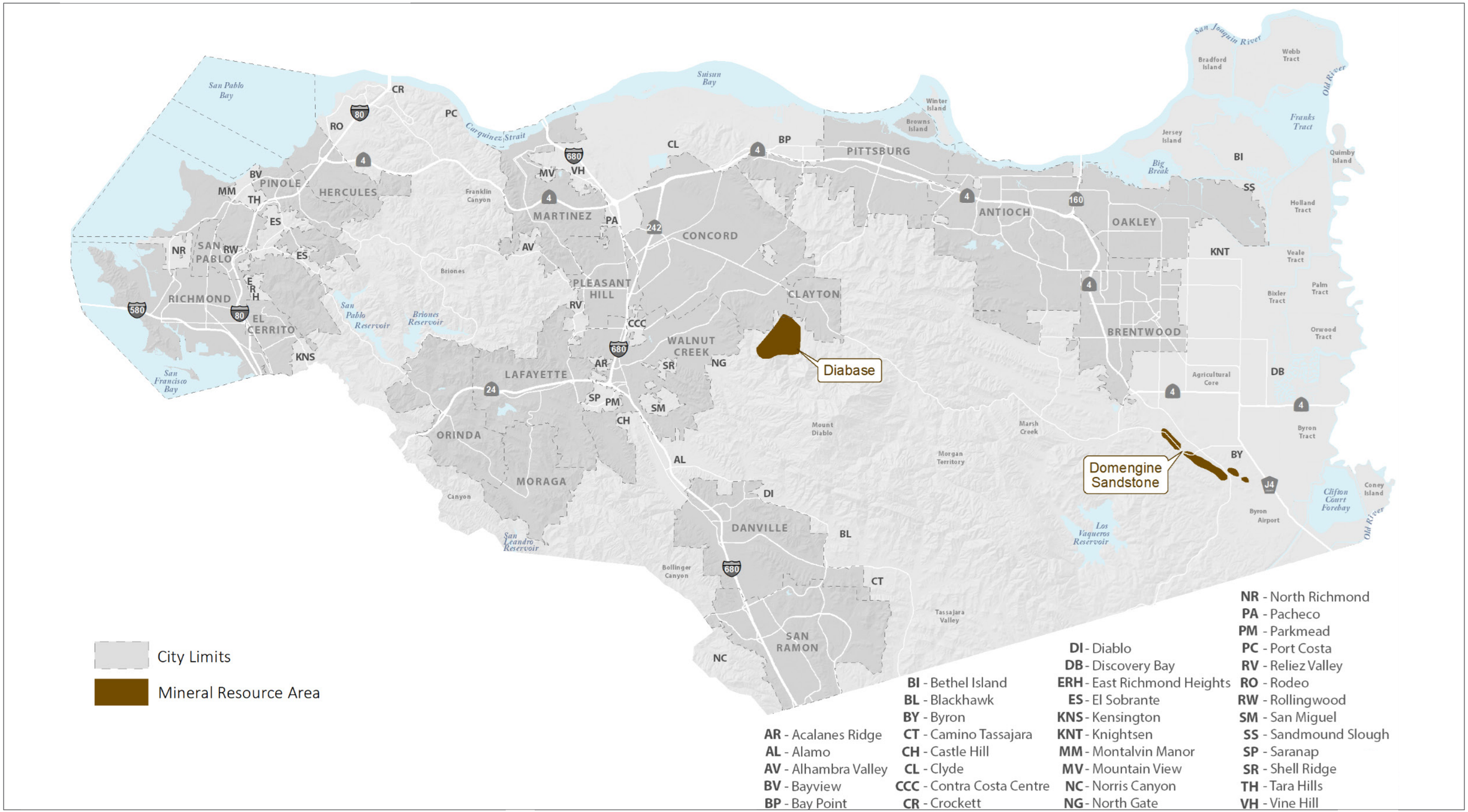


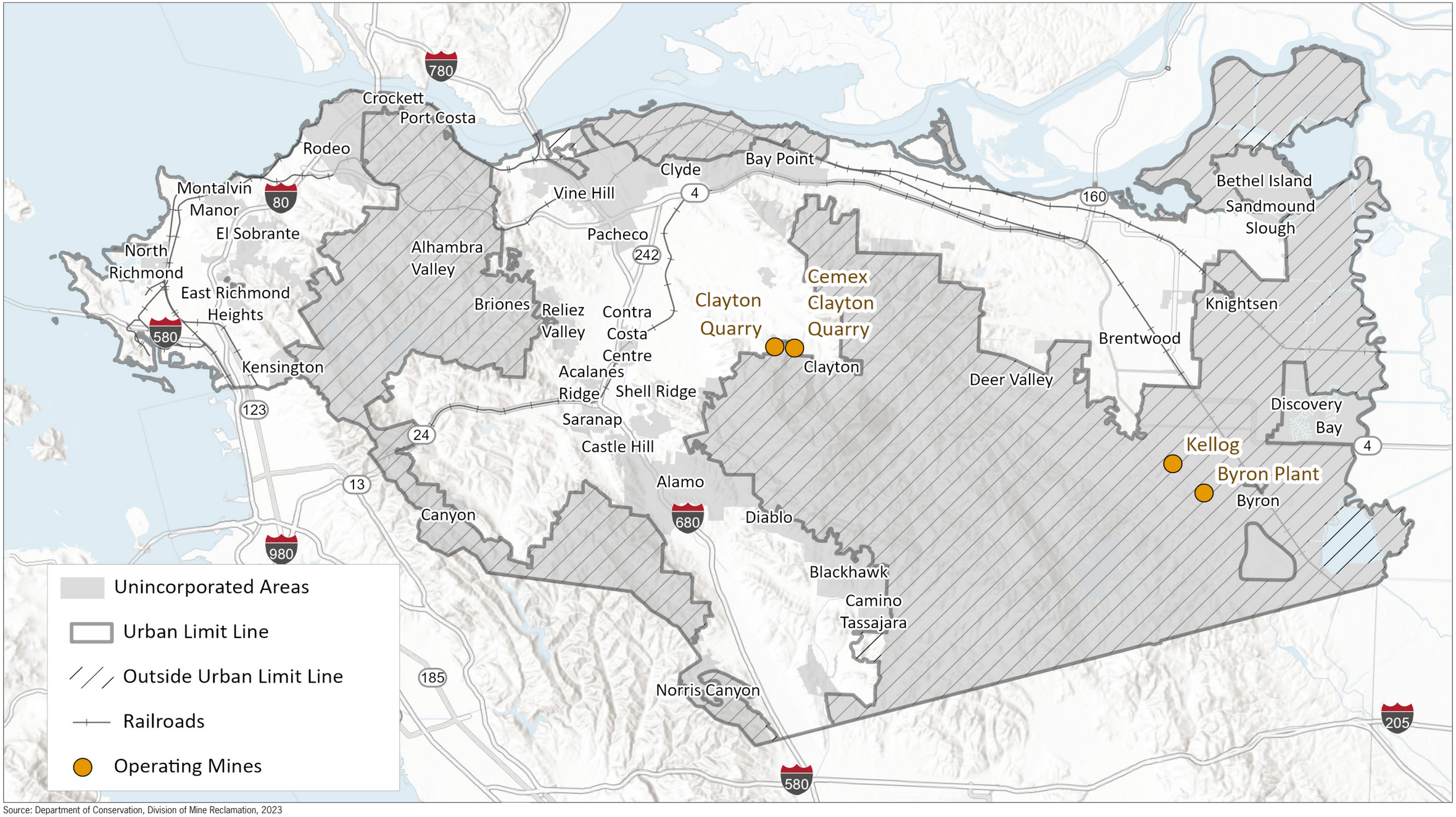
Figure 5.12-1
County-Designated Mineral Resource Areas

MINERAL RESOURCES



Source: US Geological Survey, J.C. Stinson, M.W. Manson, and J.J. Plappert, 1983.

Figure 5.12-2
Mineral Resource Zones and Resource Areas



Source: Department of Conservation, Division of Mine Reclamation, 2023

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Figure 5.12-3
Operating Mines in the Unincorporated County

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The county also contains numerous deposits of oil and natural gas resources. According to maps from the Geologic Energy Management Division (GEMD) of the DOC, there are 22 active oil, gas, and water wells in the county that produced 92,235 barrels of oil condensate and 138,286 thousand cubic feet of total gross natural gas in 2019 (GEMD 2020a). The Brentwood oil and gas field is California's northernmost commercial oil-producing area and as of 2018, the field had produced 9,300,000 barrels of oil and 51,100,000 million cubic feet of natural gas (GEMD 2020b). Figure 5.12-4, *Oil and Gas Resources*, shows the boundaries of existing oil and gas fields in the county in addition to the locations of active oil and gas wells.

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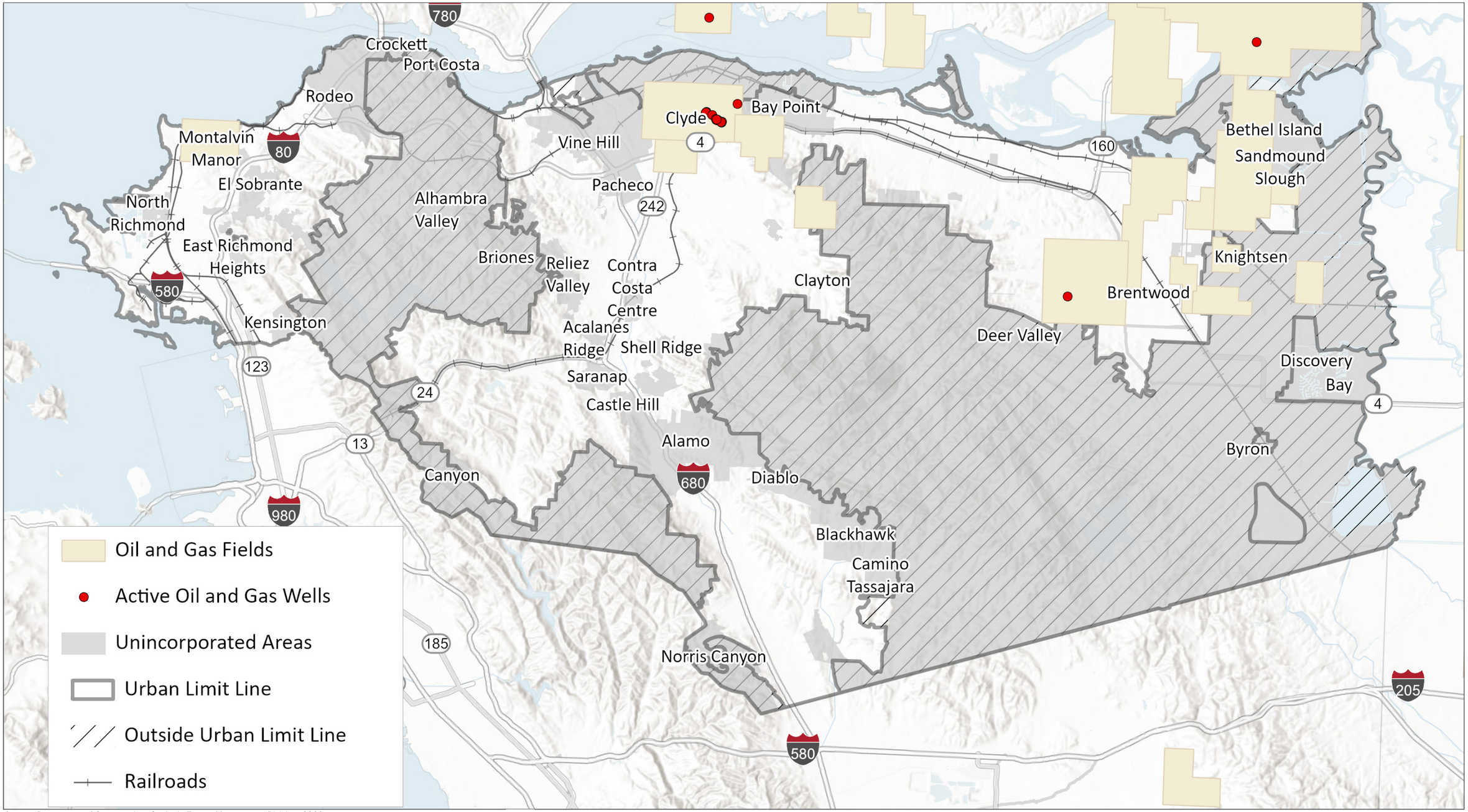
MINERAL RESOURCES



Source: Department of Conservation, Geologic Energy Management Division, 2023

0 3.5
Scale (Miles)

Figure 5.12-4
Oil and Gas Resources

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5.12.2 Thresholds of Significance

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project would normally have a significant effect on the environment if the project would:

M-1 Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

M-2 Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

5.12.3 Programs, Plans, and Policies

5.12.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to mineral resources. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Conservation, Open Space, and Working Lands Element

- **Goal COS-13**: Continued economic viability of mineral extraction operations while minimizing land use conflicts and environmental impacts.
  - **Policy COS-P13.1**: Protect valuable mineral resources by prohibiting incompatible projects and land uses (i.e., those that would directly or indirectly interfere with extraction, processing, or transportation of mineral resources) within the MRAs identified in Figure COS-11.
  - **Policy COS-P13.2**: Encourage compact design and layout for mineral resource processing areas, preserving as much land as possible for buffering between these areas and adjacent land uses.
  - ***Policy COS-P13.3:*** *For residential subdivisions within one mile of the MRAs depicted in Figure COS-11, require deed disclosures indicating the presence of the mineral resource and explaining potential disturbances (e.g., noise, dust, heavy truck traffic) associated with mineral extraction activities.*
  - ***Policy COS-P13.4:*** *Require applications for new or expanded quarrying operations adjacent to Mount Diablo State Park to include an analysis of potential impacts to the park's natural features, including viewsheds, and operations.*
  - **Policy COS-P13.5:** Ensure that quarry reclamation plans, including bonding requirements, are maintained in compliance with SMARA.
  - **Action COS-A13.1:** Update County Ordinance Code Chapter 88-11, Surface Mining and Reclamation, as necessary to maintain consistency with SMARA.
  - **Action COS-A14.1:** Amend County Ordinance Code Chapter 88-14 – Oil and Gas Drilling and Production to:

    (a) Prohibit new and expanded oil and gas production wells in the following:

    i. Sensitive ecological areas, such as wetlands and habitat for rare, threatened, endangered, or special-status species.

ii. Areas subject to 100-year flood hazards or sea-level rise, as shown in Figures HS-2 and HS-6 through HS-9.

iii. Areas within 3,200 feet of sensitive receptors or urban land use designations unless project-specific exceptions are granted by the California Department of Conservation, Geologic Energy Management Division.

(b) Restrict oil and gas drilling operations to agricultural zoning districts only.

(c) Require a land use permit for all new and expanded oil and gas wells.

(d) Require a reclamation plan for oil and gas well sites that includes bonding for site clean-up.

(e) Include performance standards related to water quality, air quality, odors, noise, and aesthetics.

In parallel, study the feasibility of amending the County Ordinance Code to prohibit development of new oil and gas wells and phase out existing oil and gas well operations.

5.12.3.2 PROPOSED CAP UPDATE STRATEGIES AND ACTIONS

There are no strategies or actions in the proposed Climate Action Plan (CAP) that are applicable to mineral resources.

5.12.4 Environmental Impacts

Impact 5.12-1: Implementation of the proposed project could result in the loss of availability of a known mineral resource. [Thresholds M-1 and M-2]

Proposed General Plan

As shown in Figure 5.12-1, the county's critical mineral resources are near Mount Zion and Clayton for diabase and Mount Diablo and Byron for domengine sandstone. As shown in Figure 5.12-3, there are no other active mining operations in the EIR Study Area outside of these two mineral resource areas. However, per the latest available data from the DOC, several additional areas in the EIR Study Area overlie significant or potentially significant mineral resource areas designated by SMARA, as shown in Figure 5.12-2. Under the proposed General Plan, development of non-mineral extraction uses would be allowed on land that overlies mapped MRZ-2 and MRZ-3 areas, including those in the communities of Rodeo, Vine Hill, and Bay Point. MRZ-2 designated areas are areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence. MRZ-3 designated areas are assumed to contain mineral deposits, the significance of which cannot be evaluated.

Development projects under the proposed General Plan would be required to comply with Chapter 88-11 of the County Ordinance Code, which implements SMARA. This chapter aims to protect significant mineral resources from the intrusion of incompatible land uses. However, because the General Plan would allow incompatible development in designated MRZ-2 and MRZ-3 areas, impacts would be potentially significant.

As shown in Figure 5.12-4, the county also contains gas and oil deposits that underlie portions of the EIR Study Area. Chapter 8-14 of the County Ordinance Code allows oil and gas drilling in specific agricultural zones and places restrictions on drilling within proximity to urban development. Proposed General Plan Action COS-A14.1 would further restrict oil and gas drilling operations from being established in sensitive ecological areas, areas subject to flooding and sea-level rise, and areas within 3,200 feet of sensitive receptors or urban land use designations. This action would also limit oil and gas drilling operations to agricultural zones and require a land use permit, reclamation plan, and performance standards related to water quality, air quality, odors, noise, and aesthetics. Since the proposed land use plan would allow incompatible development in areas that overlie these resources and the proposed General Plan intends to limit new extraction uses, impacts would be potentially significant.

Proposed CAP

As a policy document that aims to reduce greenhouse gas (GHG) emissions and adapt to changing climate conditions, the proposed CAP is not expected to result in any impacts with regard to loss of aggregate mineral resources. In addition, while the intent of the CAP is to provide a pathway for the county to achieve reductions in GHG emissions, which includes prioritizing the use of renewable energy sources, the CAP does not include strategies and actions that prohibit the continuation of oil and gas extraction in the county, and the impact is less than significant.

Level of Significance Before Mitigation: Impact 5.12-1 would be potentially significant.

Mitigation Measures

There are no feasible mitigation measures. The provisions of SMARA would reduce impacts to aggregate mineral resources to the extent possible by requiring site-specific evaluations to discover the presence of mineral resources. Subsequent review under CEQA for applicable projects would require the incorporation of measures that would reduce impacts as feasible.

Level of Significance After Mitigation: Impact 5.12-1 would be significant and unavoidable.

5.12.5 Cumulative Impacts

Cumulative projects could cause significant cumulative impacts if they cause a loss of availability of a known mineral resource valuable to the region and the state or cause a loss of availability of an important mining site delineated in a local general plan or other land use plan. Development in or near some areas of the county would have the potential to result in land uses that are incompatible with mining and resource recovery and would result in a cumulatively considerable loss of available resources.

5.12.6 Level of Significance Before Mitigation

Without mitigation, the following impact would be **potentially significant**:

- **Impact 5.12-1**: Implementation of the proposed project could result in the loss of availability of a known mineral resource.

5.12.7 Mitigation Measures

Impact 5.12-1

There are no feasible mitigation measures.

5.12.8 Level of Significance After Mitigation

Impact 5.12-1

Mineral and resource extraction could face reduced output due to development of incompatible uses on or near mineral resource areas. Aggregate mineral resource areas are in established communities, including Rodeo, Vine Hill, and Bay Point, all of which are Impacted Communities where the County finds it appropriate to promote community investment and development in support of environmental justice. Extraction of oil and gas deposits can pose health risks to nearby sensitive receptors and hazards to nearby sensitive ecological areas, so the General Plan includes an action directing the County to further regulate drilling operations near sensitive receptors and ecological areas that will have the effect of potentially reducing the ability to extract mineral resources. These are important policy objectives of the proposed project, and impacts are significant unavoidable.

5.12.9 References

Contra Costa, County of. 2005. *Contra Costa County General Plan 2005-2020* - Chapter 8: Conservation Element, Chapter 3: Land Use Element. https://www.contracosta.ca.gov/4732/General-Plan

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5. Environmental Analysis
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5.13 NOISE

This section evaluates the potential for implementation of the proposed project to result in noise impacts in the county. This section discusses the fundamentals of sound; examines federal, State, and local noise guidelines, policies, and standards; evaluates potential noise and vibration impacts associated with the proposed project; and provides mitigation to reduce noise and vibration impacts at sensitive locations. Noise monitoring and modeling data are in Appendix 5.13-1 to this Draft Environmental Impact Report (EIR).

5.13.1 Environmental Setting

5.13.1.1 NOISE AND VIBRATION FUNDAMENTALS

Noise is defined as unwanted sound and, when overexposed, is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness." Following are brief definitions of terminology used in this section.

Glossary

- **Sound.** A disturbance created by a vibrating object, which when transmitted by pressure waves through a medium such as air, is capable of being detected by the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A unitless measure of sound on a logarithmic scale.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (L_{eq}).** The mean of the noise level, energy averaged over the measurement period.
- **L_{max}.** The maximum root-mean-square noise level during a measurement period.
- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period), meaning that half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."
- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 pm to 7:00 am.

- **Community Noise Equivalent Level (CNEL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the levels occurring during the period from 7:00 pm to 10:00 pm, and 10 dB added to the sound levels occurring during the period from 10:00 pm to 7:00 am. Note: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent/interchangeable and are treated as such in this assessment.
- **Peak Particle Velocity (PPV).** The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.
- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.
- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second ($1x10^{-6}$ in/sec).

Sound Fundamentals

Sound is a pressure wave transmitted through the air. It is described in terms of loudness or amplitude (measured in decibels), frequency or pitch (measured in Hertz [Hz] or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the loudness of sound is the decibel. The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all and are "felt" more like a vibration. Similarly, while people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency dependent rating scale is usually used to relate noise to human sensitivity. The A-weighted decibel scale performs this compensation by weighting frequencies in a manner approximating the sensitivity of the human ear.

Changes of 1 to 3 dBA are detectable under quiet, controlled conditions and changes of less than 1 dBA are usually indiscernible. A 3 dBA change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dBA is readily discernable to most people in an exterior environment whereas a 10 dBA change is perceived as a doubling (or halving) of the sound.

Noise is defined as unwanted sound, and, when overexposed, is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Based on these known adverse effects of noise, the federal government, the State of California, and many local governments have established criteria to protect public health and safety and to prevent disruption of certain human activities.

Sound Measurement

Sound pressure is measured through the A-weighted measure to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies.

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve. On a logarithmic scale, an increase of 10 dBA is 10 times more intense than 1 dBA, 20 dBA is 100 times more intense, and 30 dBA is 1,000 times more intense. A sound as soft as human breathing is about 10 times greater than 0 dBA. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single point source, sound levels decrease by approximately 6 dBA for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dBA for each doubling of distance in a hard-site environment. Line source noise in a relatively flat environment with absorptive vegetation decreases by 4.5 dBA for each doubling of distance.

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. These "Ln" values are typically used to demonstrate compliance for stationary noise sources with a city's or county's noise ordinance. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law, as well as cities and counties, require that, for planning purposes, an artificial dBA increment be added to quiet time noise levels in a 24-hour noise descriptor called the CNEL or DNL.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure, functions of the heart, and the nervous system. Extended periods of noise exposure above 90 dBA can result in permanent hearing damage. When the noise level reaches 120 dBA, even short-term exposure causes a tickling sensation in the ear, called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation becomes painful, called the threshold of pain. Table 5.13-1 shows typical noise levels from familiar noise sources.

Table 5.13-1 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock band (near amplification system)
Jet flyover at 1,000 feet		
	100	
Gas lawn mower at 3 feet		
	90	
Diesel truck at 50 feet, at 50 mph		Food blender at 3 feet
	80	Garbage fisposal at 3 feet
Noisy urban area, daytime		
	70	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60	
		Large business office
Quiet urban daytime	50	Dishwasher, next room
Quiet urban nighttime	40	Theater or large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night or concert hall (background)
	20	
		Broadcast/recording studio
	10	
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013a.

Vibration Fundamentals

Vibration is an oscillating motion in the earth. Like noise, vibration is transmitted in waves, but through the earth or solid objects. Unlike noise, vibration is typically of a frequency that is felt rather than heard.

Vibration can be natural—such as earthquakes, volcanic eruptions, or landslides—or human-caused, such as explosions, heavy machinery, or trains. Both natural and human-caused vibration may be continuous, such as from operating machinery, or impulsive, as from an explosion.

As with noise, vibration can be described by both its amplitude and frequency. Amplitude can be characterized in three ways—displacement, velocity, and acceleration. Particle displacement is a measure of the distance that a vibrated particle travels from its original position; for the purposes of soil displacement, it is typically measured in inches or millimeters. Particle velocity is the rate of speed at which soil particles move in inches

per second or millimeters per second. Table 5.13-2 presents the human reaction to various levels of peak particle velocity.

Table 5.13-2 Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e., not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling—houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Caltrans 2013b.

Vibrations also vary in frequency, and this affects perception. Typical construction vibrations fall in the 10 to 30 Hz range and usually occur around 15 Hz. Traffic vibrations exhibit a similar range of frequencies; however, due to their suspension systems, buses often generate frequencies around 3 Hz at high vehicle speeds. It is less common, but possible, to measure traffic frequencies above 30 Hz.

The way in which vibration is transmitted through the earth is called propagation. As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

5.13.1.2 REGULATORY BACKGROUND

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, and local governments have established standards and ordinances to control noise.

Federal

Federal Highway Administration

Proposed federal or federal-aided highway construction projects at a new location, or the physical alteration of an existing highway that significantly changes the horizontal or vertical alignment or increases the number of through-traffic lanes, require an assessment of noise and consideration of noise abatement per 23 CFR Part

772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. The Federal Highway Administration (FHWA) has adopted noise abatement criteria for sensitive receivers—such as picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals—when "worst-hour" noise levels approach or exceed 67 dBA L_{eq} (FHWA 1978).

U.S. Environmental Protection Agency

In addition to FHWA standards, the U.S. Environmental Protection Agency (USEPA) has identified the relationship between noise levels and human response. The USEPA determined that over a 24-hour period, an L_{eq} of 70 dBA will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at an L_{eq} of 55 dBA and interior levels at or below 45 dBA. These levels are relevant to planning and design and useful for informational purposes, but they are not land use planning criteria because they do not consider economic cost, technical feasibility, or the needs of the community; therefore, they are not mandated.

The USEPA also set 55 dBA L_{dn} as the basic goal for exterior residential noise intrusion. However, other federal agencies, in consideration of their own program requirements and goals, as well as the difficulty of actually achieving a goal of 55 dBA L_{dn}, have settled on the 65 dBA L_{dn} level as their standard. At 65 dBA L_{dn}, activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

U.S. Department of Housing and Urban Development

The U.S. Department of Housing and Urban Development (HUD) has set the goal of 65 dBA L_{dn} as a desirable maximum exterior standard for residential units developed with HUD funding (This level is also generally accepted within the State of California.) Although HUD does not specify acceptable interior noise levels, standard construction of residential dwellings typically provides 20 dBA or more of attenuation with the windows closed. Based on this premise, the interior L_{dn} should not exceed 45 dBA.

Occupational Health and Safety Administration

The federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the USEPA. Noise limitations would apply to the operation of construction equipment and could also apply to any proposed industrial land uses. Noise exposure of this type is dependent on work conditions and is addressed through a facility's Health and Safety Plan, as required under OSHA, and is therefore not addressed further in this analysis.

State

General Plan Guidelines

The State of California, through its General Plan Guidelines, discusses how ambient noise should influence land use and development decisions and includes a table of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable uses at different noise levels, expressed in CNEL (OPR 2017). A conditionally acceptable designation implies new construction or development should be undertaken only

after a detailed analysis of the noise reduction requirements for each land use and needed noise insulation features are incorporated in the design. By comparison, a normally acceptable designation indicates that standard construction can occur with no special noise reduction requirements. The General Plan Guidelines provide cities and counties with recommended community noise and land use compatibility standards that can be adopted or modified at the local level based on conditions and types of land uses specific to that jurisdiction.

California Building Code

The California Building Code (CBC) is Title 24 of the California Code of Regulations. CBC Part 2, Volume 1, Chapter 12, Section 1206.4, *Allowable Interior Noise Levels*, requires that interior noise levels attributable to exterior sources not exceed 45 dBA in any habitable room. The noise metric is evaluated as either the L_{dn} or the CNEL, whichever is consistent with the noise element of the local general plan.

The State's noise insulation standards for non-residential uses are codified in the California Code of Regulations, Title 24, *Building Standards Administrative Code*, Part 11, *California Green Building Standards Code* (CALGreen). CALGreen noise standards are applied to new or renovation construction projects in California to control interior noise levels resulting from exterior noise sources. Proposed projects may use either the prescriptive method (Section 5.507.4.1) or the performance method (Section 5.507.4.2) to show compliance. Under the prescriptive method, a project must demonstrate transmission loss ratings for the wall and roof-ceiling assemblies and exterior windows when within a noise environment of 65 dBA CNEL or higher. Under the performance method, a project must demonstrate that interior noise levels do not exceed 50 dBA $L_{eq(1hr)}$.

Airport Noise Standards

California Code of Regulations Title 21, Subchapter 6, *Airport Noise Standards*, establishes 65 dBA CNEL as the acceptable level of aircraft noise for persons living in the vicinity of airports. Noise-sensitive land uses are generally incompatible in locations where the aircraft exterior noise level exceeds 65 dBA CNEL, unless an aviation easement for aircraft noise has been acquired by the airport proprietor or the residence is a high-rise with an interior CNEL of 45 dBA or less in all habitable rooms and has an air circulation or air conditioning system, as appropriate. Assembly Bill (AB) 2776 requires any person who intends to sell or lease residential properties in an airport influence area to disclose that fact to the person buying the property.

Local

Contra Costa County Ordinance Code

Contra Costa County does not have a specific noise ordinance for operational exterior stationary noise sources. However, the County Ordinance Code does include noise standards for other noise sources.

- **Title 7, *Building Regulations*, Section 716-8.1008, *Nuisances*,** states that operations shall be controlled to prevent nuisances to public and private ownerships because of dust, drainage, removal of natural support of land and structures, encroachment, noise, and/or vibration.

- **Title 8, *General Regulations*, Section 82-44.410, *Conditions*,** establishes exterior noise standards for special events. This section states that when a temporary event permit is granted for any event in a residential zoning district or at a residence in any other zoning district, the event shall not generate or emit any noise or sound that exceeds any of the levels specified in Table 5.13-3 when measured at the exterior of any dwelling unit on another residential property.

Table 5.13-3 Allowable Exterior Noise Levels for Events

Time Period	Noise Level (dBA)				
	L_{50}	L_{25}	L_8	L_2	L_{max}
9:00 a.m.–8:00 p.m.	60	65	70	75	80
8:00 p.m.–10:00 p.m.	55	60	65	70	75

Source: Contra Costa County Ordinance Code.
Note: Amplified sound is prohibited after eight p.m. Sundays through Thursdays and after ten p.m. Fridays, Saturdays, and holidays. A temporary event permit may not allow the use of amplified sound after these hours.

- **Title 8, *Special Land Uses*, Section 88-3.612, *Noise,*** establishes noise standards for wind energy conversion systems (WECS). Under this provision, a commercial WECS may not generate or emit any noise at any time that exceeds a maximum level of 65 dBA, measured at each line of the exterior project boundary. Additionally, a residential WECS may not generate or emit any noise at any time that exceeds a maximum level of 60 decibels (dBA), as measured at each line of the parcel upon which the residential WECS is installed.

Buchanan Field Airport Noise Management Program

The Buchanan Field Airport Noise Management Program includes Noise Abatement Procedures for airplanes and helicopters, such as arrivals, departures, and training procedures. The Noise Management Program also includes the following restrictions:

- Airplanes exceeding 78 dBA per Federal Aviation Administration (FAA) AC 36-3 are prohibited.
- The curfew for airplanes exceeding 75 dBA per AC 36-3 is between 10:00 p.m. and 7:00 a.m. local.

Construction Noise and Vibration

Contra Costa County has not adopted specific limits or thresholds for construction noise and vibration. The Federal Transit Administration (FTA) provides criteria for acceptable construction noise levels at sensitive receptors and groundborne vibration for various types of buildings. The recommended vibration criteria by the FTA are shown in Table 5.13-4, *Building Architectural Damage Limits*. The FTA construction noise criterion for residential receptors during daytime hour is 80 dBA $L_{eq(8hr)}$.

Table 5.13-4 Building Architectural Damage Limits

Building Category	PPV (in/sec)
I. Reinforced concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Nonengineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

Source: FTA 2018.

5.13.1.3 EXISTING CONDITIONS

Ambient Noise Measurements

Ambient noise monitoring was conducted within the EIR Study Area by PlaceWorks in April 2019 during weekday periods to determine a baseline noise level at different environments. Long-term (48-hour) measurements were conducted at four locations in the EIR Study Area, and short-term (15 minute) measurements were conducted at 19 locations in the EIR Study Area. All measurements were conducted from Tuesday, April 23, through Thursday, April 25, 2019. Short-term measurements were generally made during morning (i.e., 7:00 am to 10:00 am) and afternoon (i.e., 3:00 pm to 7:00 pm) peak commute hours.

Meteorological conditions during the measurement periods were favorable for outdoor sound measurements and were noted to be representative of the typical conditions for the season. All sound level meters were equipped with a windscreen during measurements.

All sound level meters used for noise monitoring satisfy the American National Standards Institute standard for Type 1 instrumentation.[1] The sound level meters were set to "slow" response and "A" weighting (dBA). The meters were calibrated prior to and after the monitoring period. All measurements were at least 5 feet above the ground and away from reflective surfaces. Noise measurement locations are described in this section and shown in Figures 5.13-1 through 5.13-6, *Approximate Countywide Noise Monitoring Locations*.

[1] Monitoring of ambient noise was performed using Larson-Davis Model LxT and 820 sound level meters.

5. Environmental Analysis
NOISE

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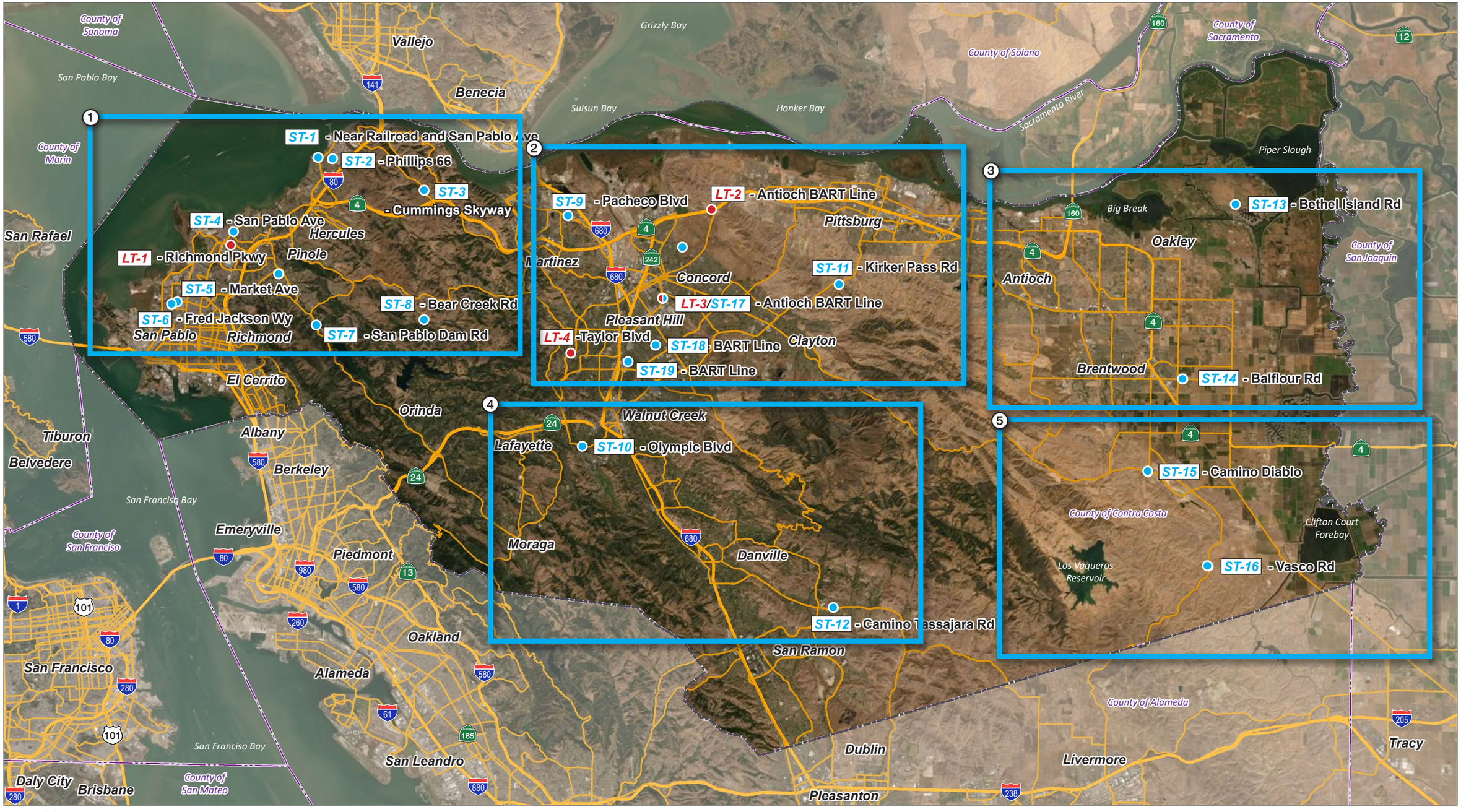
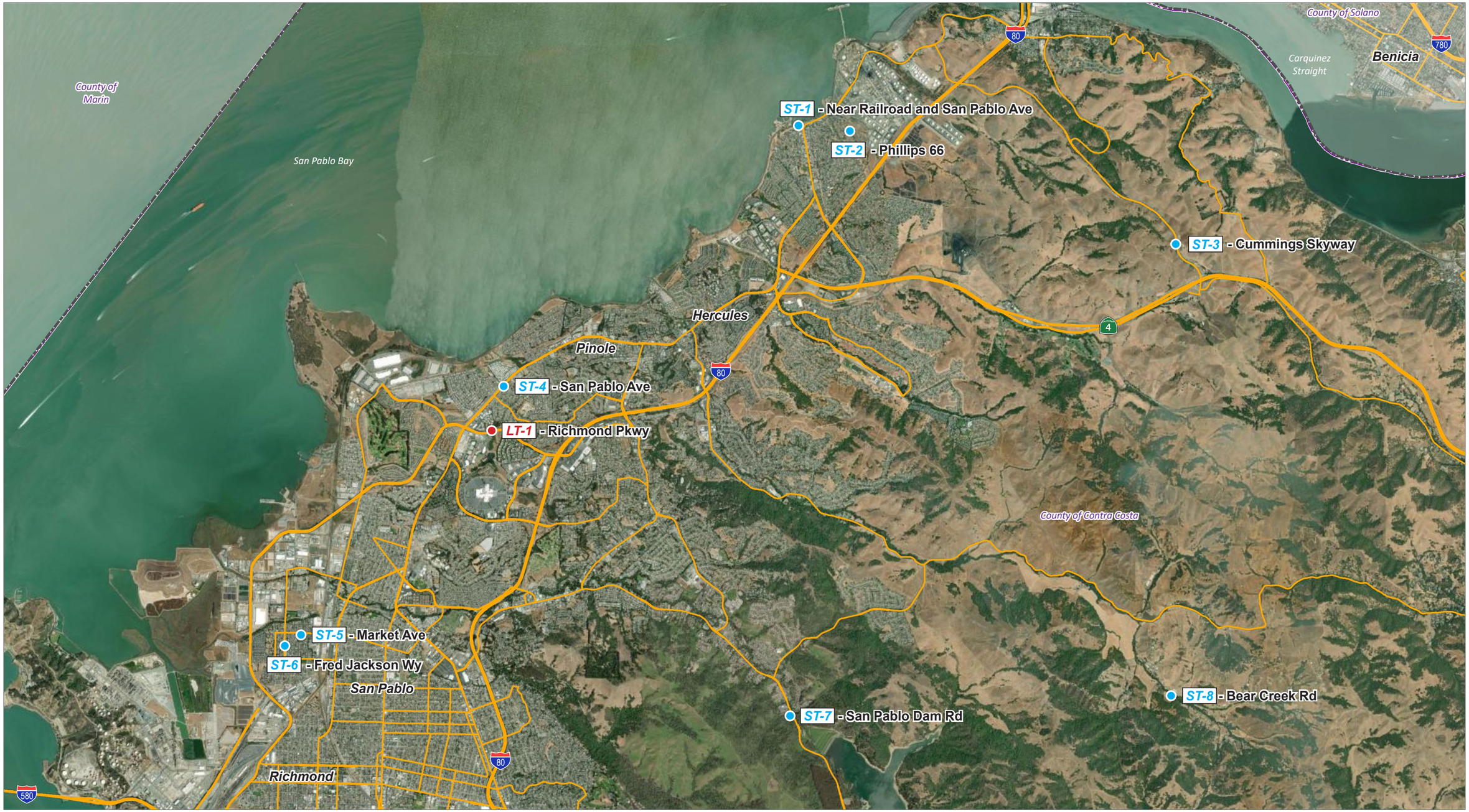


Source: ESRI, 2022

0 4
Scale (Miles)

Contra Costa County Boundary
County Boundary
Index Map Areas (5)

Figure 5.13-1
Approximate Countywide Noise Monitoring Locations (Index Map)



Source: ESRI, 2022

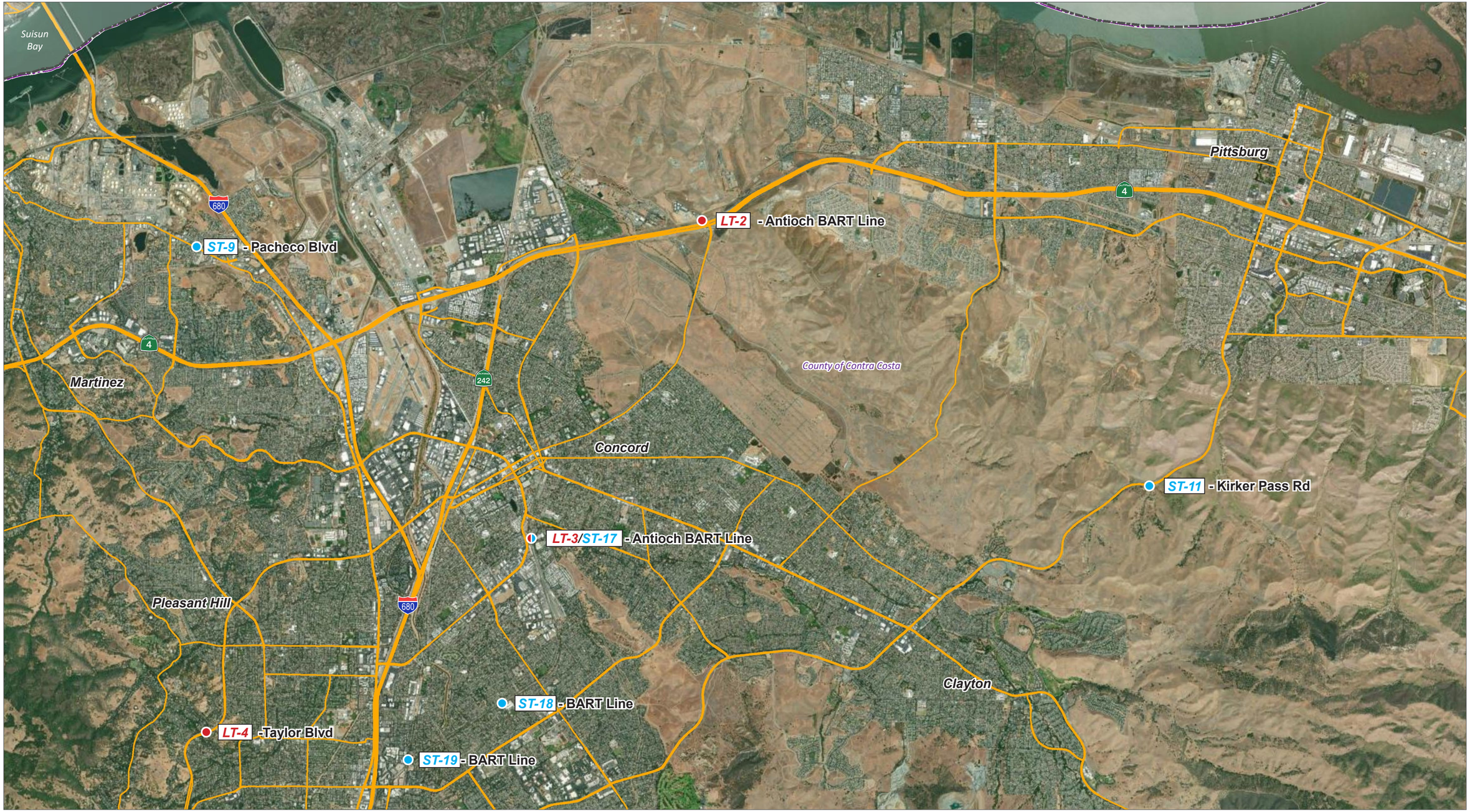
0 1
Scale (Miles)

Contra Costa County Boundary

ST-X Short-Term Noise Measurement Locations

LT-X Long-Term Noise Measurement Locations

Figure 5.13-2
Approximate Countywide Noise Monitoring Locations (Map 1 of 5)



Source: ESRI, 2022

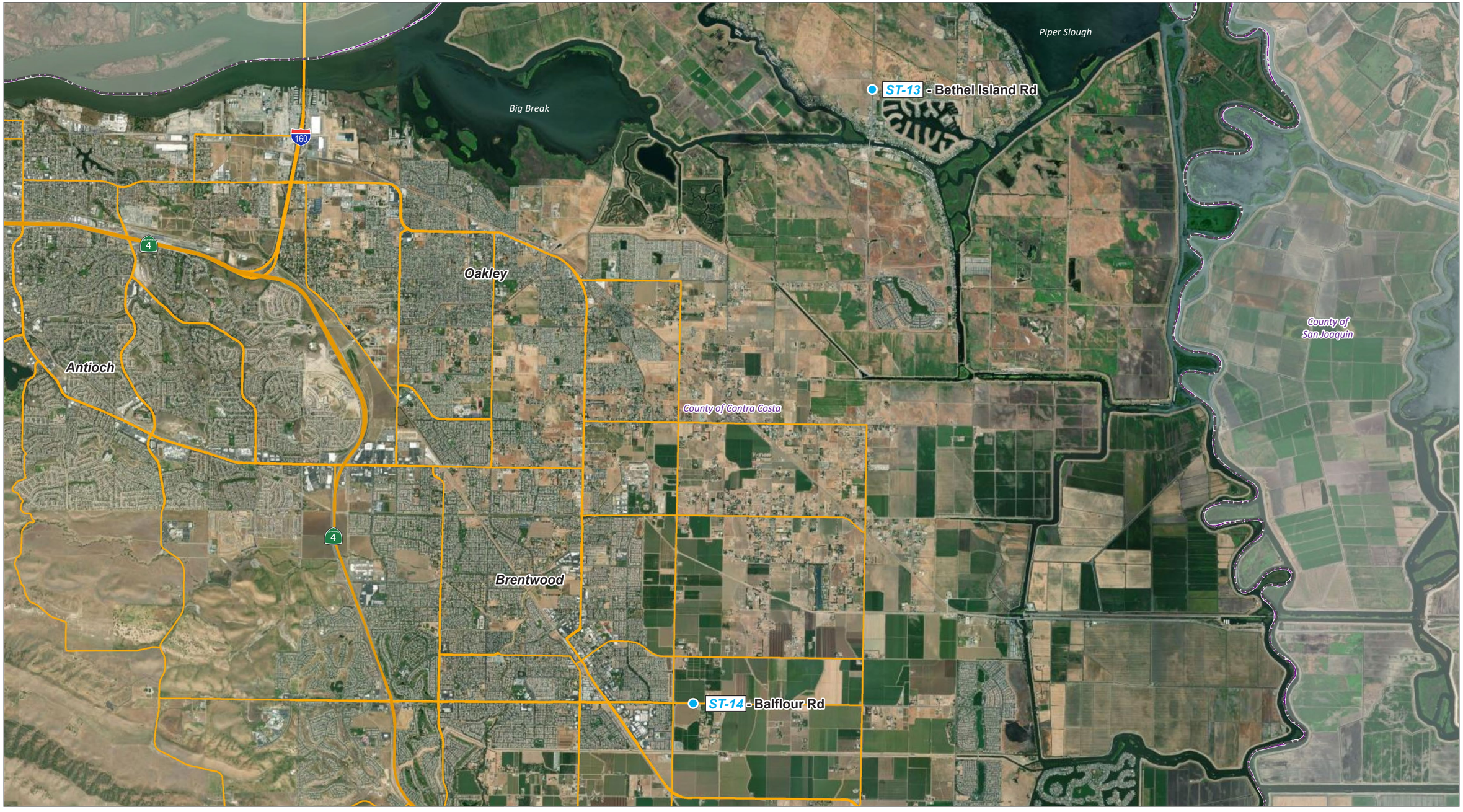
0 1
Scale (Miles)

Contra Costa County Boundary

ST-X Short-Term Noise Measurement Locations

LT-X Long-Term Noise Measurement Locations

Figure 5.13-3
Approximate Countywide Noise Monitoring Locations (Map 2 of 5)



Source: ESRI, 2022

0 1
Scale (Miles)

Contra Costa County Boundary

ST-X Short-Term Noise Measurement Locations

Figure 5.13-4
Approximate Countywide Noise Monitoring Locations (Map 3 of 5)



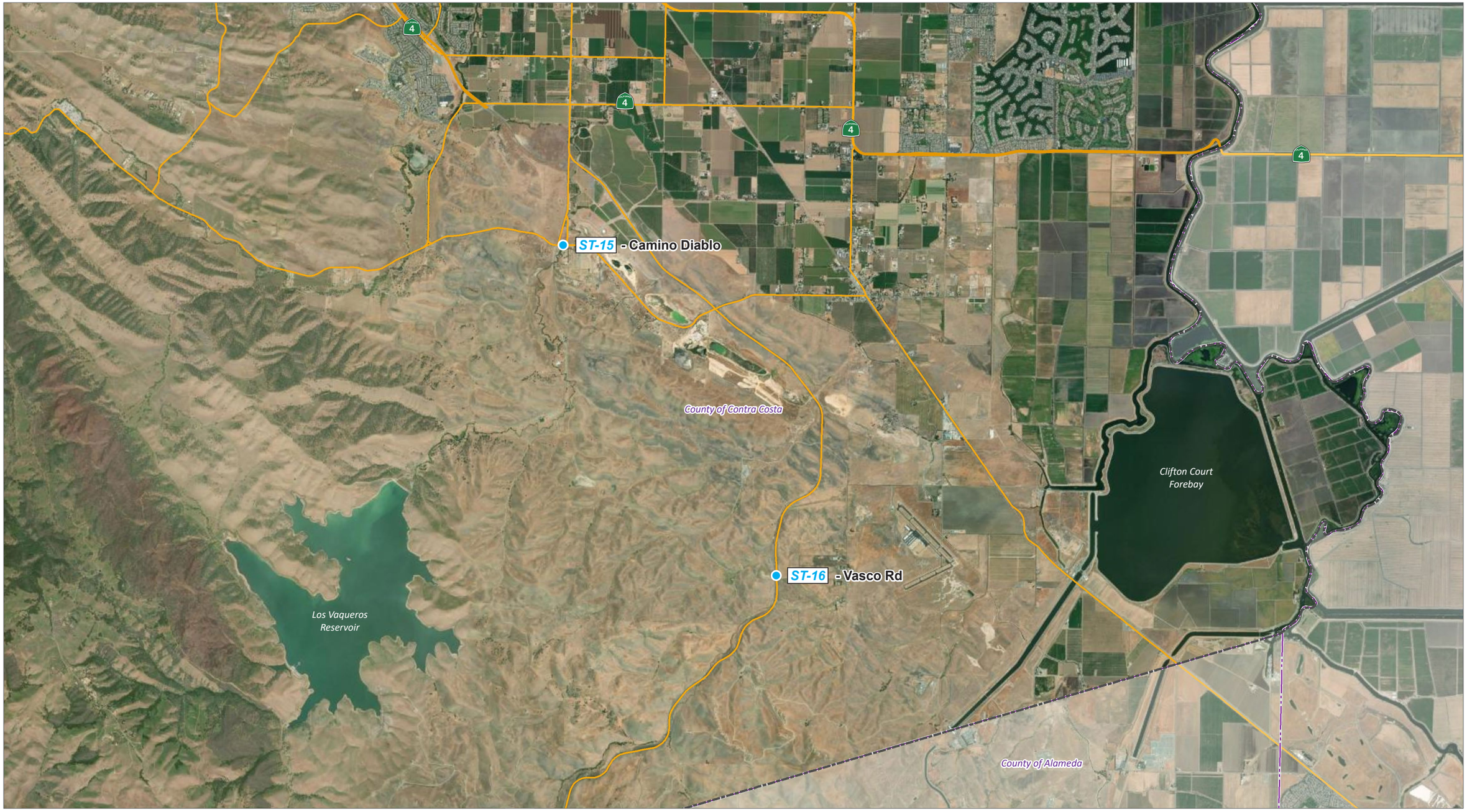
Source: ESRI, 2022

0 1
Scale (Miles)

Contra Costa County Boundary

ST-X Short-Term Noise Measurement Locations

Figure 5.13-5
Approximate Countywide Noise Monitoring Locations (Map 4 of 5)



Source: ESRI, 2022

0 1
Scale (Miles)

Contra Costa County Boundary
County Boundary
ST-X Short-Term Noise Measurement Locations

Figure 5.13-6
Approximate Countywide Noise Monitoring Locations (Map 5 of 5)

Ambient Noise Monitoring Results

During the ambient noise survey, the CNEL noise levels at monitoring locations ranged from 66 to 80 dBA CNEL. The long-term noise measurement results are summarized later in this section and shown in Table 5.13-5, *Long-Term Noise Measurements Summary*, and a graphical summary of the daily trend during long-term noise measurements is provided in Appendix 5.13-1. The short-term noise measurement results are also summarized later in this section and shown in Table 5.13-6, *Short-Term Noise Measurements Summary.*

Table 5.13-5 Long-Term Noise Measurement Summary

Monitoring Location	Description	Long-Term Noise Level, dBA		
		CNEL	Lowest $L_{eq(1hr)}$	Highest $L_{eq(1hr)}$
LT-1	Richmond Parkway east of San Pablo Avenue 04/23/2019, 11:00 am	80	68.8	76.4
LT-2	Antioch BART Line along Evora Road 04/23/2019, 1:00 pm	75	63.3	71.9
LT- 3	Antioch BART Line along San Miguel Road 04/23/2019, 2:00 pm	66	49.1	69.2
LT- 4	Taylor Boulevard east of Withers Avenue 04/23/2019, 3:00 pm	76	54.1	76.8

Table 5.13-6 Short-Term Noise Measurements Summary

Monitoring Location	15-Minute Noise Level, dBA						
	L_{eq}	L_{max}	L_{min}	L_2	L_8	L_{25}	L_{50}
ST-1	64.4	78.1	49.7	76.8	69.2	55.0	51.7
ST-2	47.8	55.3	45.1	52.6	49.4	48.1	47.1
ST-3	72.0	87.6	33.9	80.5	77.4	71.7	61.0
ST-4	74.3	87.8	44.0	80.8	78.8	75.7	72.0
ST-5	60.0	75.8	47.5	68.2	64.6	59.3	54.6
ST-6	59.7	77.1	47.1	68.8	64.7	57.6	52.6
ST-7	75.5	88.5	51.1	81.3	79.4	77.2	74.2
ST-8	56.0	76.1	34.3	67.7	56.7	43.8	39.8
ST-9	70.4	82.6	50.1	76.5	74.2	71.6	68.7
ST-10	70.1	77.3	43.6	74.7	73.6	71.8	69.4
ST-11	75.1	84.4	46.7	80.4	79.0	77.0	73.9
ST-12	69.2	81.0	41.3	76.4	74.0	70.8	65.0
ST-13	56.8	78.8	33.5	66.2	52.0	46.0	42.1
ST-14	68.3	85.3	38.2	76.4	72.7	68.1	62.0
ST-15	67.8	88.1	38.2	76.2	72.0	62.9	51.2
ST-16	73.4	87.7	60.5	81.2	78.6	72.2	68.8
5-Minute Noise Level, dBA at BART Rail Locations							
ST-17[a]	57.0	69.3	47.2	62.5	60.3	57.9	55.0
ST-18[a]	66.6	80.1	43.5	75.1	72.2	66.8	58.8
ST-19[a]	53.1	66.5	45.8	61.6	55.6	52.3	50.7

[a] 5-minute ambient measurements at BART rail locations only.

Long-Term Noise Monitoring Locations

- **Long-Term Location 1 (LT-1)** was on Richmond Parkway east of San Pablo Avenue. The measurement location was approximately 20 feet north of the Richmond Parkway westbound centerline. A 48-hour noise measurement was conducted, beginning at the 12:00 pm hour on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic.
- **Long-Term Location 2 (LT-2)** was at the intersection of the Willow Pass Road and State Route (SR-) 4 westbound onramp and in close proximity to the Antioch Bay Area Rapid Transit (BART) line in the median of SR-4. A 48-hour noise measurement was conducted, beginning at the 1:00 pm hour on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic and BART pass-bys.
- **Long-Term Location 3 (LT-3)** was on San Miguel Road north of Systron Drive and in close proximity to the Antioch BART line at the transition from an embankment to an elevated platform. A 48-hour noise measurement was conducted, beginning at the 2:00 pm hour on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic and BART pass-bys.
- **Long-Term Location 4 (LT-4)** was on Taylor Boulevard east of Withers Avenue. The measurement location was approximately 25 feet south of the Taylor Boulevard eastbound centerline. A 48-hour noise measurement was conducted, beginning at the 3:00 pm hour on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic.

Short-Term Noise Monitoring Locations

- **Short-Term Location 1 (ST-1)** was at Lone Tree Point Park in Rodeo. The measurement location was approximately 25 feet south of the park's property line with the Union Pacific right-of-way. A 15-minute noise measurement was conducted, beginning at 8:52 am on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by light local traffic, wildlife such as birds, and occasional train pass-bys. In addition to the 15-minute ambient noise measurement, a train pass-by was measured, which consisted of an Amtrak with one engine and six cars. The train did not sound its horn while passing.
- **Short-Term Location 2 (ST-2)** was at the dead end of Mariposa Avenue east of Dempsey Way near the Phillips 66 Refinery. A 15-minute noise measurement was conducted, beginning at 9:19 am on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by low ambient noise levels with a distant industrial hum, occasional small plane flyovers, distant traffic, and distant dogs barking.
- **Short-Term Location 3 (ST-3)** was on Cummings Skyway north of SR-4. The measurement location was approximately 20 feet west of the Cummings Skyway southbound centerline. A 15-minute noise measurement was conducted, beginning at 9:49 am on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic. Secondary noise sources included birds.
- **Short-Term Location 4 (ST-4)** was on San Pablo Avenue north of Shamrock Drive. The measurement location was approximately 18 feet east of the San Pablo Avenue northbound centerline. A 15-minute noise measurement was conducted, beginning at 8:35 am on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic. Secondary noise sources included birds.

- **Short-Term Location 5 (ST-5)** was on Market Avenue east of 5th Street. The measurement location was approximately 20 feet south of the Market Avenue eastbound centerline. A 15-minute noise measurement was conducted, beginning at 7:36 am on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic. Secondary noise sources included birds, dogs, and occasional train pass-bys.
- **Short-Term Location 6 (ST-6)** was on San Pablo Dam Road north of Tri Lane. The measurement location was approximately 20 feet west of the San Pablo Road southbound centerline. A 15-minute noise measurement was conducted, beginning at 9:17 am on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic. Secondary noise sources included birds.
- **Short-Term Location 7 (ST-7)** was in front of 1636 Fred Jackson Way. The measurement location was approximately 25 feet east of the Fred Jackson northbound centerline. A 15-minute noise measurement was conducted, beginning at 7:00 am on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic. Secondary noise sources included birds.
- **Short-Term Location 8 (ST-8)** was in front of 1174 Bear Creek Road. A 15-minute noise measurement was conducted, beginning at 9:51 am on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by low-volume traffic. Secondary noise sources included birds, horses, and aircraft overflights.
- **Short-Term Location 9 (ST-9)** was in front of 3907 Pacheco Boulevard. The measurement location was approximately 20 feet north of the Pacheco Boulevard westbound centerline. A 15-minute noise measurement was conducted, beginning at 3:08 pm on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic.
- **Short-Term Location 10 (ST-10)** was on Olympic Boulevard east of Newell Court. The measurement location was approximately 25 feet south of the Pacheco Boulevard westbound centerline. A 15-minute noise measurement was conducted, beginning at 3:08 pm on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic. Secondary noise sources included aircraft overflights.
- **Short-Term Location 11 (ST-11)** was on Kirker Pass Road north of Hess Road. The measurement location was approximately 20 feet south of the Kirker Pass eastbound centerline. A 15-minute noise measurement was conducted, beginning at 4:03 pm on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by traffic along Kirker Pass Road.
- **Short-Term Location 12 (ST-12)** was on Camino Tassajara Road east of Rassani Drive. The measurement location was approximately 20 feet north of the Camino Tassajara westbound centerline. A 15-minute noise measurement was conducted, beginning at 6:06 pm on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic.
- **Short-Term Location 13 (ST-13)** was on Bethel Island Road north of Gateway Road. The measurement location was approximately 8 feet east of the Bethel Island Road northbound centerline. A 15-minute noise measurement was conducted, beginning at 3:50 pm on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by birds, wind, and distant vehicular traffic. local traffic.
- **Short-Term Location 14 (ST-14)** was on Balfour Road east of Sellers Avenue. The measurement location was approximately 18 feet south of the Balfour road eastbound centerline. A 15-minute noise measurement was conducted, beginning at 4:34 pm on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic. Secondary noise sources included birds when quiet (i.e., no traffic).

- **Short-Term Location 15 (ST-15)** was on Camino Diablo east of Walnut Boulevard. The measurement location was approximately 14 feet north of the Camino Diablo westbound centerline. A 15-minute noise measurement was conducted, beginning at 5:01 pm on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic. Secondary noise sources included birds and house pumps.
- **Short-Term Location 16 (ST-16)** was on Vasco Road between Camino Diablo and the county boundary line. The measurement location was approximately 25 feet west of the Vasco Road southbound centerline. A 15-minute noise measurement was conducted, beginning at 5:34 pm on Tuesday, April 23, 2019. The noise environment of this site is characterized primarily by local traffic.
- **Short-Term Location 17 (ST-17)** was on San Miguel Road north of Systron Drive and in close proximity to the Antioch BART line at the transition from an embankment to an elevated platform. A 15-minute noise measurement was conducted, beginning at 3:30 pm on Thursday, April 25, 2019. The noise environment of this site is characterized primarily by BART rail noise.
- **Short-Term Location 18 (ST-18)** was at grade near the BART line along Minert Road east of Weaver Lane. A 15-minute noise measurement was conducted, beginning at 3:41 pm on Thursday, April 25, 2019. The noise environment of this site is characterized primarily by BART rail noise.
- **Short-Term Location 19 (ST-19)** was on between Coggins Drive (north of Las Juntas Way) and the BART above ground rail line. A 15-minute noise measurement was conducted, beginning at 4:11 pm on Thursday, April 25, 2019. The noise environment of this site is characterized primarily by BART rail noise.

Existing Traffic Noise

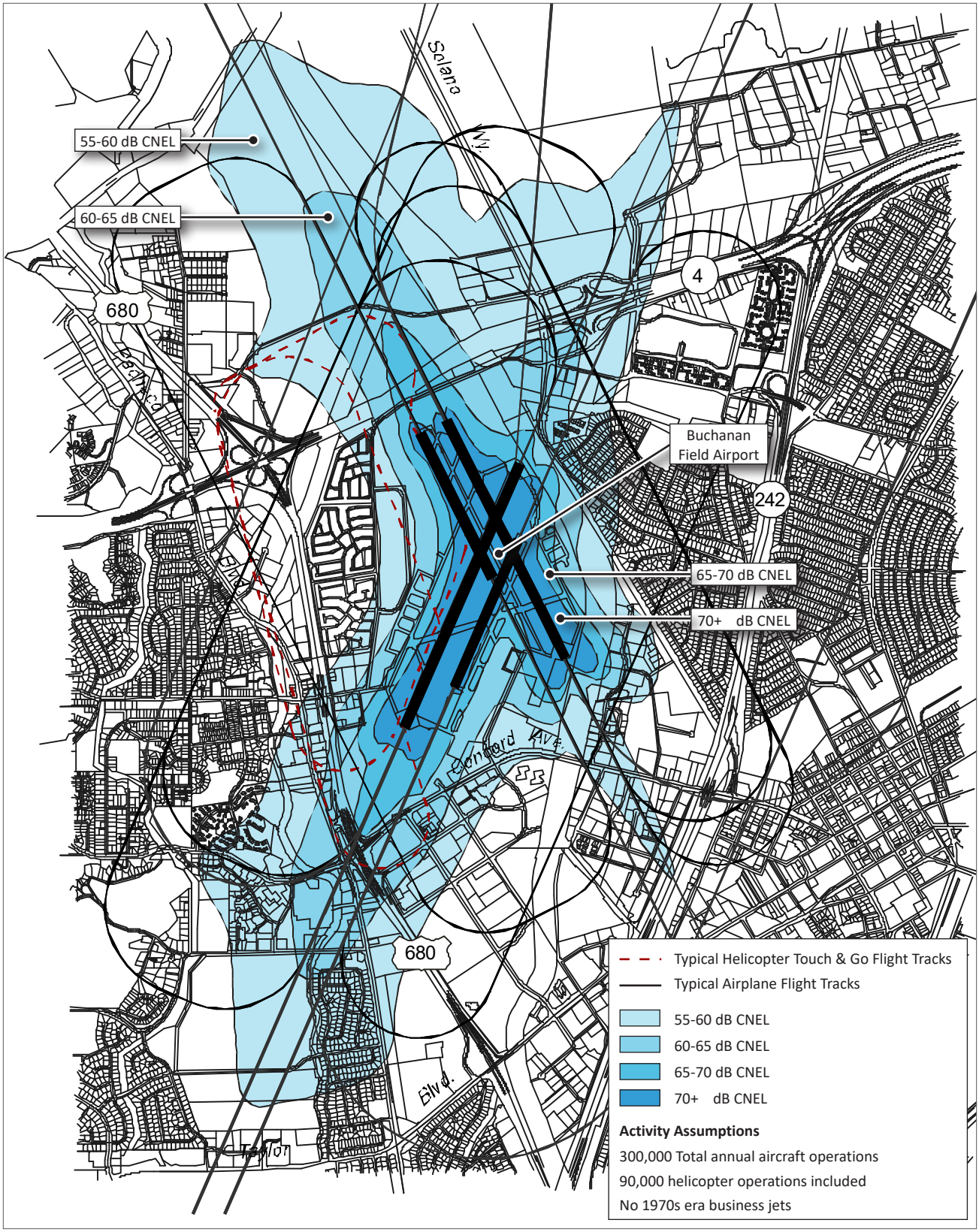
On-road vehicles are the most prominent source of noise in the EIR Study Area. Traffic data provided by Fehr and Peers, which included 225 study roadway segments, average daily traffic volumes (ADT), vehicle mix (i.e., auto, medium-duty truck, and heavy-duty truck), and day, evening, and night splits were used to model existing traffic noise levels. The modeled roadways and existing noise contours for 60 dBA CNEL, 65 dBA CNEL, and 70+ dBA CNEL can be found in Appendix 5.13-1.

Aircraft Noise

Aircraft noise in the EIR Study Area can be intrusive to sensitive receptors in the immediate vicinity of the two public airports—Buchanan Field Airport and Byron Airport.

Buchanan Field Airport

Buchanan Field Airport is a general aviation airport in unincorporated Concord. The airport has seen a decrease in aircraft operations from 350,000 in 1975 to approximately 119,355 in 2022 (AirNav 2023a). Helicopters account for approximately 35 percent of flight activity, which is primarily for flight training. It is projected that non-helicopter aircraft operations will increase by approximately 37 percent, which is consistent with the county's projected growth. Total operations are expected to reach no more than 320,000 operations per year, which would remain below the 1975 historic high of 350,000 operations (Contra Costa County 2000). As shown in Figure 5.13-7, *Buchanan Field Airport Noise Contours*, the 55 to 60 and 60 to 65 dB CNEL noise contours extend to portions of residential communities to the northeast and southwest.



Source: Buchanan Field Airport Master Plan 2008.

0 3,000
Scale (Feet)

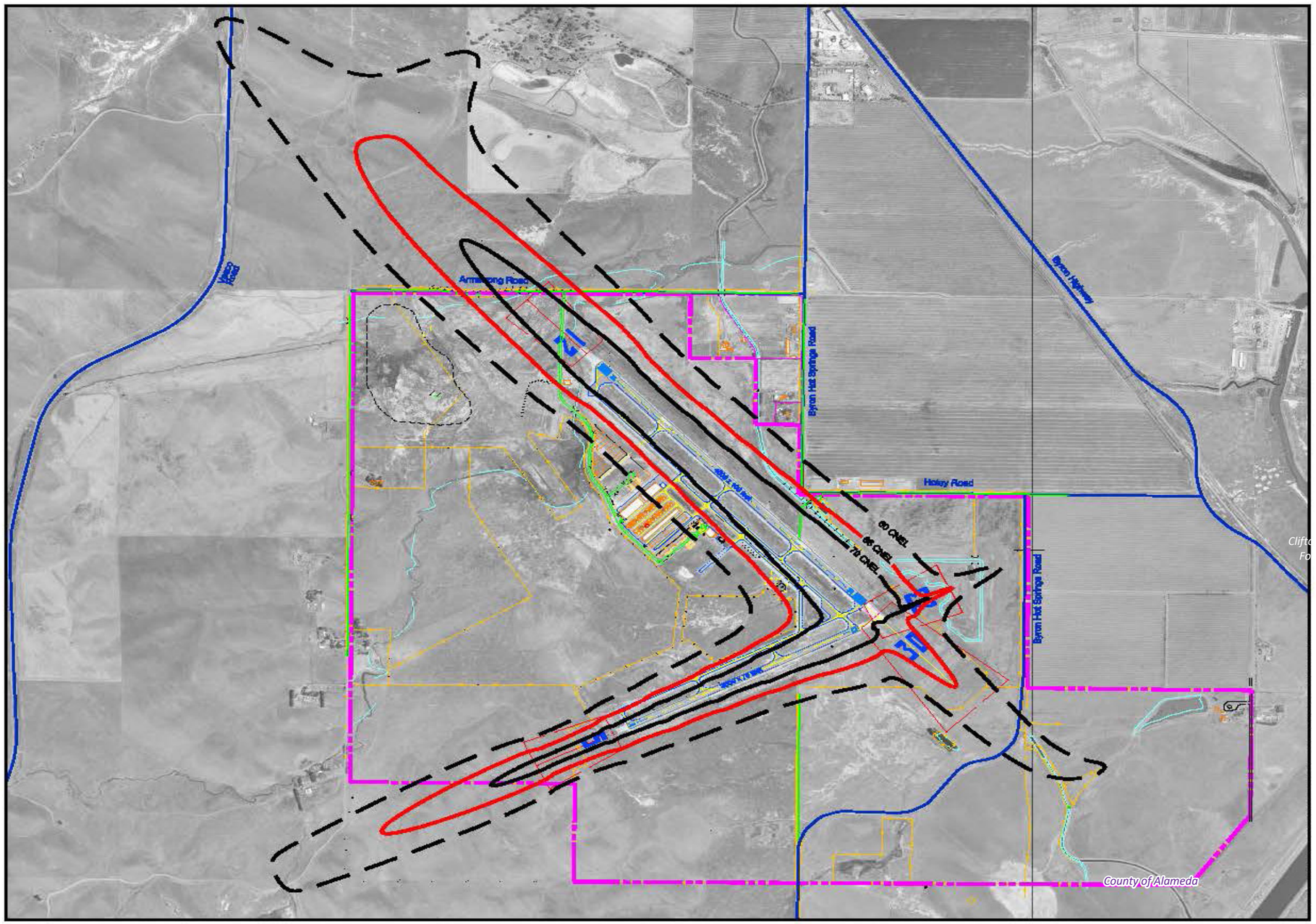
Figure 5.13-7
Buchanan Field Airport Noise Contours

Byron Airport

Byron Airport is a County-owned airport that serves a variety of flying activities, including sky diving, sailplane, flights, and ultralight aircraft operations. In June 2022, the County Board of Supervisors adopted the Byron Airport Development Program. The Development Program included a new land use plan for the airport which broadened the range of uses allowed by right on the airport property. The County Airport Land Use Commission (ALUC) subsequently adopted amendments to the Byron Airport section of the County's Airport Land Use Compatibility Plan (ALUCP) to add new policies and maps consistent with the most recent version of the Caltrans California Airport Land Use Planning Handbook. Currently 80 aircraft are based at Byron Airport (AirNav 2023b). At full buildout, the airport's capacity is approximately 380 aircraft. In 2021, approximately 82,855 aircraft operations took place (AirNav 2023b). Figure 5.13-8, *Byron Airport Noise Contours*, shows the projected airport noise contours.

Railroad Noise

Railroad operations are a substantial source of noise in some parts of the EIR Study Area. Day-night average noise levels vary throughout the EIR Study Area depending on the number of trains per day along a given rail line, the timing and duration of train pass-by events, and whether or not trains must sound their warning whistles near "at-grade" crossings. Noise levels commonly range from 65 to 75 dBA CNEL at land uses adjoining a railroad right-of-way. When trains approach a passenger station or at-grade crossing, they are required to sound their warning whistle within a quarter mile. Train warning whistles typically generate maximum noise levels of 105 to 110 dBA at 100 feet. The day-night average noise level at locations immediately adjacent to at-grade crossings and exposed to multiple train pass-by events per day can exceed 85 dBA L_{dn}/CNEL. Table 5.13-7, *Existing Railroad Noise Levels*, contains the calculated distances to the 65 dBA CNEL contours from existing railroad noise, both from the main line and within a quarter mile of grade crossings where horn warnings are required.



Source: Byron Airport Master Plan 2005

0 1,200
Scale (Feet)

Figure 5.13-8
Byron Airport Noise Contours

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Table 5.13-7 Existing Railroad Noise Levels

Operator	Subdivision	Distance (feet) to 65 dBA CNEL Contour (Main Line)	Distance (feet) to 65 dBA CNEL Contour (Within ¼ Mile of Grade Crossing)
BNSF	Stockton Subdivision	210	382
BNSF	Stockton Subdivision west of Port of Chicago	210	355
RPRC	Chevron Lead	5	69
RPRC	Cutting Lead	5	69
RPRC	Harbor Lead	15	195
RPRC	LRT Lead	20	241
UP	Martinez Subdivision	175	NA[1]
UP	Martinez Subdivision south of Pinole	220	NA[1]
UP	Tracy Subdivision	10	73

Notes: Calculated using the FTA CREATE Model and FRA Grade Crossing Horn Model. See Appendix 5.13-1.
BNSF = Burlington Northern Santa Fe; RPRC = Richmond Pacific Railroad; UP = Union Pacific.
[1]NA: Not Applicable because there are no at-grade crossings and therefore no horns.

Union Pacific: Tracy Subdivision

There currently is no freight traffic on the Union Pacific (UP) Tracy Subdivision from Mococo (Martinez) to the eastern boundary of Contra Costa County. The UP Tracy has been inactive for over 30 years but, according to UP, freight traffic may be reactivated in the future. Amtrak San Joaquin passenger trains travel on these tracks starting near Port Chicago where they cross over from the Burlington Northern and Santa Fe (BNSF) Railway Stockton Subdivision. The trains continue west on the UP Tracy Subdivision until joining with the UP Martinez Subdivision in Martinez. Only a short section between Port Chicago and Martinez is currently active with Amtrak San Joaquin passenger trains. There are 10 Amtrak San Joaquin passenger trains per day.

Burlington Northern Santa Fe: Stockton Subdivision

The BNSF Railway has freight traffic and Amtrak San Joaquin passenger traffic from Port Chicago to the eastern boundary of Contra Costa County. At Port Chicago, the westbound Amtrak San Joaquin trains switch to the UP Tracy Subdivision, from which point the BNSF only has freight traffic and the tracks terminate in Richmond.

Union Pacific: Martinez Subdivision

The UP Martinez Subdivision has freight traffic and passenger traffic. The Amtrak San Joaquin runs 10 trains per day, Amtrak Capitol Corridor runs 22 trains per day, Amtrak Coast Starlight runs two trains per day, and Amtrak California Zephyr runs two trains per day. The tracks enter Contra Costa County at the Benicia-Martinez Bridge and continue west. The UP Tracy Subdivision with Amtrak San Joaquin trains end at Ferry Street and merge onto the UP Martinez Subdivision.

Richmond Pacific Railroad

The Richmond Pacific Railroad (RPRC) is a terminal railroad serving the Chevron Refinery, the Richmond Yard, and other industrial customers in Richmond. The various RPRC tracks accommodate between 2 and 22 switching trains per day.

Quiet Zones

There are designated "quiet zones" in Richmond at Parchester Village and at select locations along the RPRC tracks in and around Richmond Harbor. In these locations, trains are not required to sound their warning whistle (though still may if the conductor deems it necessary for safety reasons).

Stationary Source Noise

Stationary sources of noise may occur from all types of land uses. Residential uses generate noise from landscaping, maintenance activities, and air conditioning systems. Commercial uses generate noise from heating, ventilation, and air conditioning (HVAC) systems; loading docks; and other sources. Industrial uses generate noise from HVAC systems, loading docks, and oil refinery machinery and activity. Noise generated by residential or commercial uses are generally short and intermittent. Industrial uses may generate noise on a more continual basis due to the nature of its activities. Nightclubs, outdoor dining areas, gas stations, car washes, fire stations, drive-throughs, swimming pool pumps, school playgrounds, athletic and music events, and public parks are other common noise sources.

Existing Vibration

Commercial and industrial operations in the EIR Study Area can generate varying degrees of ground vibration, depending on the operational procedures and equipment. Such equipment-generated vibrations spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the vibration source varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. In addition, future sensitive receptors could be placed within close proximity to existing railroad lines through development in the EIR Study Area.

5.13.2 Thresholds of Significance

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project would normally have a significant effect on the environment if the project would result in:

N-1 Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

N-2 Generation of excessive groundborne vibration or groundborne noise levels.

N-3 For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

Construction Noise and Vibration Thresholds

As mentioned previously, the County does not have specific limits or thresholds for construction noise. Therefore, the FTA construction noise criterion of 80 dBA $L_{eq(8hr)}$ is used in this analysis to assess construction noise impacts at sensitive receptors.

Stationary Noise Thresholds

The County does not provide exterior noise standards for operational stationary noise sources. However, it does provide maximum allowable exterior noise levels for special events (shown in Table 5.13-3) between the hours of 9:00 a.m. and 8:00 p.m. and 8:00 p.m. and 10:00 p.m. For the purposes of this analysis, these standards are used to determine significant stationary noise impacts with revised hours to include both daytime and nighttime periods, as shown in Table 5.13-8, *Allowable Exterior Noise Levels*.

Table 5.13-8 Allowable Exterior Noise Levels

Time Period	Noise Level (dBA)				
	L_{50}	L_{25}	L_8	L_2	L_{max}
Daytime, 7:00 am–7:00 pm[1]	60	65	70	75	80
Nighttime, 7:00 pm–7:00 am[1]	55	60	65	70	75

[1]Standard daytime and nighttime hours.

Transportation Noise Thresholds

A project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas. Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions, and changes of 1 to 3 dBA are detectable under quiet, controlled conditions. Changes of less than 1 dBA are usually indiscernible. A change of 5 dBA is readily discernible to most people in an exterior environment. Based on this, the following thresholds of significance, similar to those recommended by the FAA, are used to assess traffic noise impacts at sensitive receptor locations. A significant impact would occur if the traffic noise increase would exceed:

- 1.5 dBA in ambient noise environments of 65 dBA CNEL and higher
- 3 dBA in ambient noise environments of 60 to 64 dBA CNEL
- 5 dBA in ambient noise environments of less than 60 dBA CNEL

Vibration Thresholds

As mentioned previously, the County does not have specific limits or thresholds for construction vibration. Therefore, the recommended criteria by the FTA for vibration damage shown in Table 5.13-4 are used in this analysis.

5.13.3 Programs, Plans, and Policies

5.13.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to noise. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Transportation Element

- **Policy TR-P7.2:** Work with the Federal Aviation Administration and aviation operators to minimize conflicts with residential areas and other sensitive receptors.
- ***Policy TR-P7.3:*** *Regulate the location of private airfields and heliports to protect public safety and minimize impacts on nearby residents and sensitive receptors.*
- ***Policy TR-P7.4:*** *Protect the County's airports from encroachment by incompatible uses and minimize the public's exposure to safety hazards and excessive noise by ensuring that all future development within each Airport Influence Area is consistent with the Contra Costa County ALUCP.*
- **Policy TR-P7.5:** Partner with the cities of Concord and Pleasant Hill in making land use decisions that support Buchanan Field Airport's ongoing viability while protecting public safety, consistent with the Airport Master Plan and ALUCP.
- **Policy TR-P7.6:** Enhance Byron Airport's viability by protecting it from incompatible urban encroachment, such as large-scale residential development, and providing infrastructure that supports existing and planned airport activities, consistent with the Airport Master Plan and ALUCP.

Health and Safety Element

- **Goal HS-14:** An acceptable noise environment in all areas of the county.
  - ***Policy HS-P14.1.*** *Require projects that would locate noise-sensitive land uses in areas where the projected ambient noise level is greater than the "normally acceptable" noise level indicated in Table HS-3 of the General Plan to provide an acoustical analysis that recommends appropriate mitigation to meet the noise compatibility standards.*
  - ***Policy HS-P14.2.*** *Require new housing developments, hotels, and motels exposed to a DNL of 60 dB or greater to provide a detailed acoustical analysis describing how the project will provide an interior DNL of 45 dB or less.*
  - ***Policy HS-P14.3.*** *Require new nonresidential uses exposed to a DNL of 65 dB or greater to provide a detailed acoustical analysis describing how the project will provide an interior sound level of 50 Leq (1-hr)*
  - ***Policy HS-P14.4.*** *Require new residential development in areas exposed to a DNL in excess of 65 dB due to single events, such as train operation, to provide an acoustical analysis describing how indoor noise levels from these single events will not exceed a maximum A-weighted noise level of 35 dB in bedrooms and 55 dB in other habitable rooms. In areas exposed to a DNL in excess of 65 dB, use an indoor residential noise-level threshold of 45 dB CNEL.*
  - ***Policy HS-P14.5.*** *Protect noise-sensitive land uses listed in Table HS-3 from adverse noise impacts by requiring mitigation to the degree feasible for projects that would increase long-term noise in excess of the following thresholds, when measured at the sensitive use's property line:*

a) Greater than 1.5 dBA DNL increase for ambient noise environments of 65 dBA DNL and higher.
b) Greater than 3 dBA DNL increase for ambient noise environments of 60 to 64 DNL.
c) Greater than 5 dBA DNL increase for ambient noise environments of less than 60 dBA DNL.

- ***Policy HS-P14.6.*** *Design County projects to minimize long-term noise impacts on existing residents and follow best practices to minimize short-term impacts from construction noise.*
- ***Policy HS-P14.7.*** *Condition entitlements to limit noise-generating construction activities to the following:*
  a) Weekdays and non-holidays unless site-specific conditions warrant exception
  b) Within 1,000 feet of noise-sensitive uses: 8:00 a.m. to 5:00 p.m.
  c) Over 1,000 feet from noise-sensitive uses: 7:00 a.m. to 6:00 p.m.
- ***Policy HS-P14.8.*** *Require a traffic noise analysis for development projects where the project would generate more than 40 percent of daily trips over existing average daily traffic (ADT) on impacted roadway segments. Projects below this threshold are assumed to have no significant traffic noise impact because they would increase noise levels by less than 1.5 dBA DNL, which is the most restrictive threshold for determining a significant traffic noise impact. This screening policy does not apply to projects involving a substantial number of new operational truck trips (e.g., warehouses).*
- ***Policy HS-P14.9.*** *Require effective measures along major transportation facilities/corridors to reduce impacts on adjacent noise-sensitive land uses.*
- **Policy HS-P14.10.** Require new development to evaluate noise impacts on the natural environment, including impacts on wildlife, whenever appropriate.
- **Policy HS-P14.11.** When reviewing proposals for new vibration-sensitive uses near an existing railroad or Bay Area Rapid Transit (BART) line, use Table HS-4 to evaluate whether the sensitive uses could be exposed to excessive groundborne vibration. Projects with sensitive uses within the screening distances identified in the table will require preparation of a groundborne vibration and noise evaluation that is consistent with Federal Transit Administration-approved methodologies.
- **Action HSA14.1.** Study the feasibility of adopting a noise ordinance establishing maximum exterior noise levels at sensitive receptors for noise generated by permanent and temporary stationary, non-transportation sources and construction sources.
- **Action HSA14.2.** Pursue federal Quiet Zone status for rail crossings that are a noise nuisance to nearby residential areas and other noise-sensitive land uses.

5.1.1.1 PROPOSED CAP STRATEGIES AND ACTIONS

There are no strategies or actions in the proposed Climate Action Plan (CAP) that are applicable to noise.

5.13.4 Environmental Impacts

Traffic noise levels for existing and project conditions were estimated using the FHWA traffic noise prediction model methodology. The FHWA model predicts noise levels through a series of adjustments to a reference sound level. These adjustments account for distances from the roadway, volumes vehicle mix (i.e., auto, medium-duty truck, and heavy-duty truck), time of day split (i.e., day, evening, and night), speeds, and number of lanes data, which were provided by Fehr & Peers for highway and roadway segments in the county for

existing and future project conditions The complete distances to the 70, 65, and 60 dBA CNEL noise contours for roadway segments in the county are included in Appendix 5.13-1.

As a result of the California Supreme Court decision regarding the assessment of the environment's impacts on projects (*California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal. 4th 369 (No. S 213478) issued December 17, 2015), it is generally no longer the purview of the CEQA process to evaluate the impact of existing environmental conditions on any given project. As a result, while the noise from existing sources is taken into account as part of the baseline, the direct effects of exterior noise from nearby noise sources relative to land use compatibility of a future project as a result of implementation of the project is typically no longer a required topic for impact evaluation under CEQA. Generally, no determination of significance is required except for certain school projects, projects affected by airport noise, and projects that would exacerbate existing conditions (i.e., projects that would have a significant operational impact). As required by the proposed General Plan Policy HS-P14.1, new projects shall be required to meet acceptable exterior noise levels standards as established in the Noise and Land Use Compatibility Guidelines from the General Plan. These guidelines, along with the future noise levels shown in the General Plan noise contour maps, should be used by the County as a guide for evaluating the compatibility of noise sensitive projects in potentially noisy areas.

Impact 5.13-1: Construction activities would result in temporary noise increases in the vicinity of the proposed project. [Threshold N-1]

Proposed General Plan

As part of implementing the proposed project, various individual future development projects would generate temporary noise level increases on and adjacent to construction sites in the EIR Study Area. Construction within the EIR Study Area would be limited to weekdays and non-holidays to the hours set forth in the proposed General Plan Policy HS-P14.7. The hours would be from 8:00 a.m. to 5:00 p.m. when construction occurs within 1,000 feet of a noise sensitive receptor; and 7:00 a.m. to 6:00 p.m. when construction occurs at distances greater than 1,000 feet from the nearest noise-sensitive receptor. Construction is performed in distinct steps, each of which has its own mix of equipment, and, consequently, its own noise characteristics. Table 5.13-9, *Reference Construction Equipment Noise Levels,* lists typical construction equipment noise levels recommended for noise-impact assessments based on a distance of 50 feet between the equipment and noise receptor.

Table 5.13-9 Reference Construction Equipment Noise Levels

Construction Equipment	Typical Max Noise Level at 50 feet (dBA L_{max})[1]	Construction Equipment	Typical Max Noise Level at 50 feet (dBA L_{max})[1]
Air Compressor	80	Pile-Driver (Impact)	101
Backhoe	80	Pile-Driver (Sonic)	95
Ballast Equalizer	82	Pneumatic Tool	85
Ballast Tamper	83	Pump	77
Compactor	82	Rail Saw	90
Concrete Mixer	85	Rock Drill	95
Concrete Pump	82	Roller	85
Concrete Vibrator	76	Saw	76
Crane, Derrick	88	Scarifier	83
Crane, Mobile	83	Scraper	85
Dozer	85	Shovel	82
Generator	82	Spike Driver	77
Grader	85	Tie Cutter	84
Impact Wrench	85	Tie Handler	80
Jack Hammer	88	Tie Inserter	85
Loader	80	Truck	84
Paver	85		

Source: FTA 2018.

As shown, construction equipment generates high levels of noise, with maximums ranging from 76 to 101 dBA at a distance of 50 feet. Construction of individual development projects associated with implementation of the proposed project would temporarily increase the ambient noise environment and would have the potential to affect noise-sensitive land uses in the vicinity of an individual project.

Construction noise levels are highly variable and dependent on the specific locations, site plans, construction details, and presence or absence of any natural or human-made barriers with potential acoustic dampening effects (e.g., the presence of vegetation, berms, walls, or buildings). Significant noise impacts may occur from operation of heavy earth-moving equipment and truck-haul operations that would occur with construction of individual development projects, which have not yet been developed, particularly if construction techniques, such as impact or vibratory pile driving, are proposed. The time of day that construction activity is conducted would also determine the significance of each project, particularly during the more sensitive evening/nighttime hours. However, construction would be localized and would occur intermittently for varying periods of time.

Because specific project-level information is inherently not available at this time, it is not possible nor appropriate to quantify the construction noise impacts at specific sensitive receptors. In most cases, construction of individual development projects associated with implementation of the proposed project would temporarily increase the ambient noise environment in the vicinity of each individual project, potentially affecting existing and future nearby sensitive uses. Proposed General Plan Policy HS-P14.6 would help to mitigate County projects by requiring them to minimize short-term noise impacts on sensitive receptors by following best practices to minimize short-term impacts from construction noise. However, because construction activities associated with any individual development may occur near noise-sensitive receptors and

because, depending on the project type, equipment list, time of day, phasing, and overall construction durations, noise disturbances may occur for prolonged periods of time or during the more sensitive evening/nighttime hours, construction noise impacts associated with implementation of the proposed project are considered potentially significant.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing greenhouse gas (GHG) emissions and adapting to changing climate conditions. While the proposed CAP would not directly result in any new development, the implementation of its actions may indirectly result in construction activity. Similar to construction activity under the proposed General Plan, such activity could occur near noise-sensitive receptors. Depending on the project type, equipment list, time of day, phasing, and overall construction durations, noise disturbances may occur for prolonged periods of time or during the more sensitive nighttime hours. Therefore, construction noise impacts associated with implementation of the proposed project are considered potentially significant.

Level of Significance Before Mitigation: Impact 5.13-1 would be potentially significant.

Mitigation Measures

N-1 Require construction contractors to implement the following measures for construction activities. Demolition, grading, and construction plans submitted to the County shall identify these measures and the County Department of Conservation and Development shall verify that the submitted plans include these notations prior to issuance of demolition, grading, and/or construction permits:

- During the entire active construction period, equipment and trucks used for project construction shall use the best-available noise control techniques (e.g., improved mufflers, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) available.
- Impact tools (e.g., jack hammers and breakers) shall be hydraulically or electrically powered wherever possible. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used along with external noise jackets on the tools.
- Stationary equipment, such as generators and air compressors, shall be located as far as feasible from nearby noise-sensitive uses.
- Stockpiling shall be located as far as feasible from nearby noise-sensitive receptors.
- Construction traffic shall be limited, to the extent feasible, to approved haul routes approved by the County Conservation and Development and Public Works Departments.
- At least 10 days prior to the start of construction activities, a sign shall be posted at the entrance(s) to the job site, clearly visible to the public, that includes permitted construction days and hours, as well as the telephone numbers of the County's and contractor's authorized representatives that are assigned to respond in the event of a noise or vibration

complaint. If the authorized contractor's representative receives a complaint, they shall investigate, take appropriate corrective action, and report the action to the County.

- Signs shall be posted at the job site entrance(s), within the on-site construction zones, and along queueing lanes (if any) to reinforce the prohibition of unnecessary engine idling. All other equipment shall be turned off if not in use for more than 5 minutes.
- During the entire active construction period and to the extent feasible, the use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only. For projects that are located in close proximity to noise-sensitive uses such as residences, the construction manager shall use smart back-up alarms, which automatically adjust the alarm level based on the background noise level, or switch off back-up alarms and replace with human spotters in compliance with all safety requirements and laws.
- Erect temporary noise barriers (at least as high as the exhaust of equipment and breaking line-of-sight between noise sources and sensitive receptors), as necessary and feasible, to maintain construction noise levels at or below the performance standard of 80 dBA L_{eq}. Barriers shall be constructed with a solid material that has a density of at least 4 pounds per square foot with no gaps from the ground to the top of the barrier.

Level of Significance After Mitigation: Impact 5.13-1 would remain significant and unavoidable.

Impact 5.13-2 Project implementation would generate a substantial traffic noise increase on local roadways and could locate sensitive receptors near rail in areas that exceed established noise standards. [Threshold N-1]

Proposed General Plan

Transportation Noise

Development that results in traffic increases can also result in long-term traffic noise increases on roadways and freeways in the county. New development and associated traffic noise increases could result in exposure of existing receptors or future planned development to substantial permanent noise increases. Depending on the proximity of future projects to other land use types and existing major freeways and roadways, traffic noise increases could expose sensitive receptors to substantial traffic noise levels that would exceed applicable noise standards. Future CNEL noise levels at 50 feet along local roadways for existing and future conditions provided by Illingworth & Rodkin (2023) are shown in Table 5.13-10, *Existing and Future Modeled Noise Levels Along Surrounding Roadways*.

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Table 5.13-10 Existing and Future Modeled Noise Levels Along Surrounding Roadways

Roadway	Segment	CNEL at 50 feet from the Roadway Centerline, dBA		Increase over Existing, dBA
		Existing	2045	2045
Alhambra Valley Rd	Pereira Rd to Valley Orchard Ct	64	66	2
	West 2/3 of Castro Ranch Rd to Pereira Rd	63	66	3
	East 1/3 of Castro Ranch Rd to Pereira Rd	63	66	3
	Vasa Creek Rd to Alhambra Valley Rd	64	66	2
Appian Way	Kister Cir to Valley View Rd/Appian Way	69	72	3
	Northeast 2/3 of Santa Rita Rd to La Paloma Rd	68	71	3
	Garden Rd to San Pablo Dam Rd	68	70	2
	Sunhill Cir to Fran Way	67	69	2
	La Paloma Rd to Pebble Dr	67	70	3
	Pebble Dr to Sunhill Cir	67	69	2
	Manor Rd to Kister Cir	69	72	3
	Allview Ave to Rancho Rd	70	73	3
	Rancho Rd to Manor Rd	70	73	3
	Southwest 2/3 of Santa Rita Rd to La Paloma Rd	68	71	3
	Garden Rd to Santa Rita Rd	68	70	2
Arlington Ave	Rincon Rd to Arlington Ct	60	63	3
	Oberlin Ave to Coventry Rd	64	67	3
	Arlington Ct to Oberlin Ave	61	64	3
	Lam Ct to Rincon Rd	61	64	3
	Roberta Dr to Lam Ct	63	67	4
Bailey Rd	North 1/2 of San Marco Blvd to Willow Ave	70	73	3
	Second and third 1/6 from the South of Willow Ave to San Marco Blvd	70	73	3
	North 1/3 of San Marco Blvd to Myrtle Dr	70	73	3
	San Marco Blvd intersection	70	73	3
	South 1/9 of Willow Ave to San Marco Blvd	70	73	3
	California Delta Hwy interchange	70	73	3

Table 5.13-10 Existing and Future Modeled Noise Levels Along Surrounding Roadways

Roadway	Segment	CNEL at 50 feet from the Roadway Centerline, dBA		Increase over Existing, dBA
		Existing	2045	2045
Bailey Rd	South 3/4 of Mary Ann Ln to Canal Rd	67	69	2
	Canal Rd to California Delta Hwy	71	73	2
	South 1/2 of Canal Rd to Canal Rd	68	71	3
	Willow Pass Rd to Mary Ann Ln/Placer Dr	66	69	3
	North 1/4 of Mary Ann Ln to Canal Rd	67	69	2
Balfour Rd	Byron Hwy to Bixler Rd	62	65	3
	West 1/2 of Sellers Ave to Byron Hwy	60	61	1
	East 1/2 of Sellers Ave to Byron Hwy	60	60	0
Bear Creek Rd	Bear Oaks Rd to Happy Valley Rd	60	64	4
	Alhambra Valley Rd to Bear Oaks Dr	61	65	4
Bethel Island Rd	Dutch Slough Rd to Wells Rd	66	70	4
	Wells Rd to Sandmound Blvd	67	70	3
Byron Hwy	Northwest 1/3 of Camino Diablo Rd to Byron Hot Springs Rd	69	71	2
	Northwest 1/4 of Holway Dr to Byron Hot Springs Rd	69	71	2
	Northwest 3/4 of Byron Hot Springs Rd to Clifton Ct	69	61	-8
	Southeast 2/3 of Camino Diablo Rd to Byron Hot Springs Rd	69	71	2
California Delta Hwy	Byron Hwy to Regatta Dr	71	73	2
	Newport Dr to Wayfarer Dr	71	74	3
	Bixler Rd to Newport Dr	72	74	2
	Regatta Dr to Bixler Rd	71	73	2
	Wayfarer Dr to County line	66	69	3
Camino Diablo Rd	N Vasco Rd to Holway Dr	69	70	1
	McCabe Rd to Holway Dr	69	70	1
Camino Tassajara	Oak Gate Dr to Shadow Creek Dr	66	68	2
	Conejo Dr to Buckingham Dr	71	73	2
	Crow Canyon Rd to Blackhawk Plaza Cir/Tassajara Ranch Dr	71	72	1
	Tassajara Ranch Dr to Conejo Dr	71	73	2

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Table 5.13-10 Existing and Future Modeled Noise Levels Along Surrounding Roadways

Roadway	Segment	CNEL at 50 feet from the Roadway Centerline, dBA		Increase over Existing, dBA
		Existing	2045	2045
Camino Tassajara	Parkhaven Dr to Jasmine Way	70	71	1
	Rassani Dr to Parkhaven Dr	70	72	2
	East 3/4 of Mansfield Dr/Jasmine Way to Oak Gate Dr/Lawrence Rd	69	70	1
	West 1/4 of Mansfield Dr/Jasmine Way to Oak Gate Dr/Lawrence Rd	69	70	1
	North 1/2 of Highland Rd to Windemere Pkwy	62	65	3
	Johnston Rd to Highland Rd	63	66	3
	Finley Rd to Johnston Rd	63	66	3
	Third 1/6 from the North of Highland Rd to Windemere Pkwy	62	65	3
	Second 1/4 from the South of Highland Rd to Windemere Pkwy	62	65	3
	West 3/4 of Charbray St to Finley Rd	63	66	3
	Monterosso St to Knollview Dr	63	66	3
	West 9/10 of Knollview Dr to Blackhawk Dr	63	66	3
	East 1/10 of Knollview Dr to Blackhawk Dr	63	65	2
	Southeast 1/4 of Blackhawk Dr to Finley Rd	63	66	3
Castro Ranch Rd	Hillside Dr to San Pablo Dam Rd	63	66	3
	Olinda Rd to Amend Rd	64	67	3
	Country View Dr to Alhambra Valley Rd	61	65	4
Coggins Dr	Southeast 2/3 of Buskirk Ave/Oak Rd to Roble Rd	46	50	4
	West 1/3 of Buskirk Ave/Oak Rd to Roble Rd	44	49	5
Cummings Skwy	Crockett Blvd to John Muir Pkwy	61	64	3
Danville Blvd	Casa Maria Ct to Camille Ave	68	69	1
	Stone Valley Rd W to Casa Maria Ct	68	70	2
	Camille Ave to El Portal	68	70	2
Deer Valley Rd	Balfour Rd to Marsh Creek Rd	54	64	10
	Empire Mine Rd to Balfour Rd	66	69	3
	Balfour Rd to Chadbourne Rd	61	66	5
	South 3/4 of Deer Hill Ln to Empire Mine Rd	67	71	4
	Second 1/8 from the North of Deer Hill Ln to Empire Mine Rd	67	71	4
Delta Rd	Sellers Ave to Curlew Connex	61	64	3

Table 5.13-10 Existing and Future Modeled Noise Levels Along Surrounding Roadways

Roadway	Segment	CNEL at 50 feet from the Roadway Centerline, dBA		Increase over Existing, dBA
		Existing	2045	2045
Evora Rd	Gwin Ave to Willow Pass Ct/Willow Pass Rd	63	63	0
	Southwest 1/2 of Willow Pass Ct to Driftwood Dr	69	71	2
	Northeast 1/2 of Willow Pass Ct to Driftwood Dr	69	71	2
Fred Jackson Way	Pittsburg Ave to Market Ave	51	57	6
Imhoff Dr	Waterbird Way to Solano Way	58	60	2
	Blum Rd to Imhoff Pl	61	64	3
	Imhoff Pl to Waterbird Way	60	64	4
Kirker Pass Rd	Black Diamond Mines to Pheasant Dr	73	75	2
	Black Diamond Mines to Myrtle Dr	73	75	2
Market Ave	4th St to 6th St	54	60	6
	Fred Jackson Way to 4th St	54	60	6
	2nd St to Fred Jackson Way	51	57	6
	West 3/4 of 6th St to Rumrill Blvd	57	63	6
Marsh Creek Rd	West 1/2 of Byron Hwy to Bixler Rd	56	62	6
	Northwest 1/3 of Russelmann Park Rd to Morgan Territory Rd	60	65	5
	Northwest 1/3 of Marsh Creek Rd/Clayton Rd intersection to Morgan Territory Rd	61	65	4
	South 2/3 of Vineyard Pkwy to Marsh Creek Rd/Camino Diablo Rd	58	61	3
	West 1/2 of Deer Valley Rd to Marsh Creek Rd	57	62	5
	Gill Dr to Deer Valley Rd	55	63	8
	Clayton Ranch of Russelmann Park Rd to Bragdon Way	59	64	5
	Bragdon Way to Gill Dr	59	64	5
	East 1/4 of Deer Valley Rd to Marsh Creek Rd	57	62	5
	Second 1/4 from the East of Deer Valley Rd to Old Marsh Creek Rd	57	62	5
Marsh Creek Rd	East 1/3 of California Delta Hwy/Vasco Rd to Walnut Blvd	69	62	-7
	North 1/3 of Vineyard Pkwy to Camino Diablo Rd	59	62	3
	Vineyard Pkwy intersection	59	64	5
	West 1/3 of Orchard Ln to Walnut Blvd	69	62	-7

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Table 5.13-10 Existing and Future Modeled Noise Levels Along Surrounding Roadways

Roadway	Segment	CNEL at 50 feet from the Roadway Centerline, dBA		Increase over Existing, dBA
		Existing	2045	2045
	California Delta Hwy to Orchard Ln	69	69	0
	Sellers Ave to Byron Hwy	69	63	-6
	Walnut Blvd to Sellers Ave	69	62	-7
	Fertado Ln to Bixler Rd	56	62	6
	East 1/3 of Byron Hwy to Fertado Ln	56	62	6
N Vasco Rd	Central 1/3 of Camino Diablo to County line	63	70	7
	South 1/3 of Camino Diablo to County line	63	70	7
	North 1/3 of Camino Diablo to County line	74	78	4
Oak Rd	Wayne Dr to Treat Blvd	64	64	0
	Coggins Dr to Elena Ct	61	65	4
	Elena Ct to Las Juntas Way	63	65	2
	Las Juntas Way to Wayne Dr	58	62	4
Old Marsh Creek Rd	Southwest 3/4 of Vineyard Pkwy to California Delta Hwy/Vasco Rd	60	64	4
Olympic Blvd	Boulevard Way to Willow Ave	71	73	2
	Newell Ct to Boulevard Way/Tice Valley Blvd	70	71	1
	Pleasant Hill Rd to Windtree Ct	70	71	1
	Windtree Ct to Newell Ct	70	71	1
	Crawford Cr to Newell Ave	71	73	2
	Newell Ave to Paulson Ln	70	71	1
	Willow Ave to Crawford Ct	71	73	2
Pacheco Blvd	Wygal Dr to Morello Ave	68	68	0
	Camino del Sol to Arthur Rd/Pacheco Blvd	70	69	-1
	Morello Ave to Adelaide Dr	68	68	0
Pacheco Blvd	Adelaide Dr to Camino del Sol	69	68	-1
	Southeast 2/3 of Arnold Dr to Blum Rd	64	69	5
	Northwest 1/3 of Arnold Dr to Blum Rd	61	67	6

Table 5.13-10 Existing and Future Modeled Noise Levels Along Surrounding Roadways

Roadway	Segment	CNEL at 50 feet from the Roadway Centerline, dBA		Increase over Existing, dBA
		Existing	2045	2045
	Arthur Rd to Arnold Dr	61	67	6
	Carolos Dr to 1st Ave N	64	68	4
	Muir Rd to N Buchanan Cir	66	69	3
	Blum Rd to Muir Rd	68	71	3
	Center Ave to 2nd Ave S	67	70	3
	1st Ave N to Center Ave	65	68	3
	West 1/2 of Howe Rd to Wygal Dr	67	68	1
	Palm Ave to Santa Fe Ave	67	68	1
	Shell Ave to Palm Ave	68	69	1
	Santa Fe Ave to Howe Rd	68	68	0
	Central 1/3 of Howe Rd to Morello Ave	67	68	1
Parr Blvd	East 2/3 of Richmond Pkwy to Fred Jackson Way	58	61	3
	East 1/2 of Fred Jackson Way to Goodrick Ave	59	62	3
	West 1/2 of Richmond Pkwy to Fred Jackson Way	60	61	1
Pinole Valley Rd	Marlin Ct to Alhambra Valley Rd/Castro Ranch Rd intersection	60	65	5
Pittsburg Ave	West 1/2 of Richmond Pkwy to Central St	56	59	3
	Central St to Fred Jackson Way	53	57	4
	East 1/2 of Richmond Pkwy to Central St	55	58	3
Pleasant Hill Rd	Purson Ln to Rancho View Dr	71	72	1
Pomona St	West 2/3 of Merchant St to Eastshore FWY	67	69	2
Reliez Valley Rd	Grayson Rd to Gloria Ter	65	66	1
	Gloria Ter to Withers Ave	65	67	2
	Southeast 1/2 of Hidden Pond Rd to Silverhill Dr	67	68	1
	Tavan Estates Dr to Silverhill Way	67	69	2
Reliez Valley Rd	Silverhill Dr to Grayson Rd	68	69	1

5. Environmental Analysis
NOISE

Table 5.13-10 Existing and Future Modeled Noise Levels Along Surrounding Roadways

Roadway	Segment	CNEL at 50 feet from the Roadway Centerline, dBA		Increase over Existing, dBA
		Existing	2045	2045
Richmond Pkwy	Parr Blvd to Pittsburg Ave	75	76	1
San Pablo Ave	Kay Rd to Shamrock Dr	70	73	3
	Northeast 3/4 of Richmond Pkwy to Kay Rd	71	74	3
	Shamrock Dr to Tara Hills Dr	70	73	3
	Tara Hills Dr to Oconnor Dr	70	73	3
	Railroad Ave to California St	68	70	2
	San Pablo Ave and Parker Ave intersection to Railroad Ave	68	70	2
	West 1/2 of California St to A St	68	69	1
	Southwest 1/8 of California St to Refinery Rd	68	69	1
	Vista del Rio St to Merchant St	67	69	2
	Cummings Skwy to Vista del Rio St	67	69	2
	Union Oil Company to A St	67	69	2
	A St to Cummings Skwy	67	69	2
San Pablo Dam Rd	Greenridge Dr to Lila Ln	66	69	3
	Hillcrest Rd to La Colina Rd	71	73	2
	El Portal Dr to Hillcrest Rd	69	72	3
	La Colina Rd to Campbell Ln	70	72	2
	North 1/2 of Castro Ranch Rd to Old San Pablo Dam Rd	68	70	2
	Southeast 1/2 of Old San Pablo Dam Rd to Bear Creek Rd	68	70	2
	Central 1/3 of Old San Pablo Dam Rd to Old San Pablo Dam Rd	68	70	2
	Third 1/6 from the South of Old Pablo Dam Rd to Old Pablo Dam Rd	68	70	2
	Oak Creek Rd to Castro Ranch Rd	66	69	3
	Lila Ln to Valley View Rd	66	69	3
	Valley View Rd to Jodie Ln	66	68	2
Sellers Ave	Central 1/3 of Sunset Rd to Chestnut St	54	58	4
	Redhaven St to Balfour Ave	54	58	4

Table 5.13-10 Existing and Future Modeled Noise Levels Along Surrounding Roadways

Roadway	Segment	CNEL at 50 feet from the Roadway Centerline, dBA		Increase over Existing, dBA
		Existing	2045	2045
Sellers Ave	South 1/2 of Sycamore Ave to Chestnut St	54	58	4
	Chestnut St to Redhaven Ave	57	62	5
	Fourth 1/8 from the North of Sycamore Ave to Chestnut St	54	58	4
	North 2/3 of Sunset Rd to Sycamore Ave	54	58	4
	Second 1/6 from the South of Sunset Rd to Sycamore Ave	54	58	4
Sobrante Ave	Fran Way to Valley View Rd	66	69	3
Stone Valley Rd	Northeast 3/4 of Alamo Glen Dr/Stone Creek Pl to Smith Rd	66	69	3
Sunset Rd	Sellers Ave to Eden Plains Rd	59	60	1
	Eden Plains Rd to Byron Hwy	60	63	3
Taylor Blvd	Twinview Pl to Withers Ave	70	72	2
	North 1/2 of Withers Ave to Pleasant Hill Rd	70	72	2
	South 1/2 of Withers Ave to Pleasant Hill Rd	71	72	1
Treat Blvd	Augello Ct/Maywood Dr to Cherry Ln	72	74	2
	Oak Rd to Jones Rd	73	73	0
	Jones Rd to Augello Ct/Maywood Dr	73	74	1
	Cherry Ln to Sheppard Rd	72	74	2
Valley View Rd	Sobrante Ave to Fleetwood Dr	66	69	3
	Amend Rd to Olinda Rd	64	67	3
	San Pablo Dam Rd to Olinda Rd	64	67	3
	Southeast 2/3 of Morninside Dr to Via Giaramita	64	67	3
	Pine Hill Dr to Quiet Ln	63	67	4
	Appian Way to Sobrante Ave	69	72	3
Walnut Blvd	Marsh Creek Rd to Vasco Rd	66	73	7
Willow Pass Rd	Evora Rd to Goble Dr	69	73	4
	Bella Vista Ave to Loftus Rd	66	69	3
	West 1/3 of Clearland Dr to Bailey Rd	67	71	4
	Port Chicago Hwy to Alberts Ave	68	72	4

5. Environmental Analysis

NOISE

Table 5.13-10 Existing and Future Modeled Noise Levels Along Surrounding Roadways

Roadway	Segment	CNEL at 50 feet from the Roadway Centerline, dBA		Increase over Existing, dBA
		Existing	2045	2045
Willow Pass Rd	Goble Dr to Port Chicago Hwy	69	73	4
	Alberts Ave to Enes Ave	67	72	5
	Alves Ln to Clearland Dr	67	72	5
	Marin Ave to Alves Ln	67	72	5
	Solano Ave to Fairview Ave	67	70	3
	East 2/3 of Clearland Dr to Bailey Rd	67	71	4
	Bailey Rd to Solano Ave	68	71	3
	Madison Ave to Bella Vista Ave	67	70	3
	Fairview Ave to Madison Ave	67	70	3

As shown in Table 5.13-10, significant traffic noise increases are estimated along numerous study roadway segments from implementation of the proposed project when analyzed using thresholds similar to those recommended by the FAA, which are identified in the proposed General Plan Policy HS-P14.5. The traffic noise increase is the difference between the projected future noise level and the existing noise level. The modeling also shows that along several roadway segments, a decrease in traffic noise levels is anticipated from implementation of the proposed project. Implementation of proposed General Policies HS-P14.5, HS-P14.6, and HS-P14.9 would help reduce impacts by utilizing best practices and requiring mitigation as feasible for roadways that exceed the thresholds in Policy HS-P14.5 in order to reduce long-term (traffic) impacts to adjacent noise sensitive land uses. However, traffic noise increases would still be potentially significant.

Table 5.13-11, *Proposed General Plan Traffic Noise Contour Distances,* presents the future distances from the 60, 65, and 70 dBA CNEL contours along the local roadways. With the implementation of proposed General Plan Policies HS-P14.1 and HS-P14.2, noise-sensitive land uses would either be in areas where existing noise levels are normally acceptable for the specific land use (as shown in Table HS-3 of the proposed General Plan), or a detailed acoustical analysis would be required to identify appropriate mitigation to meet the noise compatibility standards. In addition, future noise-sensitive land use projects that are exposed to a DNL of 60 dB or greater are required to provide a detailed acoustical analysis demonstrating how the project would provide an interior DNL of 45 dB or less.

Table 5.13-11 Proposed General Plan Traffic Noise Contour Distances

Roadway	Segment	Distance from Centerline to Traffic Noise Contours, feet[1]		
		70 dBA	65 dBA	60 dBA
Alhambra Valley Rd	Pereira Rd to Valley Orchard Ct	25	60	125
	West 2/3 of Castro Ranch Rd to Pereira Rd	30	60	135
	East 1/3 of Castro Ranch Rd to Pereira Rd	25	60	130
	Vasa Creek Rd to Alhambra Valley Rd	30	60	130
Appian Way	Kister Cir to Valley View Rd/Appian Way	65	140	295
	Northeast 2/3 of Santa Rita Rd to La Paloma Rd	55	120	255
	Garden Rd to San Pablo Dam Rd	50	115	245
	Sunhill Cir to Fran Way	45	95	210
	La Paloma Rd to Pebble Dr	50	105	225
	Pebble Dr to Sunhill Cir	45	100	215
	Manor Rd to Kister Cir	65	145	310
	Allview Ave to Rancho Rd	75	165	355
	Rancho Rd to Manor Rd	75	165	355
	Southwest 2/3 of Santa Rita Rd to La Paloma Rd	55	120	255
	Garden Rd to Santa Rita Rd	55	115	250
Arlington Ave	Rincon Rd to Arlington Ct	20	40	80
	Oberlin Ave to Coventry Rd	30	65	140
	Arlington Ct to Oberlin Ave	20	40	90
	Lam Ct to Rincon Rd	20	40	95
	Roberta Dr to Lam Ct	30	65	140
Bailey Rd	North 1/2 of San Marco Blvd to Willow Ave	75	165	355
	Second and third 1/6 from the South of Willow Ave to San Marco Blvd	75	165	355
	North 1/3 of San Marco Blvd to Myrtle Dr	75	165	355
	San Marco Blvd intersection	75	165	355
	South 1/9 of Willow Ave to San Marco Blvd	75	165	355
	California Delta Hwy interchange	75	165	355

Table 5.13-11 Proposed General Plan Traffic Noise Contour Distances

Roadway	Segment	Distance from Centerline to Traffic Noise Contours, feet[1]		
		70 dBA	65 dBA	60 dBA
Bailey Rd	South 3/4 of Mary Ann Ln to Canal Rd	45	95	205
	Canal Rd to California Delta Hwy	80	170	375
	South 1/2 of Canal Rd to Canal Rd	55	115	250
	Willow Pass Rd to Mary Ann Ln/Placer Dr	40	85	185
	North 1/4 of Mary Ann Ln to Canal Rd	40	90	195
Balfour Rd	Byron Hwy to Bixler Rd	25	50	110
Bear Creek Rd	Bear Oaks Rd to Happy Valley Rd	20	40	90
	Alhambra Valley Rd to Bear Oaks Dr	20	50	105
Bethel Island Rd	Dutch Slough Rd to Wells Rd	50	105	225
	Wells Rd to Sandmound Blvd	50	105	225
Byron Hwy	Northwest 1/3 of Camino Diablo Rd to Byron Hot Springs Rd	55	120	260
	Northwest 1/4 of Holway Dr to Byron Hot Springs Rd	55	120	265
	Southeast 2/3 of Camino Diablo Rd to Byron Hot Springs Rd	55	120	255
California Delta Hwy	Byron Hwy to Regatta Dr	80	180	385
	Newport Dr to Wayfarer Dr	85	190	405
	Bixler Rd to Newport Dr	95	205	445
	Regatta Dr to Bixler Rd	80	170	370
	Wayfarer Dr to County line	40	90	190
Camino Diablo Rd	N Vasco Rd to Holway Dr	45	100	220
	McCabe Rd to Holway Dr	50	100	220
Camino Tassajara	Oak Gate Dr to Shadow Creek Dr	40	85	180
	Conejo Dr to Buckingham Dr	75	165	350
	Crow Canyon Rd to Blackhawk Plaza Cir/Tassajara Ranch Dr	70	155	335
	Tassajara Ranch Dr to Conejo Dr	75	165	350
	Parkhaven Dr to Jasmine Way	60	130	285
	Rassani Dr to Parkhaven Dr	60	135	295
	East 3/4 of Mansfield Dr/Jasmine Way to Oak Gate Dr/Lawrence Rd	50	110	240

5. Environmental Analysis
NOISE

Table 5.13-11 Proposed General Plan Traffic Noise Contour Distances

Roadway	Segment	Distance from Centerline to Traffic Noise Contours, feet[1]		
		70 dBA	65 dBA	60 dBA
Camino Tassajara	West 1/4 of Mansfield Dr/Jasmine Way to Oak Gate Dr/Lawrence Rd	50	115	250
	North 1/2 of Highland Rd to Windemere Pkwy	25	50	110
	Johnston Rd to Highland Rd	25	55	120
	Finley Rd to Johnston Rd	25	55	120
	Third 1/6 from the North of Highland Rd to Windemere Pkwy	25	50	110
	Second 1/4 from the South of Highland Rd to Windemere Pkwy	20	50	105
	West 3/4 of Charbray St to Finley Rd	30	60	130
	Monterosso St to Knollview Dr	30	60	130
	West 9/10 of Knollview Dr to Blackhawk Dr	25	55	120
	East 1/10 of Knollview Dr to Blackhawk Dr	25	50	110
	Southeast 1/4 of Blackhawk Dr to Finley Rd	30	60	130
Castro Ranch Rd	Hillside Dr to San Pablo Dam Rd	25	60	125
	Olinda Rd to Amend Rd	35	70	155
	Country View Dr to Alhambra Valley Rd	25	50	110
Cummings Skwy	Crockett Blvd to John Muir Pkwy	20	40	85
Danville Blvd	Casa Maria Ct to Camille Ave	40	90	195
	Stone Valley Rd W to Casa Maria Ct	45	100	215
	Camille Ave to El Portal	45	100	220
Deer Valley Rd	North 1/2 of Chadbourne Rd to Albers Ct	20	40	90
	Central 2/4 of Chadbourne Rd to Marsh Creek Rd	20	40	90
	South 1/2 of Briones Valley Rd to Marsh Creek Rd	20	40	90
	Empire Mine Rd to Balfour Rd	40	85	190
	Balfour Rd to Chadbourne Rd	25	60	125
	South 3/4 of Deer Hill Ln to Empire Mine Rd	60	130	285
	Second 1/8 from the North of Deer Hill Ln to Empire Mine Rd	60	130	280
Delta Rd	Sellers Ave to Curlew Connex	20	45	95

Table 5.13-11 Proposed General Plan Traffic Noise Contour Distances

Roadway	Segment	Distance from Centerline to Traffic Noise Contours, feet[1]		
		70 dBA	65 dBA	60 dBA
Evora Rd	Southwest 1/2 of Willow Pass Ct to Driftwood Dr	60	125	275
	Northeast 1/2 of Willow Pass Ct to Driftwood Dr	60	130	280
Imhoff Dr	Blum Rd to Imhoff Pl	20	45	95
	Imhoff Pl to Waterbird Way	20	40	90
Kirker Pass Rd	Black Diamond Mines to Pheasant Dr	115	250	535
	Black Diamond Mines to Myrtle Dr	110	240	515
Marsh Creek Rd	Northwest 1/3 of Russelmann Park Rd to Morgan Territory Rd	25	50	110
	Northwest 1/3 of Marsh Creek Rd/Clayton Rd intersection to Morgan Territory Rd	25	50	115
	Gill Dr to Deer Valley Rd	20	40	80
	Clayton Ranch of Russelmann Park Rd to Bragdon Way	20	45	100
	Bragdon Way to Gill Dr	20	45	95
	Vineyard Pkwy intersection	20	40	90
	California Delta Hwy to Orchard Ln	45	95	200
N Vasco Rd	Central 1/3 of Camino Diablo to County line	50	100	220
	South 1/3 of Camino Diablo to County line	45	100	215
	North 1/3 of Camino Diablo to County line	175	375	810
Oak Rd	Wayne Dr to Treat Blvd	20	40	90
	Coggins Dr to Elena Ct	25	50	110
	Elena Ct to Las Juntas Way	20	50	105
Old Marsh Creek Rd	Southwest 3/4 of Vineyard Pkwy to California Delta Hwy/Vasco Rd	20	45	95
Olympic Blvd	Boulevard Way to Willow Ave	75	160	350
	Newell Ct to Boulevard Way/Tice Valley Blvd	60	135	290
	Pleasant Hill Rd to Windtree Ct	60	130	285
	Windtree Ct to Newell Ct	60	135	290
	Crawford Cr to Newell Ave	80	170	360
	Newell Ave to Paulson Ln	60	130	280

Table 5.13-11 Proposed General Plan Traffic Noise Contour Distances

Roadway	Segment	Distance from Centerline to Traffic Noise Contours, feet[1]		
		70 dBA	65 dBA	60 dBA
	Willow Ave to Crawford Ct	70	160	340
Pacheco Blvd	Wygal Dr to Morello Ave	40	85	185
	Camino del Sol to Arthur Rd/Pacheco Blvd	40	95	200
	Morello Ave to Adelaide Dr	35	75	160
	Adelaide Dr to Camino del Sol	40	80	180
	Southeast 2/3 of Arnold Dr to Blum Rd	40	90	190
	Northwest 1/3 of Arnold Dr to Blum Rd	35	70	155
	Arthur Rd to Arnold Dr	35	70	155
	Carolos Dr to 1st Ave N	35	90	165
	Muir Rd to N Buchanan Cir	40	90	200
	Blum Rd to Muir Rd	55	120	255
	Center Ave to 2nd Ave S	50	105	230
	1st Ave N to Center Ave	40	80	180
	West 1/2 of Howe Rd to Wygal Dr	35	80	175
	Palm Ave to Santa Fe Ave	40	80	175
	Shell Ave to Palm Ave	40	90	200
	Santa Fe Ave to Howe Rd	40	85	180
	Central 1/3 of Howe Rd to Morello Ave	35	75	160
Pinole Valley Rd	Marlin Ct to Alhambra Valley Rd/Castro Ranch Rd intersection	20	50	105
Pleasant Hill Rd	Purson Ln to Rancho View Dr	70	150	325
Pomona St	West 2/3 of Merchant St to Eastshore FWY	40	90	195
Reliez Valley Rd	Grayson Rd to Gloria Ter	30	60	135
	Gloria Ter to Withers Ave	30	70	150
	Southeast 1/2 of Hidden Pond Rd to Silverhill Dr	40	85	180
	Tavan Estates Dr to Silverhill Way	40	85	185
	Silverhill Dr to Grayson Rd	45	100	215

Table 5.13-11 Proposed General Plan Traffic Noise Contour Distances

Roadway	Segment	Distance from Centerline to Traffic Noise Contours, feet[1]		
		70 dBA	65 dBA	60 dBA
Richmond Pkwy	Parr Blvd to Pittsburg Ave	120	265	570
San Pablo Ave	Kay Rd to Shamrock Dr	85	180	390
	Northeast 3/4 of Richmond Pkwy to Kay Rd	85	190	405
San Pablo Ave	Shamrock Dr to Tara Hills Dr	75	160	350
	Tara Hills Dr to Oconnor Dr	75	160	350
	Railroad Ave to California St	50	100	220
	San Pablo Ave and Parker Ave intersection to Railroad Ave	45	100	220
	West 1/2 of California St to A St	45	100	215
	Southwest 1/8 of California St to Refinery Rd	45	100	215
	Vista del Rio St to Merchant St	40	85	190
	Cummings Skwy to Vista del Rio St	40	90	190
	Union Oil Company to A St	45	95	205
	A St to Cummings Skwy	45	95	205
San Pablo Dam Rd	Greenridge Dr to Lila Ln	45	95	210
	Hillcrest Rd to La Colina Rd	80	175	380
	El Portal Dr to Hillcrest Rd	70	150	320
	La Colina Rd to Campbell Ln	70	150	320
	North 1/2 of Castro Ranch Rd to Old San Pablo Dam Rd	50	110	240
	Southeast 1/2 of Old San Pablo Dam Rd to Bear Creek Rd	50	110	240
	Central 1/3 of Old San Pablo Dam Rd to Old San Pablo Dam Rd	50	110	240
	Third 1/6 from the South of Old Pablo Dam Rd to Old Pablo Dam Rd	50	110	240
	Oak Creek Rd to Castro Ranch Rd	40	90	190
	Lila Ln to Valley View Rd	40	90	200
	Valley View Rd to Jodie Ln	40	85	180
Sobrante Ave	Fran Way to Valley View Rd	40	90	195
Stone Valley Rd	Northeast 3/4 of Alamo Glen Dr/Stone Creek Pl to Smith Rd	40	85	190
Sunset Rd	Eden Plains Rd to Byron Hwy	20	40	80

Table 5.13-11 Proposed General Plan Traffic Noise Contour Distances

Roadway	Segment	Distance from Centerline to Traffic Noise Contours, feet[1]		
		70 dBA	65 dBA	60 dBA
Taylor Blvd	Twinview Pl to Withers Ave	70	150	330
	North 1/2 of Withers Ave to Pleasant Hill Rd	70	150	320
	South 1/2 of Withers Ave to Pleasant Hill Rd	70	155	330
Treat Blvd	Augello Ct/Maywood Dr to Cherry Ln	85	190	405
	Oak Rd to Jones Rd	85	180	390
	Jones Rd to Augello Ct/Maywood Dr	90	195	420
	Cherry Ln to Sheppard Rd	90	190	410
Valley View Rd	Sobrante Ave to Fleetwood Dr	45	100	210
	Amend Rd to Olinda Rd	30	70	150
	San Pablo Dam Rd to Olinda Rd	30	65	140
	Southeast 2/3 of Morninside Dr to Via Giaramita	30	70	155
	Pine Hill Dr to Quiet Ln	30	70	155
	Appian Way to Sobrante Ave	65	140	300
Walnut Blvd	Marsh Creek Rd to Vasco Rd	80	180	385
Willow Pass Rd	Evora Rd to Goble Dr	85	180	390
	Bella Vista Ave to Loftus Rd	45	95	200
	West 1/3 of Clearland Dr to Bailey Rd	60	135	290
	Port Chicago Hwy to Alberts Ave	70	155	330
	Goble Dr to Port Chicago Hwy	80	175	375
	Alberts Ave to Enes Ave	70	150	320
	Alves Ln to Clearland Dr	65	140	300
	Marin Ave to Alves Ln	70	145	315
	Solano Ave to Fairview Ave	55	115	250
	East 2/3 of Clearland Dr to Bailey Rd	60	135	290
	Bailey Rd to Solano Ave	60	130	285
	Madison Ave to Bella Vista Ave	50	105	225
	Fairview Ave to Madison Ave	55	115	250

[1] Distance to the Traffic Noise Contours have been rounded to the nearest 5

Rail and Airport Noise

Table 5.13-12 contains the calculated distances to the 65 dBA L_{dn}/CNEL contours from future railroad noise. The same methodology that was used to estimate existing railroad noise contours was used for future railroad activity. Though implementation of the proposed project would not cause a direct increase in rail activity, future residential development could be placed within distances to rail that could expose them to noise levels that exceed the applicable noise standard for the respective land use type.

In addition, future noise-sensitive land uses could be in areas that exceed the "Normally Acceptable" noise standards due to airport operations (see Figures 5.13-7 and 5.13-8 for airport noise contours). Implementation of proposed General Plan Policy HS-P14.4 would require that new residential development in areas exposed to a DNL in excess of 65 dB due to single events, such as train operation (which can also extend to airport activity), provide an acoustical analysis describing how indoor noise levels from these single events will not exceed a maximum A-weighted noise level of 35 dB in bedrooms and 55 dB in other habitable rooms. In areas exposed to a DNL in excess of 65 dB, an indoor residential noise-level threshold of 45 dB CNEL is required. However, impacts would still be potentially significant.

Table 5.13-12 Future Railroad Noise Levels

Operator	Subdivision	Distance (feet) to 65 dBA CNEL Contour (Main Line)	Distance (feet) to 65 dBA CNEL Contour (Within ¼ Mile of Grade Crossing)
BNSF	Stockton Subdivision	265	449
BNSF	Stockton Subdivision west of Port of Chicago	265	421
RPRC	Chevron Lead	6	87
RPRC	Cutting Lead	6	87
RPRC	Harbor Lead	20	236
RPRC	LRT Lead	28	289
UP	Martinez Subdivision	230	NA[1]
UP	Martinez Subdivision south of Pinole	285	NA[1]
UP	Tracy Subdivision	270	413

Source: Calculated using the FTA CREATE Model and FRA Grade Crossing Horn Model. See Appendix 5.13-1.
[1]NA: Not Applicable because there are no at grade crossings, and therefore, there are no noise horns.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions. While the proposed CAP would not directly result in any new development, the implementation of its actions, which may indirectly result in new development, would be subject to the same County standards that apply to development under the proposed General Plan, as applicable. The proposed CAP does not include strategies or actions that would otherwise result in permanent noise increases (e.g., rail or traffic noise) and certain other noise-generating sources, such as wind turbines, would be subject to County noise standards, so impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.13-2 would be potentially significant.

Mitigation Measures Considered

In compliance with CEQA, "each public agency shall mitigate or avoid the significant effects on the environment of project it carries out or approves whenever it is feasible to do so" (Public Resources Code Section 21002.1(b)). The term "feasible" is defined in CEQA to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Public Resources Code Section 21061.1). A number of measures were considered for mitigating or avoiding traffic noise impacts (Impact 5.13-2).

Special Roadway Paving

Notable reductions in tire noise have been achieved via implementation of special paving materials, such as rubberized asphalt or open-grade asphalt concrete overlays. For example, the California Department of Transportation conducted a study of pavement noise along Interstate 80 in Davis (Caltrans 2011) and found an average improvement of 6 to 7 dBA compared to conventional asphalt overlay.

Although this amount of noise reduction from rubberized/special asphalt materials would be sufficient to avoid the predicted noise increase due to traffic in some cases, the potential up-front and ongoing maintenance costs are such that the cost versus benefits ratio[2] may not be feasible and reasonable and would not mitigate noise to a level of less than significant in all cases. In addition, the study found that noise levels increased over time due to pavement raveling, with the chance of noise-level increases higher after a 10-year period.

Sound Barrier Walls

Some, if not most, residences in the EIR Study Area have direct access via driveways to the associated impacted roadways. Barrier walls would prevent access to individual properties and would be infeasible. Further, these impacted homes are on private property outside of the control of future project developers, so there may be limited admittance onto these properties to construct such walls. Lastly, the costs versus benefits ratio in relation to the number of benefited households may not be feasible and reasonable in all cases.

Sound Insulation of Existing Residences and Sensitive Receptors

Exterior-to-interior noise reductions depend on the materials used, the design of the homes, and their conditions. To determine what upgrades would be needed, a noise study would be required for each house to measure exterior-to-interior noise reduction. Sound insulation may require upgraded windows, upgraded doors, and a means of mechanical ventilation to allow for a "windows closed" condition. There are no funding mechanisms and procedures that would guarantee that the implementation of sound insulation features at each affected home would offset the increase in traffic noise to interior areas and ensure that the State's 45 dBA CNEL standard for multiple-family residences would be achieved.

Level of Significance After Mitigation: Impact 5.13-2 would remain significant and unavoidable.

[2] Cost versus benefit considerations are in terms of the number of households benefited, per the general methodology employed by Caltrans in the evaluation of highway sound walls.

Impact 5.13-3: Individual construction developments for future projects may expose sensitive uses to excessive levels of groundborne vibration. [Threshold N-2]

Proposed General Plan

Construction Vibration Impacts

Construction activity from projects within the EIR Study Area would generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures but can achieve the audible and perceptible ranges in buildings close to the construction site. Table 5.13-13, *Vibration Levels for Construction Equipment*, lists reference vibration levels for construction equipment.

Table 5.13-13 Vibration Levels for Construction Equipment

Equipment	Approximate PPV Vibration Level at 25 Feet (in/sec)
Pile Driver, Impact (Upper Range)	1.518
Pile Driver, Impact (Typical)	0.644
Pile Driver, Sonic (Upper Range)	0.734
Pile Driver, Sonic (Typical)	0.170
Vibratory Roller	0.210
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer	0.003

Source: FTA 2018.
in/sec = inches per second; PPV = peak particle velocity.

As shown in Table 5.13-13, vibration generated by construction equipment has the potential to be substantial, since it has the potential to exceed the FTA criteria for architectural damage (i.e., 0.12 inches per second [in/sec] PPV for fragile or historical resources, 0.2 in/sec PPV for nonengineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry). Construction details and equipment for future project-level developments under the proposed General Plan are not known at this time but may cause vibration impacts. As such, this would be a potentially significant impact.

Operational Vibration Impacts

Operational vibration is typically associated with commercial and industrial uses, which can generate varying levels of groundborne vibration, depending on operational procedures and equipment. Other sources of groundborne vibration include rail traffic and subways. The proposed General Plan would allow for the future development of commercial and industrial land uses, which could generate significant levels of operational vibration. Therefore, impacts would be potentially significant.

Rail Vibration Impacts

Placement of new receptors near existing or future rail right-of-way could expose people to substantial vibration levels, depending on the proximity to rail alignments and depending on the type of rail and daily frequency of service. Regarding rail vibration, it is extremely rare for operations to cause substantial or even minor cosmetic damage to buildings. Proposed General Plan Policy HS-P14.11 provides guidance for reviewing proposals for new vibration-sensitive uses near an existing railroad or BART line. This policy directs the County to use Table HS-4 in the proposed General Plan to evaluate whether the sensitive uses could be exposed to excessive groundborne vibration. Projects with sensitive uses within the screening distances identified in the table would require preparation of a groundborne vibration and noise evaluation that is consistent with FTA-approved methodologies. However, due to the programmatic nature of this analysis, specific distances from transit types to future sensitive land uses cannot be determined at this time because project-specific details are unknown. Therefore, this impact would be potentially significant.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions. While the proposed CAP would not directly result in any new development, the implementation of its actions, which may indirectly result in new development (such as wind farms or battery storage projects), would be subject to the same County standards that apply to development under the proposed General Plan, as applicable. The 2024 CAP does not include any strategies or actions that would otherwise result in new sources of vibration, so impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.13-3 would be potentially significant.

Mitigation Measures

N-2 Prior to issuance of a grading or building permit for a project requiring pile driving during construction within 135 feet of fragile structures, such as historical resources, 100 feet of non-engineered timber and masonry buildings (e.g., most residential buildings), or within 75 feet of engineered concrete and masonry (no plaster); or a vibratory roller within 25 feet of any structure, the project applicant shall prepare a noise and vibration analysis to assess and mitigate potential noise and vibration impacts related to these activities. This noise and vibration analysis shall be conducted by a qualified and experienced acoustical consultant or engineer. The vibration levels shall not exceed FTA architectural damage thresholds (i.e., 0.12 inches per second [in/sec] peak particle velocity [PPV] for fragile or historical resources, 0.2

in/sec PPV for non-engineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry). If vibration levels would exceed this threshold, alternative uses such as drilling piles as opposed to pile driving and static rollers as opposed to vibratory rollers shall be used. If necessary, construction vibration monitoring shall be conducted to ensure vibration thresholds are not exceeded.

N-3 During the project-level CEQA process for industrial development projects or other projects that could generate substantial vibration levels near sensitive uses, such as residential uses, a noise and vibration analysis shall be conducted to assess and mitigate potential noise and vibration impacts related to the operations of that individual development. This noise and vibration analysis shall be conducted by a qualified and experienced acoustical consultant or engineer and shall follow the latest CEQA guidelines, practices, and precedents.

Level of Significance After Mitigation: Impact 5.13-3 would be less than significant.

Impact 5.13-4: Implementation of the proposed project would not expose future residents to excessive levels of airport-related noise. [Threshold N-3]

Proposed General Plan

Aircraft noise in the county is typically characterized as occasional, and the majority of flights served by the Buchanan Field Airport and Byron Airport are for training or recreational purposes. Pursuant to Section 21096 of the Public Resources Code, the lead agency must consider whether the project will result in a safety hazard or noise problem for persons using the airport or for persons residing or working in the project area. Future housing development or other sensitive uses could be in areas that exceed the 60 dBA CNEL as a result of implementation of the proposed project. However, the following proposed General Plan policies would reduce impacts to a less than significant impact:

- **Policy TR-P7.3:** Regulate the location of private airfields and heliports to protect public safety and minimize impacts on nearby residents and sensitive receptors.
- **Policy TR-P7.4:** Protect the County's airports from encroachment by incompatible uses and minimize the public's exposure to safety hazards and excessive noise by ensuring that all future development within each Airport Influence Area is consistent with the Contra Costa County ALUCP.
- **Policy HS-P14.1.** Require projects that would locate noise-sensitive land uses in areas where the projected ambient noise level is greater than the "normally acceptable" noise level indicated in Table HS-3 to provide an acoustical analysis that recommends appropriate mitigation to meet the noise compatibility standards.
- **Policy HS-P14.2.** Require new housing developments, hotels, and motels exposed to a DNL of 60 dB or greater to provide a detailed acoustical analysis describing how the project will provide an interior DNL of 45 dB or less.
- **Policy HS-P14.4.** Require new residential development in areas exposed to a DNL in excess of 65 dB due to single events, such as train operation, to provide an acoustical analysis describing how indoor noise levels from these single events will not exceed a maximum A-weighted noise level of 35 dB in

bedrooms and 55 dB in other habitable rooms. In areas exposed to a DNL in excess of 65 dB, use an indoor residential noise-level threshold of 45 dB CNEL.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions. The proposed CAP would not directly result in any new development that would place sensitive receptors near airport noise sources, nor would it facilitate the development of new airstrips or airports. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.13-4 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.13-4 would be less than significant.

5.13.5 Cumulative Impacts

Implementation of the proposed project would result in an increase in various land uses across the county (e.g., residential, commercial, and industrial uses). This growth would result in an increase in roadway traffic volumes and associated noise levels for major arterial and collector roadways throughout the county. Cumulative development conditions would result in a cumulative increase in roadway noise levels.

Future cumulative transportation noise levels are projected to exceed the established noise standards, resulting in a significant cumulative impact. While traffic volumes would likely increase regardless of the implementation of the proposed project, the proposed project would introduce future development that would contribute to cumulative traffic volumes. Consequently, the proposed project's contribution would be cumulatively considerable. Implementation of the mitigation measures identified would reduce the project's contribution to cumulative traffic noise impacts, but not to a level that is less than significant.

5.13.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, the following impact would be less than significant: Impact 5.13-4.

Without mitigation, the following impacts would be **potentially significant**:

- **Impact 5.13-1:** Construction activities would result in temporary noise increases in the vicinity of the proposed project.
- **Impact 5.13-2:** Project implementation would generate a substantial traffic noise increase on local roadways and could locate sensitive receptors near rail in areas that exceed established noise standards.
- **Impact 5.13-3:** Individual construction developments for future projects may expose sensitive uses to excessive levels of groundborne vibration.

5.13.7 Mitigation Measures

Impact 5.13-1

N-1 Require construction contractors to implement the following measures for construction activities. Demolition, grading, and construction plans submitted to the County shall identify these measures and the County Department of Conservation and Development shall verify that the submitted plans include these notations prior to issuance of demolition, grading, and/or construction permits:

- During the entire active construction period, equipment and trucks used for project construction shall use the best-available noise control techniques (e.g., improved mufflers, equipment re-design, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) available.
- Impact tools (e.g., jack hammers and breakers) shall be hydraulically or electrically powered wherever possible. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used along with external noise jackets on the tools.
- Stationary equipment, such as generators and air compressors, shall be as far as feasible from nearby noise-sensitive uses.
- Stockpiling shall be as far as feasible from nearby noise-sensitive receptors.
- Construction traffic shall be limited, to the extent feasible, to approved haul routes approved by the County Conservation and Development and Public Works Departments.
- At least 10 days prior to the start of construction activities, a sign shall be posted at the entrance(s) to the job site, clearly visible to the public, that includes permitted construction days and hours, as well as the telephone numbers of the County's and contractor's authorized representatives that are assigned to respond in the event of a noise or vibration complaint. If the authorized contractor's representative receives a complaint, they shall investigate, take appropriate corrective action, and report the action to the County.
- Signs shall be posted at the job site entrance(s), within the on-site construction zones, and along queueing lanes (if any) to reinforce the prohibition of unnecessary engine idling. All other equipment shall be turned off if not in use for more than 5 minutes.
- During the entire active construction period and to the extent feasible, the use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only. The construction manager shall use smart back-up alarms, which automatically adjust the alarm level based on the background noise level or switch off back-up alarms and replace with human spotters in compliance with all safety requirements and laws.

- Erect temporary noise barriers (at least as high as the exhaust of equipment and breaking line-of-sight between noise sources and sensitive receptors), as necessary and feasible, to maintain construction noise levels at or below the performance standard of 80 dBA Leq. Barriers shall be constructed with a solid material that has a density of at least 4 pounds per square foot with no gaps from the ground to the top of the barrier.

Impact 5.13-2

Mitigation Measures Considered

Notable reductions in tire noise have been achieved via the implementation of special paving materials, such as rubberized asphalt or open-grade asphalt concrete overlays. For example, the California Department of Transportation conducted a study of pavement noise along Interstate 80 in Davis (Caltrans 2011) and found an average improvement of 6 to 7 dBA compared to conventional asphalt overlay.

Although this amount of noise reduction from rubberized/special asphalt materials would be sufficient to avoid the predicted noise increase due to traffic in some cases, the potential up-front and ongoing maintenance costs are such that the cost versus benefits ratio[3] may not be feasible and reasonable and would not mitigate noise to a level of less than significant in all cases. In addition, the study found that noise levels increased over time due to pavement raveling, with the chance of noise-level increases higher after a 10-year period.

Sound Barrier Walls

Some, if not most, residences in the EIR Study Area have direct access via driveways to the associated impacted roadways. Barrier walls would prevent access to individual properties and would be infeasible. Further, these impacted homes are on private property outside of the control of future project developers, so there may be limited admittance onto these properties to construct such walls. Lastly, the costs versus benefits ratio in relation to the number of benefitted households may not be feasible and reasonable in all cases.

Sound Insulation of Existing Residences and Sensitive Receptors

Exterior-to-interior noise reductions depend on the materials used, the design of the homes, and their conditions. To determine what upgrades would be needed, a noise study would be required for each house to measure exterior-to-interior noise reduction. Sound insulation may require upgraded windows, upgraded doors, and a means of mechanical ventilation to allow for a "windows closed" condition. There are no funding mechanisms and procedures that would guarantee that the implementation of sound insulation features at each affected home would offset the increase in traffic noise to interior areas and ensure that the State's 45 dBA CNEL standard for multiple-family residences would be achieved.

[3] Cost versus benefit considerations are in terms of the number of households benefited, per the general methodology employed by Caltrans in the evaluation of highway sound walls.

Impact 5.13-3

N-2 Prior to issuance of a grading or building permit for a project requiring pile driving during construction within 135 feet of fragile structures, such as historical resources, 100 feet of non-engineered timber and masonry buildings (e.g., most residential buildings), or within 75 feet of engineered concrete and masonry (no plaster); or a vibratory roller within 25 feet of any structure, the project applicant shall prepare a noise and vibration analysis to assess and mitigate potential noise and vibration impacts related to these activities. This noise and vibration analysis shall be conducted by a qualified and experienced acoustical consultant or engineer. The vibration levels shall not exceed FTA architectural damage thresholds (i.e., 0.12 inches per second [in/sec] peak particle velocity [PPV] for fragile or historical resources, 0.2 in/sec PPV for non-engineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry). If vibration levels would exceed this threshold, alternative uses such as drilling piles as opposed to pile driving and static rollers as opposed to vibratory rollers shall be used. If necessary, construction vibration monitoring shall be conducted to ensure vibration thresholds are not exceeded.

N-3 During the project-level CEQA process for industrial development projects or other projects that could generate substantial vibration levels near sensitive uses, such as residential uses, a noise and vibration analysis shall be conducted to assess and mitigate potential noise and vibration impacts related to the operations of that individual development. This noise and vibration analysis shall be conducted by a qualified and experienced acoustical consultant or engineer and shall follow the latest CEQA guidelines, practices, and precedents.

5.13.8 Level of Significance After Mitigation

Impact 5.13-1

Implementation of Mitigation Measure N-1 would reduce potential noise impacts during construction to the extent feasible. However, due to the potential for proximity of construction activities to sensitive uses, the number of construction projects occurring simultaneously, and the potential duration of construction activities, Impact 5.13-1 could result in a temporary substantial increase in noise levels above ambient conditions. Therefore, impacts would remain ***significant and unavoidable***. It should be noted that the identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects analyzed at the project level.

Impact 5.13-2

As demonstrated under the heading *Mitigation Measures Considered*, there are no feasible or practical mitigation measures available to reduce project-generated traffic noise to less-than-significant levels for existing residences along the affected roadway. No individual measure and no set of feasible or practical mitigation measures are available to reduce project-generated traffic noise to less-than-significant levels in all cases. Thus, traffic noise would remain a ***significant and unavoidable*** impact in the EIR Study Area. It should be noted that the

identification of this program-level impact does not preclude the finding of less-than-significant impacts for subsequent projects analyzed at the project level.

Impact 5.13-3

With implementation of Mitigation Measures N-2 and N-3, coupled with adherence to associated performance standards, Impact 5.13-3 would be reduced to less-than-significant levels. Specifically, Mitigation Measure N-2 would reduce potential vibration impacts during construction below the pertinent thresholds, and Mitigation Measure N-3 (operations-related vibration) would reduce potential vibration impacts from proposed sensitive uses near existing railroads and facilities to less-than-significant levels. No significant and unavoidable vibration impacts would remain.

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5. Environmental Analysis
NOISE

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5.14 POPULATION AND HOUSING

This section describes the regulatory framework and existing conditions of the Environmental Impact Report (EIR) Study Area and evaluates the potential population and housing impacts from future development that could occur by adopting and implementing the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project.

5.14.1 Environmental Setting

5.14.1.1 REGULATORY BACKGROUND

State

Housing Accountability Act

The Housing Accountability Act (HAA) was passed in 1982 and amended under Assembly Bill 678 and Senate Bill 167 in 2017 with the aim to limit the ability of local government to restrict the development of new housing. Specifically, the HAA prohibits a local agency from disapproving, or conditioning approval in a manner than renders infeasible, a housing development project for very low-, low-, or moderate-income households or an emergency shelter unless the local agency makes specified written findings based on a preponderance of evidence in the record.

Housing Crisis Act

Senate Bill (SB) 330, or the Housing Crisis Act of 2019, aims to address California's housing shortage by expediting the approval process for housing development of all types, particularly in regions suffering the worst housing shortages and highest rates of displacements. To address the crisis, SB 330 prohibits some local discretionary land use controls currently in place and generally requires cities and counties to approve all housing developments that comply with current zoning codes and general plans. SB 330 requires that a housing development project only be subject to the ordinances, policies, and standards adopted and in effect when a preliminary application is submitted, notwithstanding the provisions of the HAA or any other law, subject to certain exceptions.

Regional

Association of Bay Area Governments

The Association of Bay Area Governments (ABAG) is a regional planning agency encompassing nine counties in the San Francisco Bay Area, including Contra Costa County. ABAG is responsible for conducting the Bay Area's Regional Housing Needs Allocation (RHNA) process every eight years via the Housing Methodology Committee in conjunction with local elected officials and staff, stakeholders, and residents from around the region.

The California Department of Housing and Community Development (HCD) has approved the ABAG Regional Housing Needs Allocation (RHNA) Plan. HCD's approval comes after action by the ABAG Executive Board to approve the Final RHNA, which occurred on December 16, 2021. The Final RHNA Plan distributes the Bay Area's portion of the state housing needs to local jurisdictions within the nine-county region and reports the methodology used for determining the RHNA (ABAG 2021).

Local

Affordable Housing Finance Committee

The Affordable Housing Finance Committee (AHFC) works with the Contra Costa County Department of Conservation and Development to develop recommendations for the Board of Supervisors concerning the allocation of Community Development Block Grant, HOME Investment Partnership Program, Housing Opportunities for Persons with AIDS (HOWPWA), and other State and local funds among eligible affordable housing programs and projects in the county (DCD 2021).

Contra Costa County Ordinance Code

Chapter 822-2 – Residential Density Bonus

The purposes of this chapter are to provide incentives to produce housing for very low income, lower income, moderate income, or senior households; facilitate the development of affordable housing; implement the goals, objectives, and policies of the County's General Plan Housing Element; and establish procedures for complying with Government Code Section 65915.

Chapter 8222-4 – Inclusionary Housing Ordinance

The goal of this chapter is to ensure that affordable housing units are added to the county's housing stock in proportion to the increase in new housing units in the county.

An update to the inclusionary housing in-lieu fees for rental and for-sale housing was brought to the Board of Supervisors and approved in December 2018, which became effective in February 2019. The County's Inclusionary Housing Ordinance was updated on November 25, 2019, and February 1, 2022.

The 2023-2031 Housing Element amends and continues the Inclusionary Housing Ordinance to increase the supply of affordable housing.

Contra Costa County 6th Cycle Housing Element

Contra Costa County adopted the 6th Cycle Housing Element on December 12, 2023, and received certification of the adopted Element on January 22, 2024. The Housing Element is required to identify and analyze existing and projected housing needs and include statements of the County's goals, policies, quantified objectives, and scheduled programs for the preservation, improvement, and development of housing. State law (Government Code Sections 65580–65589.8) mandates the content of the Housing Element and requires an analysis of:

- Population and employment trends

- The fair share of the regional housing needs
- Household characteristics
- An inventory of land suitable for residential development
- Governmental and non-governmental constraints on the improvement, maintenance, and development of housing
- Special housing needs
- Opportunities for energy conservation
- Publicly assisted housing developments that may convert to non-assisted housing developments

The purpose of these requirements is to demonstrate adequate housing resources to meet the assigned RHNA for all housing categories.

The 6th Cycle Housing Element includes the following policies applicable to population and housing:

- **Policy HE-P1.4:** Ensure that the County's condominium conversion ordinance (Chapter 926-2.202) mitigates impacts to displaced tenants and ensures the quality of units being sold to homeowners.
- **Policy HE-P1.5:** Preserve existing affordable housing developments at risk of converting to market-rate housing through promotion of bond refinancing and other mechanisms.
- **Policy HE-P2.1:** Support development of affordable housing by non-profit and for-profit developers through affordable housing funding sources, regulatory incentives such as density bonus, and/or flexible development standards through planned unit developments.
- **Policy HE-P2.3:** Increase the supply of affordable housing and mixed-income housing through the Inclusionary Housing Ordinance.
- **Policy HE-P2.4:** Actively promote accessory dwelling unit (ADU) and junior accessory dwelling unit (JADU) construction as a viable means of meeting affordable housing needs by design, particularly in higher resource communities, and those communities identified as RCAAs in the central and southern portions of the county.
- **Policy HE-P2.5:** Encourage innovative housing design and building types to lower housing costs and provide high quality options for affordable housing.
- **Policy HE-P3.1:** Expand affordable housing opportunities for households with special needs, including but not limited to seniors, persons with disabilities, large households, single parents, persons with HIV/AIDS, persons with mental illness, persons with development disabilities, farmworkers, and persons experiencing homelessness.
- **Policy HE-P3.2:** Continue to support non-profit service providers that help meet the diverse housing and supportive service needs of the community.
- **Policy HE-P3.3:** Continue to require inclusion of ADA accessible units in all new construction projects receiving County financing.
- **Policy HE-P3.4:** Encourage housing programs that provide wrap-around social and supportive services for residents in need of services.

- **Policy HE-P4.2:** Continue to support the provision of rental assistance to extremely low-, very low-, and low-income households.
- **Policy HE-P4.3:** Prioritize and encourage financial support to non-profit organizations that own or operate housing for persons with developmental disabilities.
- **Policy HE-P4.4:** Designate additional land to address the County's Regional Housing Needs Assessment (RHNA) allocation.
- **Policy HE-P6.1:** Establish and maintain development standards that streamline housing development while protecting quality of life goals.
- **Policy HE-P6.2:** Provide financial and/or regulatory incentives where feasible and appropriate to offset or reduce the costs of affordable housing development, including density bonuses and flexibility in site development standards.
- **Policy HE-P6.3:** Encourage P-1 zoning in areas with significant numbers of non-conforming parcels and uses.
- **Policy HE-P7.1:** Prohibit discrimination in the sale or rental of housing to anyone on the basis of race, color, ancestry, national origin, religion, disability, gender identity sexual orientation, familial status, marital status, or other such arbitrary factors.
- **Policy HE-P7.2:** Provide financial support to non-profit organizations providing fair housing services.
- **Policy HE-P7.4:** Ensure that housing programs prioritize the needs of underserved communities, benefit lower-income residents, and avoid gentrification as neighborhoods are improved.

5.14.1.2 EXISTING CONDITIONS

Population

There are 19 incorporated cities and towns in Contra Costa County, which is where the majority of the countywide population resides. Table 5.14-1, *Contra Costa County Population Growth*, shows the population of the incorporated and unincorporated parts of the county in 2010 and 2020, along with the corresponding growth rates, based on information provided by Department of Finance (DOF). As shown in the table, the incorporated areas experienced a 9.75-percent increase in population, while the unincorporated areas experienced an 8.80-percent increase over that timeframe.

Table 5.14-1 Contra Costa County Population Growth

Contra Costa County	2010 Population	2020 Population	Growth	Percentage Change
Incorporated	889,240	975,944	+86,704	9.75%
Unincorporated	159,785	173,851	+14,066	8.80%
County Total	1,049,025	1,149,795	+100,770	9.60%

Source: DOF 2020.

Housing

Table 5.14-2, *Housing Unit Growth in the EIR Study Area*, shows the estimated housing units in the EIR Study Area in 2010 and 2020, along with the corresponding growth. The DOF estimates that a total of 62,401 housing units existed in the EIR Study Area in 2010, increasing to 64,481 units in 2020, which equates to a 3.33-percent increase over that timeframe.

Table 5.14-2 Housing Unit Growth in the EIR Study Area

Housing Units	2010	2020	Growth	Percentage Change
Total Housing Units	62,401	64,481	2,080	3.33%
Single-Family Units	50,098	51,546	1,448	2.89%
Multifamily Units	9,485	10,119	634	6.68%
Mobile Homes	2,818	2,816	-2	-0.07%
Occupied	57,706	60,575	2,869	4.97%
Vacancy Rate	7.5%	6.1%	--	--
Persons per Household	2.75	2.86	--	--

Source: DOF 2020.
[1] Single-family units include "single detached" and "single attached" categories.
[2] Multifamily units contain "two to four" and "five plus" categories.

As noted in Section 5.14.1.1, *Regulatory Background*, HCD has approved the ABAG RHNA Plan. Table 5.14-3, *2023-2031 Regional Housing Needs Allocation*, shows the RHNA for the unincorporated county for the 2023 to 2031 period. The RHNA determined that a total of 7,610 housing units will need to be accommodated within the EIR Study Area.

Table 5.14-3 2023-2031 Regional Housing Needs Allocation

Income Category	Area Median Income Percentage	2023-2031 RHNA
Very Low	<50%	2,072
Low	50-80%	1,194
Moderate	80-120%	1,211
Above Moderate	>120%	3,133
Total		**7,610**

Source: ABAG 2021

Employment

Table 5.14-4, *EIR Study Area Employment Growth (5-Year Increment),* shows employment estimates and growth in the EIR Study Area from 2010 to 2020 in five-year increments. As shown in the table, the number of employed residents in the EIR Study Area has increased over this timeframe, growing by a total of 16.41 percent. The majority of this growth occurred in the 2010 to 2015 timeframe.

Table 5.14-4 EIR Study Area Employment Growth (5-Year Increment)

Year	Employed Residents	Growth from 2010	Percentage Change from 2010
2010	76,035	--	--
2015	87,830	11,795	15.51%
2020	88,515	12,480	16.41%

Source: ABAG 2022.

As shown in Table 5.14-5, *Industry by Occupation in the EIR Study Area (2010 and 2020),* there was a total employed civilian workforce (16 years and older) in the EIR Study Area of 72,641 in 2010 and 85,951 in 2020. The largest occupational sector in both years was Educational Services, and Health Care and Social Assistance, which experienced a 16.77-percent increase within the last decade. The second largest sector in both years was Professional, Scientific, and Management, and Administrative and Waste Management Services, which experienced a 41.67-percent increase in that decade. The third largest sector was Retail Trade, which experienced a 6.50-percent increase between 2010 and 2020.

Table 5.14-5 Industry by Occupation in the EIR Study Area (2010 and 2020)

Industry/Occupation	Estimated Employees 2010 (Percentage of Total)		Estimated Employees 2020 (Percentage of Total)		Percentage Change
Agriculture, forestry, fishing and hunting, and mining	285	0.39%	469	0.55%	64.56%
Construction	6,130	8.44%	8,108	9.43%	32.27%
Manufacturing	5,551	7.64%	5,844	6.80%	5.28%
Wholesale trade	2,143	2.95%	2,133	2.48%	-0.47%
Retail trade	7,985	10.99%	8,504	9.89%	6.50%
Transportation and warehousing, and utilities	3,810	5.24%	4,338	5.05%	13.86%
Information	2,005	2.76%	2,049	2.38%	2.19%
Finance and insurance, and real estate and rental and leasing	7,969	10.97%	7,037	8.19%	-11.70%
Professional, scientific, and management, and administrative and waste management services	10,358	14.26%	14,674	17.07%	41.67%
Educational services, and health care and social assistance	15,145	20.85%	17,685	20.58%	16.77%
Arts, entertainment, and recreation, and accommodation and food services	4,527	6.23%	7,487	8.71%	65.39%
Other services, except public administration	3,831	5.27%	4,111	4.78%	7.31%
Public administration	2,902	3.99%	3,512	4.09%	21.02%
TOTAL	**72,641**	**100%**	**85,951**	**100%**	**--**

Source: Census 2010a; Census 2020b.

Growth Projections

Plan Bay Area 2050 is the Bay Area's Regional Transportation Plan and Sustainable Communities Strategy for the Bay Area, adopted October 21, 2021. Although it provides regional growth projections, it does not differentiate between Contra Costa County as a whole and the unincorporated portion of the county. The earlier version of the Plan, Plan Bay Area 2040, does provide growth projections for the unincorporated county.

Plan Bay Area 2040 was adopted by the ABAG Executive Board and the Metropolitan Transportation Commission (MTC) on July 26, 2017. Table 5.14-6, *Summary of the EIR Study Area's Projected Growth (5-Year Increments)*, shows the Plan Bay Area 2040 Growth Pattern projected household and job growth for the EIR Study Area through 2040. The EIR Study Area population is expected to increase by 19.92 percent by 2040. Households are expected to increase by 13.77 percent, housing units by 12.11 percent, and employment by 6.52 percent by the year 2040.

Table 5.14-6 Summary of the EIR Study Area's Projected Growth (5-Year Increments)

Year	2020	2025	2030	2035	2040	Percentage Increase (2020-2040)
Population	166,030	178,900	184,585	189,455	199,105	19.92%
Households	59,480	62,780	64,195	65,195	67,670	13.77%
Housing Units[1]	62,020	64,265	65,050	66,475	69,530	12.11%
Employment	50,025	50,030	50,300	51,365	53,285	6.52%

Source: ABAG 2022.

[1] Housing units include single-family and multifamily units.

5.14.2 Thresholds of Significance

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project would normally have a significant effect on the environment if the project would:

P-1 Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

P-2 Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

5.14.3 Programs, Plans, and Policies

5.14.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to population and housing. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Stronger Communities Element

- **Action SC-A1.3**: With input from residents of Impacted Communities, amend County Ordinance Code Title 8 – Zoning to create an Impacted Communities Overlay Zone that applies to areas within and adjacent to Impacted Communities and establishes requirements for discretionary permits for nonresidential developments of 25,000 square feet or more. The overlay zone will include additional required project findings that promote environmental justice, health, and safety. Projects able to satisfy the required findings will:

a) Provide benefits that support the community objectives, such as those identified in the Community Profile

b) Provide economic benefits for the community.

c) Avoid unwelcome permanent displacement of existing residents or businesses in the community.

d) Support community resiliency, cohesion, and safety.

e) Positively impact health and quality of life within the community.

As part of the process to develop this ordinance, create guidance for demonstrating consistency with these findings.

- **Policy SC-P6.1**: Ensure that future improvements in Impacted Communities will not result in a net loss of affordable housing or significant preventable displacement of residents.

Land Use Element

- ***Policy LU-P.1.1****: The General Plan Update Environmental Impact Report (EIR) assumes the following maximum development projections for the year 2045:*

  a) 23,200 new dwelling units.

  b) 1.2 million square feet of new commercial and office space.

  c) 5 million square feet of new industrial space.

  If new development approved within the unincorporated county reaches the maximum number of residential units and commercial/office and industrial square feet projected in the General Plan EIR, require that environmental review conducted for any subsequent development project address growth impacts that would occur from development exceeding the General Plan EIR's projections.

- ***Action LU-A1.1****: Track growth to ensure it does not exceed the development projections analyzed in the General Plan EIR and described in Policy LU-P1.1 without subsequent environmental review.*
- **Action LU-A1.2**: Periodically update County Ordinance Code Titles 7 – Building Regulations, 8 – Zoning, 9 – Subdivisions, and 10 – Public Works and Flood Control to maintain consistency with State law and newly adopted or revised planning documents (General Plan, Specific Plans, etc.); address emerging issues; and respond to economic, technological, and social trends.
- **Policy LU-P2.1**: Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.
- **Policy LU-P2.2**: Enhance the ULL's effectiveness by supporting efforts to acquire and permanently protect land along the ULL boundary.
- **Policy LU-P2.3**: Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.
- **Policy LU-P2.4**: Prohibit major subdivisions outside the ULL as well as successive minor subdivisions of lots outside the ULL that were created through previous subdivisions.

- **Policy LU-P2.5**: Encourage infill development.
- **Policy LU-P2.6**: Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).
- **Policy LU-P3.1**: Support regional efforts to achieve a jobs-housing balance within the county and within subregions of the county by maintaining an adequate supply of developable land designated for job-generating uses. For any General Plan amendment proposing to convert commercial, industrial, or office land uses to a residential or non-urban land uses, evaluate the project's effect on the local and countywide jobs-housing balance.
- **Policy LU-P3.2**: Encourage residential development in or near existing employment centers, and development of job-generating uses near areas that are primarily residential. Where large-scale residential or commercial development is planned, encourage a mix of housing and employment opportunities unless doing so would exacerbate a severe jobs-housing imbalance in the area.
- **Policy LU-P3.3**: Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility and transit use, shorter commutes, and reduced dependency on single-occupant vehicles.
- **Policy LU-P3.4**: Encourage conversion of existing commercial areas to mixed-use nodes and corridors.
- **Action LU-A3.2**: Develop and maintain an inventory of County-owned surplus lands with residential development potential and post the inventory on the County's website.
- **Policy LU-P5.1**: Allow development only where requisite community services, facilities, and infrastructure can be provided.
- **Policy LU-P5.2**: Consider the potential locations of planned public infrastructure projects (e.g., transit lines, roadways, drainage improvements) when evaluating development proposals and deny development applications that would interfere with implementation of such projects.
- **Action LU-A5.2**: Work with LAFCO and utility service providers to:
  a) Annex lands planned for urban development by this General Plan into their service areas.
  b) Detach private lands, especially agricultural or rural lands, from district boundaries if they are not planned for urban development and are not currently served.
- **Policy LU-P6.4**: Coordinate with LAFCO to ensure that city annexations and related land use decisions do not:
  a) Interfere with attainment of the County's land use goals as expressed in this General Plan. Include Housing Element inventory sites unless provisions have been made to transfer the site's assigned units to the receiving city's Regional Housing Needs Allocation (RHNA).
  b) Create new unincorporated "islands" (i.e., isolated areas substantially surrounded by incorporated cities).
- **Policy LU-P6.5**: Encourage cities to annex unincorporated "islands", such as the Ayers Ranch and San Miguel neighborhoods.

- **Policy LU-P7.1**: Plan for a variety of housing types. Encourage innovative, nontraditional designs and layouts in response to evolving housing trends and needs.
- **Policy LU-P7.2**: Provide housing opportunities for all economic segments of the population, ensuring that affordable housing is distributed throughout the county and is not concentrated in traditionally lower-income areas. Promote development of affordable housing near public transit and essential services whenever possible.
- **Policy LU-P7.3**: Protect residential neighborhoods from incompatible uses and activities that will adversely affect public health and safety.
- **Policy LU-P7.4**: Require new residential development to be planned, designed, and constructed in a way that promotes health, minimizes hazard exposure for future residents, and mitigates potential adverse effects on natural resources and the environment.

Transportation Element

- **Policy TR-P1.5**: Ensure new highways constructed outside the Urban Limit Line are not growth-inducing through land-use controls, access limitations, and other appropriate measures.

Growth Management Element

- **Policy GM-P3.6**: Provide housing opportunities for all income levels by implementing the programs contained in the Housing Element.
- **Action GM-A3.1**: Submit a biennial report to the CCTA on implementation of actions outlined in the Housing Element as part of the biennial GMP Compliance Checklist. The report will demonstrate reasonable progress in providing housing opportunities for all income levels using one of the following methods:
  a) Comparing the number of housing units approved, constructed, or occupied within the unincorporated county over the preceding five years with the number of units needed on average each year to meet the housing objectives established in the Housing Element; or
  b) Illustrating how the County has adequately planned to meet the existing and projected housing needs through adoption of land use plans and regulatory systems that provide opportunities for, and do not unduly constrain, housing development; or
  c) Illustrating how the County's General Plan and zoning regulations facilitate improvement and development of sufficient housing to meet those objectives.

5.14.3.2 PROPOSED CAP UPDATE STRATEGIES AND ACTIONS

The following strategies and actions from the proposed Climate Action Plan (CAP) are applicable to population and housing:

Strategy CE-1: Provide access to affordable, clean, safe, and healthy housing and jobs.

Strategy CE-1 Actions:

- Encourage companies and entrepreneurs from local universities and national labs to create jobs in such industries as renewable energy, transportation technology, diverse forms of manufacturing, biotech/biomedical, and clean tech.
- Provide support for State and federal programs that support family-sustaining jobs in sustainable industries, efforts to support organized labor, and living wage labor standards.

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated county, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-neutral fuels.

Strategy BE-2 Actions:

- Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy.
- Create a detailed roadmap to convert existing homes and businesses to use low- or zero-carbon appliances. The roadmap should include steps to support converting buildings to rely on low- or zero-carbon energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants.
- Evaluate options for incentivizing and requiring additions and alterations to be energy efficient and to achieve the lowest feasible levels of GHG emissions, including upgrades to the building electric panel, as needed.
- Ensure County-led and supported retrofit programs incentivize and prioritize conversion of buildings built before 1980 and emphasize assistance to owners of properties that are home to very low-, low-, and moderate-income residents and/or located in Impacted Communities, as permitted by available funding.

5.14.4 Environmental Impacts

Impact 5.14-1: The proposed project would not induce substantial unplanned population growth in the EIR Study Area. [Threshold P-1]

Proposed General Plan

As described in Chapter 3, *Project Description*, of this Draft EIR, the proposed General Plan is a high-level policy document that will replace the existing General Plan as the County's overarching policy document that defines a vision for future change and sets up a framework for growth. The proposed General Plan considers growth through 2045 but does not include specific development proposals. The General Plan is the policy document that projects the amount of reasonably foreseeable growth given past growth trends and the ability of existing services and infrastructure to support future growth.

Future development in the EIR Study Area is projected to occur through approved and pending development projects and on vacant and underutilized parcels within unincorporated communities that are designated for a use that allows development. Therefore, the proposed General Plan could induce substantial, unplanned

population growth directly or indirectly in any particular location. As of 2020, the EIR Study Area has a population of approximately 174,000 with about 64,000 homes (DOF 2020). The proposed General Plan is projected to result in an increase of 23,200 new housing units and 65,600 new residents in the EIR Study Area by 2045. This equates to a 38-percent increase in housing units and a 36-percent increase in total population over the 25-year planning timeframe.

Approximately 33 percent of this residential growth would be required to fulfill the unincorporated county's 2023-2031 RHNA of 7,610 units, which is growth dictated by California Housing Law and not the County (ABAG 2021). It is anticipated that future RHNA cycles will continue to dictate additional housing growth within the EIR Study Area after 2031 and through the proposed General Plan's 2045 horizon.

As shown in Table 5.14-6, regional projections for the EIR Study Area anticipate an approximately 12-percent increase in housing units and a 20-percent increase in population by 2040. The development potential under the proposed General Plan would allow for a 38-percent increase in housing units and population by 2045. Therefore, implementation of the proposed General Plan would exceed current regional projections for housing by 26 percent and population by 18 percent based on these factors alone. However, it is important to note that regional projections used were from Plan Bay Area 2040 and not the updated Plan Bay Area 2050 because the more recent Plan does not differentiate between Contra Costa County as a whole and the unincorporated portion of the county. In addition, Plan Bay Area relies on local general plan growth projections when preparing growth forecasts, so the proposed project would be incorporated into future growth forecasts.

The proposed Land Use Element serves as the blueprint for the development of public and private property in the EIR Study Area and sets the foundation for future growth, change, and preservation. The following Land Use Element policies and actions would serve to minimize potential adverse impacts related to growth:

- **Policy LU-P.1.1**: The General Plan Update Environmental Impact Report (EIR) assumes the following maximum development projections for the year 2045:
  a) 23,200 new dwelling units.
  b) 1.2 million square feet of new commercial and office space.
  c) 5 million square feet of new industrial space.

  If new development approved within the unincorporated county reaches the maximum number of residential units and commercial/office and industrial square feet projected in the General Plan EIR, require that environmental review conducted for any subsequent development project address growth impacts that would occur from development exceeding the General Plan EIR's projections.
- **Action LU-A1.1**: Track growth to ensure it does not exceed the development projections analyzed in the General Plan EIR and described in Policy LU-P1.1 without subsequent environmental review.
- **Policy LU-P2.1**: Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.

- **Policy LU-P2.3**: Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.
- **Policy LU-P2.4**: Prohibit major subdivisions outside the ULL as well as successive minor subdivisions of lots outside the ULL that were created through previous subdivisions.
- **Policy LU-P2.5**: Encourage infill development.
- **Policy LU-P2.6**: Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).
- **Policy LU-P3.1**: Support regional efforts to achieve a jobs-housing balance within the county and within subregions of the county by maintaining an adequate supply of developable land designated for job-generating uses. For any General Plan amendment proposing to convert commercial, industrial, or office land uses to residential or non-urban land uses, evaluate the project's effect on the local and countywide jobs-housing balance.
- **Policy LU-P5.1**: Allow development only where requisite community services, facilities, and infrastructure can be provided.
- **Policy LU-P5.2**: Consider the potential locations of planned public infrastructure projects (e.g., transit lines, major roadways, drainage improvements) when evaluating development proposals and deny development applications that would interfere with implementation of such projects.
- **Action LU-A5.2**: Work with LAFCO and utility service providers to:
  a) Annex lands planned for urban development by this General Plan into their service areas.
  b) Detach private lands, especially agricultural or rural lands, from district boundaries if they are not planned for urban development and are not currently served.

The policies and actions described would limit development to areas that are planned for urban uses and direct the County to monitor and control growth in the EIR Study Area to ensure it remains within the development projections analyzed in this EIR.

Although the proposed General Plan would accommodate population and housing growth that exceeds the Plan Bay Area 2040 projections, it would not introduce a substantial amount of unplanned population in the EIR Study Area because it will become the overriding policy document that plans for such growth. All potential future development would be required to adhere to the policy guidance described, which limits development to areas that are already planned for urban uses, as well as comply with any required site-specific infrastructure improvements and pay any project-specific impact fees. Therefore, implementation of the proposed General Plan would not induce substantial unplanned population growth either directly or indirectly and the impact is less than significant.

Proposed CAP

The proposed CAP does not include projects that would result in residential development nor an unanticipated increase in density or population growth outside of what was accounted for and projected within the proposed General Plan. Some CAP strategies could promote the construction of utility-scale energy projects (e.g., solar, battery storage, substation, and transmission) and water facilities and supplies. However, these types of facilities would not directly serve residential uses such that they would induce population growth in their vicinity. Therefore, impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.14-1 would be less than significant.

Mitigation Measures

No mitigation measures required.

Level of Significance After Mitigation: Impact 5.14-1 would be less than significant.

Impact 5.14-2: The proposed project would not result in the displacement of people and/or housing. [Threshold P-2]

Proposed General Plan

Implementation of the proposed General Plan is projected to result in an increase of 23,200 housing units in the EIR Study Area over a 25-year horizon, contributing to a net increase in housing units. It is anticipated that residential development would occur on vacant sites, as well as through redevelopment on sites that may include existing housing units, although no major redevelopment projects are envisioned in the General Plan. Therefore, it is possible that construction activities could displace an unknown number of existing residents or housing units. However, all redevelopment would be voluntary in nature, and no housing units would be displaced without permission of the property owners.

In addition, the County's 6th Cycle Housing Element includes policies that minimize potential adverse impacts related to population and housing displacement. For example, Policy HE-P1.4 directs the County to maintain a condominium conversion ordinance aimed at mitigating the impacts to displaced tenants and ensuring the quality of the units being sold to homeowners. Also, Policy HE-P1.5 directs the County to preserve existing affordable housing developments at risk of converting to market-rate housing through bond refinancing and other mechanisms.

Because the proposed General Plan would allow a net increase of housing and does not envision substantial redevelopment projects, and because the existing Housing Element includes policies that protect existing neighborhoods and housing, the impact related to housing displacement would be less than significant.

Proposed CAP

The proposed CAP is a policy document that does not include projects that would displace substantial numbers of existing people or housing. To the contrary, the proposed CAP strategies and actions would support affordable housing, promote stability in housing, and otherwise support development as already anticipated by General Plan land use assumptions. Implementation of the strategies and actions in the proposed CAP could involve retrofitting existing building or requiring new developments to incorporate water conservation systems and energy efficiency upgrades, as outlined in Strategy BE-2. This strategy includes an action to create a detailed road map to convert existing homes and business to all-electric appliances while including equitable requirements, additional compensation for Impacted Communities, and a methodical conversion without displacement or disruptions. These retrofits and upgrades for new developments are not anticipated to displace substantial housing or population. This impact would be less than significant.

Level of Significance Before Mitigation: Impact 5.14-2 would be less than significant.

Mitigation Measures

No mitigation measures required.

Level of Significance After Mitigation: Impact 5.14-2 would be less than significant.

5.14.5 Cumulative Impacts

The proposed project would not result in considerable contributions to any significant cumulative impacts. While the proposed project would allow population and housing growth as described in Impact Discussions 5.14-1 and 5.14-2, this growth is necessary to meet housing needs in the region. Implementation of the proposed project would remedy this situation in a manner that would not result in significant adverse impacts on the environment. The growth would occur under the proposed General Plan, which will become the overriding policy document that plans for growth in the unincorporated county and which will be used for future regional growth forecasting. Meanwhile, countywide growth is managed across all jurisdictions in the county in support of the 65/35 Land Preservation Standard and ULL that limit growth to areas that are already planned for urban uses. Therefore, cumulative population and housing impacts would be less than cumulatively considerable.

5.14.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.14.7 Mitigation Measures

No mitigation measures are required.

5.14.8 Level of Significance After Mitigation

Impacts would be less than significant.

5.14.9 References

Association of Bay Area Governments (ABAG). 2021. *Final Regional Housing Needs Allocation (RHNA) Plan: San Francisco Bay Area, 2023-2031*. https://abag.ca.gov/sites/default/files/documents/2021-12/Final_RHNA_Allocation_Report_2023-2031-approved_0.pdf.

———. 2022. Plan Bay Area 2040, Projections 2040 By Jurisdiction, Projections 2040 - Forecasts for Population Households and Jobs. https://mtc.ca.gov/sites/default/files/Projections_2040-ABAG-MTC-web.pdf

Contra Costa County Department of Conservation and Development (DCD). 2021. *Contra Costa County Affordable Housing Finance Committee Bylaws*. https://www.contracosta.ca.gov/DocumentCenter/View/70022/Affordable-Housing-Finance-Committee-Bylaws-PDF.

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US Census Bureau (Census). 2010a. Table S2405 2010 American Community Survey 5-Year Estimates.

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———. 2020b. 2020 Census State Redistricting Data (P.L. 94-171) Summary File. https://www.contracosta.ca.gov/DocumentCenter/View/72110/Contra-Costa-County-Places-Data-Profiles---2020-Redistricting-Data-PDF.

5. Environmental Analysis
POPULATION AND HOUSING

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5.15 PUBLIC SERVICES AND RECREATION

This section describes the regulatory framework and existing conditions of the Environmental Impact Report (EIR) Study Area and evaluates the potential public services impacts from adopting and implementing the proposed project and from future development and activities that could occur under the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project. This section covers the following public services:

- Fire protection and emergency services
- Police protection
- School services
- Library services
- Parks and Recreation

Public and private utilities and service systems, including water, wastewater, and solid waste services and systems, are addressed in Section 5.17, *Utilities and Service Systems*.

5.15.1 Fire Protection and Emergency Services

5.15.1.1 ENVIRONMENTAL SETTING

Regulatory Background

State

California Building Code

The State of California provides a minimum standard for building design through Title 24, Part 2, of the California Code of Regulations (CCR), commonly referred to as the "California Building Code" (CBC). The CBC is updated every three years. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Contra Costa County regularly adopts each new CBC update under County Ordinance Code Division 74, *Building Code*. Commercial and residential buildings are plan-checked by local County building officials for compliance with the CBC. Typical fire safety requirements of the CBC include the installation of sprinklers in all high-rise buildings and other facilities; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction in high fire hazard severity zones; requirements for smoke-detection systems and exiting requirements; and the clearance of debris.

California Fire Code

The 2007 California Fire Code (Title 24, Part 9 of the CCR) establishes regulations to safeguard against hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The Fire Code also establishes requirements intended to provide safety and assistance to firefighters and emergency responders during emergency operations. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout the State of California (CBSC 2008). The Fire Code

includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland-urban interface areas.

California Health and Safety Code

Additional State fire regulations are set forth in Section 13000 et seq. of the California Health and Safety Code, which include regulations for building standards, fire protection and notification systems, fire protection devices such as extinguishers, smoke alarms, high-rise building and child-care facility standards, and fire suppression training.

California Occupational Safety and Health Administration

In accordance with the California Code of Regulations, Title 8, Sections 1270, *Fire Prevention*, and 6773, *Fire Protection and Fire Fighting Equipment*, the California Occupational Safety and Health Administration (Cal/OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

Mitigation Fee Act (California Government Code 66000-66008)

Assembly Bill (AB) 1600, the Mitigation Fee Act, requires a local agency establishing, increasing, or imposing an impact fee as a condition of development to identify the purpose of the fee and the use to which the fee is to be put. The agency must also demonstrate a reasonable relationship between the fee and the purpose for which it is charged, and between the fee and the type of development project on which it is to be levied. This act became enforceable on January 1, 1989.

Local

Mutual Aid Agreements

Fire protection mutual aid is defined as an agreement between two fire agencies in which they commit to respond to calls for services in the other agency's jurisdiction when they are called, at no cost to the requesting agency. Automatic aid is not only predetermined, but one or more additional departments are automatically dispatched to certain locations or types of alarms at the same time as the home department. Mutual aid agreements in the county are discussed later under the heading *Existing Conditions*.

Contra Costa County Ordinance Code

Under Chapter 818-2 of the County Ordinance Code, a fire protection facilities fee is required as a condition of approval for the issuance of any building permit for new construction within the unincorporated portion of any service area for which existing fire protection facilities are overextended. An additional administration fee is also collected prior to the issuance of a building permit. These fees are used for the purposes of acquiring or improving fire protection facilities serving the service area.

Additionally, County Ordinance Code Title 9, *Subdivisions*, includes several provisions relevant to fire protection and suppression as they apply to subdivision map approval. These include street design (turning radius, width, slope, etc.) and provision of fire hydrants. Furthermore, the County has adopted the 2022 California Fire Code, which contains fire-safety-related building standards, such as construction standards, vehicular and emergency access, fire hydrants and fire flow, and sprinkler requirements.

Existing Conditions

Contra Costa County Fire Protection District

The Contra Costa County Fire Protection District (CCCFPD) provides fire protection and emergency medical response services for approximately 628,200 people within Contra Costa County. CCCFPD is an all-hazards fire district providing traditional fire protection, wildland firefighting, emergency medical services, Advanced Life Support (ALS), ambulance transport, various special operations (e.g., water rescue, hazardous materials response, marine firefighting, and technical rescue), and a comprehensive life-safety and prevention program that includes inspections, a dedicated fire investigation unit, code enforcement, plan reviews, and public education.

In 2016, CCCFPD developed a unique arrangement with American Medical Response, Inc. (AMR) that they refer to as the "Alliance." The program utilizes AMR emergency medical services personnel to staff CCCFPD's ALS ambulances, assisted by CCCFPD firefighters certified as Emergency Medical Technicians (EMTs) or Paramedics and functioning in a first-responder capacity.

CCCFPD operates the Contra Costa Regional Fire Communications Center (CCRFCC), which serves as a secondary Public Safety Answering Point (PSAP) for most fire and emergency medical service (EMS) 911 calls in the county. CCRFCC provides dispatch to its district, plus the Rodeo-Hercules Fire Protection District and four other fire agencies. The Center dispatches more than 140,000 emergency and non-emergency fire and EMS incidents annually. CCCFPD currently maintains approximately 435 funded positions, including staff in the dispatch center.

CCCFPD currently maintains 26 fire stations throughout the county. CCCFPD personnel includes 335 operations staff, 21 dispatchers, 26 fire prevention staff, and 40 administrative/support staff. In 2020, CCCFPD responded to over 47,000 fire, emergency medical service, and other incidents. CCCFPD follows the National Fire Protection Association Standard 1710 (NFPA) for providing an effective firefighting force of at least 17 personnel on the initial response to a single-family residential structure fire. Across the District, the travel time for the full first alarm contingent of 17 personnel is 12 minutes, 90 percent of the time, for suburban areas. The average travel time for all priority incidents is just over 8 minutes. The number of priority incidents within six minutes travel of a fire station during 2020 for CCCFPD was 96 percent, or 31,074 of 32,161 total priority incidents (CCCFPD 2021).

Independent Fire Protection Districts

Several other independent fire districts also provide fire protection services to both incorporated and unincorporated areas of the county. The Kensington Fire Protection District (KFPD) provides fire suppression and emergency services to Kensington, with one operating station. The KFPD also receives aid from the El Cerrito Fire Department (KFPD 2019). The Moraga-Orinda Fire Protection District (MOFPD) provides services to the cities of Moraga and Orinda with five stations operating in the district. The Rodeo-Hercules Fire Protection District (RHFPD) services approximately 32 square miles that contain 34,000 residents in the City of Hercules and in Rodeo (RHFPD 2022). The San Ramon Valley Fire Protection District (SRVFPD) services the Cities of San Ramon and Danville and the unincorporated communities of Tassajara, Blackhawk, and Alamo with ten fire stations. The Crockett-Carquinez Fire Protection District (CCFPD) is a volunteer fire department that serves Crockett, Valona, Port Costa, and Tormey. The boundaries of these fire protection districts are shown in Figure 5.15-1, *Fire Protection District Boundaries in Contra Costa County*.

A separate fire district, the East Contra Costa Fire Protection District (ECCFPD), previously served the eastern part of the county, but it was annexed into the CCCFPD and dissolved in 2022 (CCLAFCO 2022).

Response Times and ISO Ratings

Table 5.15-1, *Response Times and ISO Ratings (2014) for Fire Districts in Contra Costa County*, shows the response times that were reported by each fire protection district to the Contra Costa Local Agency Formation Commission (CCLAFCO) in 2015. It also shows the Insurance Services Office (ISO) ratings that were received by each district in 2014. This rating is intended to reflect a community's local fire protection capacity for property insurance rating purposes. ISO classifies communities from 1 (the best) to 10 (the worst) based on how well the community scores on the ISO Fire Suppression Rating Schedule, which grades such features as water distribution, fire department equipment, manpower, and fire alarm facilities (CCLAFCO 2016).

Table 5.15-1 Response Times and ISO Ratings (2014) for Fire Districts in Contra Costa County

Area/Agency	90 Percent of Responses	ISO Rating
West County		
KFPD	7:37	2
City of Richmond	8:20	2
City of El Cerrito	6:51	2
City of Pinole	8:38	3
RHFPD	9:43	2/2X
CCFPD	9:40	3/10
Central County		
SRVFPD	7:01	02/2Y
MOFPD	8:20	3/9
East County		
ECCFPD[a]	11:58	4/10
Other		
CCCFPD	(8:20)[1]	3/8

[a] Although the ECCFPD has been annexed into the CCCFPD, they were the service provider for East County at the time data was collected.
Source: CCLAFCO 2016
[1] CCCFPD 2021

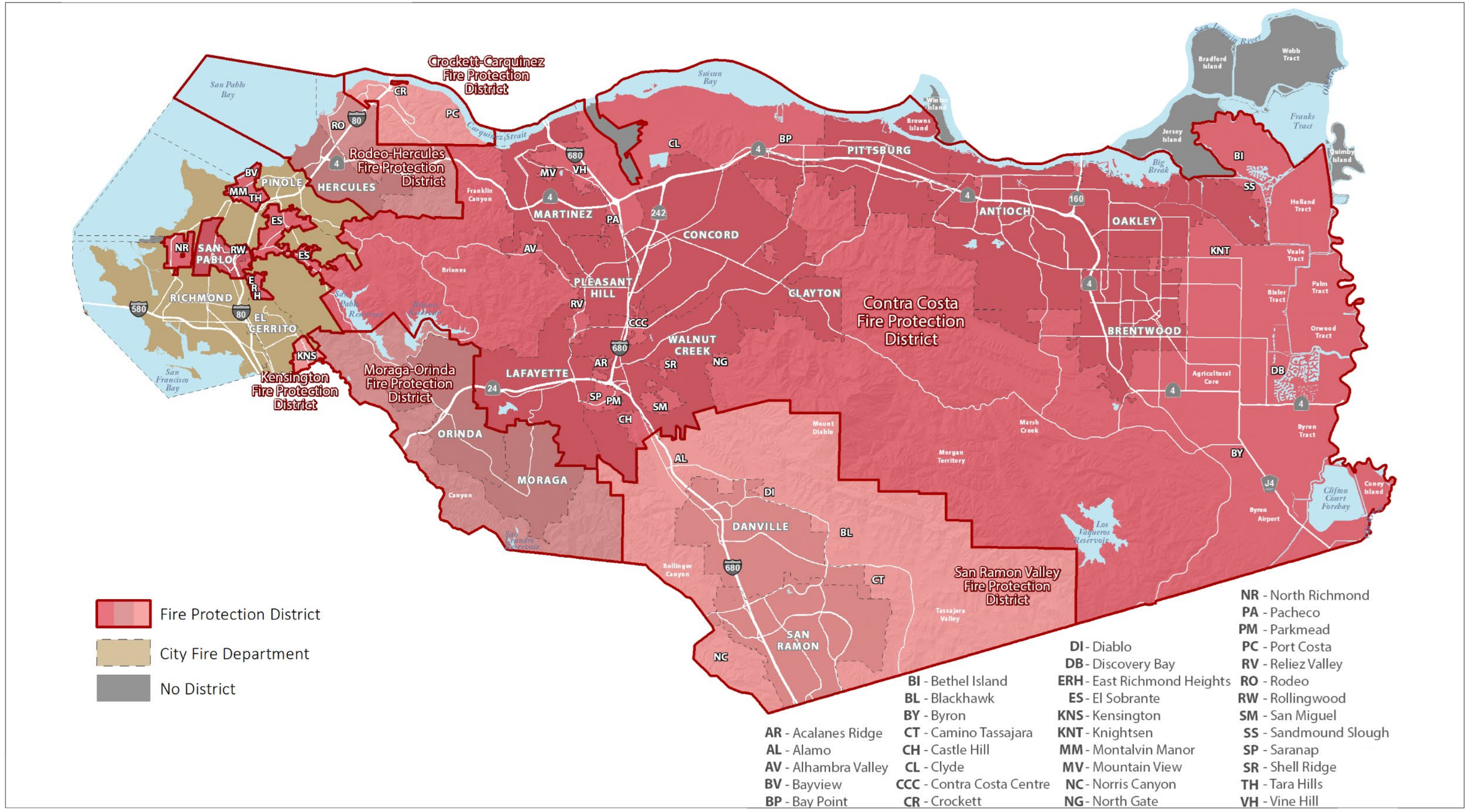

Figure 5.15-1
Fire Protection District Boundaries in Contra Costa County

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Mutual Aid Agreements

All fire agencies in the county have signed the California State Master Mutual Aid Agreement that is administered by the State Office of Emergency Services (Cal OES). All agencies have also signed the Contra Costa County Fire Chief's Mutual Aid Plan, which was last updated in 1997. The County Fire Chiefs are assigned the responsibility to establish and manage the County Mutual Aid Plan that governs day-to-day interagency cooperation when an emergency exceeds the operational capability of any fire agency, by Cal OES, under the State Master Mutual Aid Agreement (CCLAFCO 2016). Table 5.15-2, *Overview of Mutual Aid Agreements,* shows these agreements for fire protection in the county. Note that this information was sourced from the CCLAFCO Municipal Services Review of Fire and EMS Services, which was released in 2016. The recent annexation of ECCFPD will likely lead to changes in these agreements.

Table 5.15-2 Overview of Mutual Aid Agreements

Boundary	Automatic Aid Provided to	Automatic Aid Received from	Mutual Aid Partners
City of Cerrito FD	Cities of Albany, Berkely, Pinole and Richmond, CCCFPD, MOFPD, RHFPD	Cities of Albany, Berkeley, and Richmond	Cities of Berkeley and Oakland, CCCFPD, EBRPD, and CAL FIRE
City of Pinole FD	City of El Cerrito, CCCFPD, CCFPD, RHFPD	CCCFPD, CCFPD, RHFPD	EBRPD and CAL FIRE
City of Richmond FD	Cities of El Cerrito and Pinole, CCCFPD, RHFPD	Cities of El Cerrito and Pinole, CCCFPD, RHFPD	ECCFPD, CAL FIRE, CCFPD, EBRPD, MOFPD, SRVFPD
CCCFPD	Cities of Benecia, Pinole, and Richmond, ECCFPD, MOFPD, RHFPD, SRVFPD	Cities of Richmond and Pinole, ECCFPD, MOFPD, RHFPD, SRVFPD	EBRPD, CAL FIRE
CCFPD	City of Vallejo, RHFPD	RHFPD	City of Vallejo, EBRPD, CAL FIRE
MOFPD	City of Oakland, CCCFPD	Cities of Oakland and El Cerrito, CCCFPD	Cities of Berkeley and Oakland, CAL FIRE, Alameda County
RHFPD	City of Pinole, CCCFPD, CCFPD	City of Pinole, CCCFPD, CCFPD	EBRPD and CAL FIRE
SRVFPD	Alameda County, CCCFPD	Alameda County, CCCFPD	Cities of El Cerrito, Richmond, and Pinole, Alameda County, ECCFPD, CAL FIRE, CCFPD, MOFPD, RHFPD

FD = Fire Department
EBRPD = East Bay Regional Parks District
CAL FIRE = California Department of Forestry and Fire Protection
Source: CCLAFCO 2016

5.15.1.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project would normally have a significant effect on the environment if the project would:

FP-1 Result in a substantial adverse physical impact associated with the provisions of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection services.

5.15.1.3 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to fire protection services. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Health and Safety Element

- **Policy HS-P4.3**: Discourage new below-market-rate housing in High and Very High Fire Hazard Severity Zones, the Wildland-Urban Interface, and Alquist-Priolo Fault Zones. If below-market-rate housing must be constructed within these zones, require it to be hardened or make use of nature-based solutions to ensure it remains habitable to the greatest extent possible.
- **Policy HS-P4.6**: In hazard-prone areas, such as slopes exceeding 15 percent, mapped floodplains, High and Very High Fire Hazard Severity Zones, and Alquist-Priolo Earthquake Fault Zones, allow for decreased residential density, including below the minimum density requirement for the applicable land use designation, as the severity of risk increases.
- **Policy HS-P7.1**: Deny applications for new residential subdivisions in Very High Fire Hazard Severity Zones and discourage residential subdivisions in High Fire Hazard Severity Zones.
- **Policy HS-P7.2**: Require any construction of buildings or infrastructure within a High or Very High Fire Hazard Severity Zone in the LRA or SRA or in the WUI, as shown on Figures HS-10 and HS-11, to incorporate fire-safe design features that meet the State Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulation for road ingress and egress, fire equipment access, and adequate water supply.
- **Policy HS-P7.3**: Require new development within a Very High Fire Hazard Severity Zone in the LRA or SRA (as shown on Figure HS-10) or in the WUI (as shown on Figure HS-11), and on a residential parcel with evacuation constraints (as shown on Figure HS-21), to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with evacuation plans during the construction period. Work with the appropriate fire protection district to review and approve the traffic control plan prior to issuance of building permits.
- **Policy HS-P7.4**: Require subdivisions in the High Fire Hazard Severity Zone in the LRA or SRA and projects requiring a land use permit in the High or Very High Fire Hazard Severity Zone in the LRA or SRA, as shown in Figure HS-10, to complete a site-specific fire protection plan. Work with the appropriate fire protection district to review and revise the fire protection plans. The fire protection plan shall include measures for fire-resistant construction materials and modifying fuel loading, as well as a plan to maintain that protection over time. The fire protection plan shall include:
  a) A risk analysis
  b) Fire response capabilities
  c) Defensible space requirements
  d) Fire safety requirements for infrastructure
  e) Building ignition resistance

f) Mitigation measures and design for non-conforming fuel modification
g) Wildfire education
h) Maintenance and limitations
i) A plan for emergency preparedness, response, and evacuation

- **Policy HS-P7.5**: Work with property owners within mapped High or Very High Fire Hazard Severity Zones in the LRA or SRA or in the WUI areas to establish and maintain fire breaks and defensible space, vegetation clearance, emergency access roads, water supply and fire flow, signage, and firefighting infrastructure that meets current adopted State, County, or community fire safety standards.
- **Policy HS-P7.6**: Promote installation of smoke detectors at the time of sale or lease agreement, and maintenance of smoke detectors in existing residences and commercial facilities that were constructed prior to the requirement for their installation.
- **Policy HS-P7.7**: Work with water service providers and fire protection agencies to promote the long-term integrity of water supplies to meet firefighting needs and ensure that new and existing developments in high fire risk areas have suitable water delivery infrastructure.
- **Policy HS-P7.8**: Construct critical facilities, such as Office of Emergency Services facilities and other uses on the County's designated critical facilities list, with fire-resistant materials, defensible space, and fire-resistant landscaping that allows them to maintain structural integrity and ensure functional operation to the greatest extent feasible. Avoid locating these facilities in high fire risk areas to the extent possible.
- ***Action HS-A7.1**: Collaborate with local fire safe councils, CAL FIRE Santa Clara Unit, and other fire protection agencies to update and implement the Community Wildfire Protection Plan for Contra Costa County.*
- **Action HS-A7.2**: Support local fire protection agencies with efforts to seek funding for development and implementation of a continuous vegetation management program in fire hazard severity zones and WUI areas.
- **Action HS-A7.3**: Update countywide fire hazard severity zone and WUI mapping as new data becomes available from the California Board of Forestry and Fire Protection.
- **Action HS-A7.4**: Following a large fire, evaluate the feasibility and resilience of redevelopment, and consider changes to building or development standards to improve resilience.
- ***Action HS-A7.5:** Collaborate with local and regional fire safe councils, CAL FIRE Santa Clara Unit, and other fire protection agencies to develop a fire safe education program to provide information about State fuel modification, defensible space, access, water, signage, and other fire safe regulations.*
- **Action HS-A7.6:** Pursue grants and other funding mechanisms to retrofit ventilation systems at County buildings to provide refuge for residents during periods of unhealthy air quality caused by excessive wildfire smoke.
- **Policy HS-P12.1**: Continue implementing the Contra Costa County Local Hazard Mitigation Plan, which was adopted by the Board of Supervisors and certified by FEMA and is incorporated into this Health and Safety Element.
- ***Policy HS-P12.2**: Locate facilities and uses on the County's designated critical facilities list outside of identified hazard areas whenever possible, accounting for how climate change may increase frequency and intensity of hazards. If*

critical facilities must be in hazard areas, ensure these facilities and their access routes are protected from the hazard risks inherent to each location.

- **Policy HS-P12.4**: Ensure there are adequate identified locations for alternate care sites, especially in Impacted Communities.
- **Action HS-A12.1:** Update the Contra Costa County Local Hazard Mitigation Plan as necessary to remain compliant with State and federal laws and reflect changing climate conditions.
- **Action HS-A12.2:** Incorporate the assessments and projections for future emergency service needs from the most recent Municipal Services Reviews into updates of the Contra Costa County Local Hazard Mitigation Plan.
- **Action HS-A12.3:** At least once every eight years, evaluate the effectiveness of and update the public safety, preparedness, and hazard mitigation policies in this Health and Safety Element, with consideration given to changing climate conditions.
- **Action HS-A13.3:** Coordinate with local fire districts to develop and maintain minimum roadway, ingress, and egress standards for evacuation of residential areas in Very High Fire Hazard Severity Zones.
- **Action HS-A13.4:** Develop an evacuation education program to help inform community members about the Contra Costa County Community Warning System and recommended approaches to evacuation.

Public Facilities and Services Element

- **Goal PFS-3**: Adequate, fair, and cost-effective funding for public facilities, infrastructure, and services.
  - **Policy PFS-P3.1**: Coordinate with LAFCO, infrastructure and service providers, and cities to ensure infrastructure and services are reliable and provided in a cost-effective and equitable manner.
  - ***Policy PFS-P3.2****: Require new development to pay its fair share of public improvement costs for infrastructure, facilities, maintenance, and services based on the proportionate cost of serving the project.*
  - ***Policy PFS-P3.3****: When new development cannot adequately be served by existing infrastructure and facilities or through the County's impact fee programs, require a public facilities financing plan that identifies the necessary public improvements and establishes an equitable plan to pay for and develop the required improvements.*
  - ***Policy PFS-P3.4****: When communities request levels of County services that exceed the countywide standard, require creation of (or annexation into) a County Service Area, community facilities district, or equivalent mechanism to fund the supplemental service costs. Allow exceptions for enhanced services in Impacted Communities if alternative funding sources can be identified.*
  - **Policy PFS-P3.6**: When adopting, amending, and imposing impact fees, community benefits agreements, and developer exactions, consider the effects of such fees and exactions upon individual project economics, housing supply, economic development, and the County's broad goals and objectives related to overall community development. If gap funding can be identified, consider fee reductions or exemptions for projects in Impacted Communities that are consistent with the community objectives identified in their Community Profile.

- **Action PFS-A3.1**: Implement an equitable and standardized approach to property tax sharing with cities during the annexation process.
- ***Action PFS-A3.2****: Regularly update development impact fees to ensure new development pays its fair share of infrastructure and service costs.*

- **Goal PFS-6:** Efficient and effective law enforcement, fire, and emergency medical services for all communities.
  - **PFS-P6.1**: Require new development to support effective law enforcement and fire protection by providing a safe and accessible public realm for all.
  - ***PFS-P6.3****: During the discretionary review process for projects with potential to increase demand on fire protection services, consult with the applicable fire district to identify any upgrades to fire protection facilities, infrastructure, and equipment needed to reduce fire risk and improve emergency response.*

Proposed CAP Strategies and Actions

The following strategies and actions from the proposed Climate Action Plan (CAP) are applicable to fire protection services:

Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

Strategy BE-3 Actions:

- Require new commercial parking lots with 50 or more spaces to mitigate heat gain through installation of shade trees, solar arrays, or other emerging cooling technologies. Prioritize the use of solar arrays where feasible and appropriate. (HS-P8.3)
- Encourage property owners to pursue financial incentives for solar installations and energy storage technologies, such as battery storage systems, on new and existing buildings.
- Work with MCE to increase enrollment, especially in the Deep Green tier.
- Continue to enroll all eligible, non-solar-equipped County facility electricity accounts in MCE territory in the Deep Green tier.
- Work with the Contra Costa County Fire Protection District and other organizations that provide fire protection services to provide education and promote incentives for battery storage systems that can increase the resilience of homes and businesses to power outages.
- Encourage installation of battery storage systems in new and existing buildings, especially buildings with solar energy systems and buildings that provide essential community services. (COS-P14.7)
- Provide information about battery storage systems with all applications for new home construction and solar panel installations.
- Pursue implementation of recommendations of the 2018 Renewable Resource Potential Study.
- Evaluate the least-conflict feasible locations for stand-alone battery storage systems and modify land use regulations to enable such use in these locations.

5.15.1.4 ENVIRONMENTAL IMPACTS

Impact 5.15-1: The proposed project could introduce new structures and residents into the CCCFPD, RHFPD, SRVFPD, KFPD, and CCFPD's service boundaries, thereby increasing the requirement for fire protection facilities and personnel. [Threshold FP-1]

Proposed General Plan

As discussed under Section 5.15.1.1, *Environmental Setting*, the EIR Study Area is served by several fire protection districts including the CCCFPD, HRFPD, SSRVFPD, KFPD, and CCFPD. The total growth projected in the unincorporated county by 2045 under the proposed General Plan is approximately 23,200 new housing units, 65,600 new residents, 1.2 million square feet of new commercial space, and 5 million square feet of new industrial space.[1] The increase in population as a result of the proposed General Plan would be expected to generate the typical range of service calls, including fire, emergency medical service, and other incidents. New fire personnel, vehicles, and equipment would be required to provide adequate response times to serve future development. Therefore, the CCCFPD, RHFPD, SRVFPD, KFPD, and CCFPD's respective costs to maintain equipment and facilities and to train and equip personnel would also increase. However, the additional personnel and materials costs would likely be gradual as the increase in population would occur incrementally over time.

As detailed in the policies and actions included under Goal PFS-3 in the proposed Public Facilities and Services Element, future development would help to fund public facilities and services, including fire protection services. For example, Policy PFS-P3.2 requires that new development pay its fair share of public improvement costs for services based on the proportionate cost of serving the project. Action PFS-A3.2 would require the County to regularly update its development fees to support Policy PFS-P3.2. Policy PFS-P3.3 would require new development lacking sufficient infrastructure and facilities to implement a public facilities financing plan. The proposed General Plan's wildfire safety-related policies within the Health and Safety Element would also ensure that new development is designed and operated under stringent safety standards, thereby reducing the demand on fire services.

As such, it would be possible to assess the need for additional fire and emergency medical service personnel and equipment and address these needs to ensure that adequate fire service response time standards are maintained. However, as a matter of information, if and when the construction or expansion of facilities to accommodate additional personnel or equipment should become necessary, CEQA review, General Plan provisions, Ordinance Code regulations, and payment of impact fees would all be required. The County would continue to monitor service needs and construct facilities as needed over time. The impact on fire protection and emergency medical response services would be less than significant.

[1] Refer to Chapter 3, *Projection Description*.

Proposed CAP

As a policy document that aims to reduce GHG emissions and to help the county to adapt to changing climate conditions, the proposed CAP is not expected to result in any impacts with regard to fire protection services. Strategy BE-3 under the proposed CAP would seek to accelerate the replacement of electricity generated by fossil fuels with electricity generated from renewable or carbon-free sources. To implement this strategy, the CAP directs the County to work with CCCFPD and other organizations that provide fire protection services to promote participation in the Self-Generation Incentive Program and related efforts to provide education and incentives for battery storage programs. The Self-Generation Incentive Program is a statewide initiative to provide incentives for battery storage systems among other energy storage systems. While this action directs coordination with the county's fire protection districts to potentially provide increased fire protection services, it is not likely to result in the need for new facilities. Therefore, impacts from the proposed CAP are considered less than significant.

Level of Significance Before Mitigation: Impact 5.15-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.15-1 would be less than significant.

5.15.1.5 CUMULATIVE IMPACTS

Projected development under the proposed General Plan, combined with existing, planned, proposed, approved, and reasonably foreseeable development within the service areas of CCCFPD, RHFPD, SRVFPD, KFPD, and CCFPD and nearby fire departments and protection districts that provide mutual aid, would increase the demand on fire protection and emergency medical services. This increased demand may result in increased requests for mutual aid from regional and State agencies like CAL FIRE or EBRPD, as shown in Table 5.15-2. It is not anticipated that increased mutual aid requirements would result in the need for additional fire protection facilities because mutual aid would be provided via existing facilities, equipment, and personnel at the time of the mutual aid request. In addition, future development projects, including fire protection facilities, would be subject to subsequent project-level CEQA review at such time as an application is submitted.

All new development proposed in the county would be subject to the California Building Code and California Fire Code, which would help to prevent and minimize the occurrences of fire, increasing the ability of the county's fire service providers to provide adequate fire protection services. Subsequent project-level CEQA review of future development, along with compliance with the California Building and Fire Codes, would ensure that cumulative environmental impacts associated with the continued provision of fire protection and emergency medical response services would be less than cumulatively considerable.

5.15.1.6 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.15.1.7 MITIGATION MEASURES

No mitigation measures are required.

5.15.1.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

5.15.2 Police Protection

5.15.2.1 ENVIRONMENTAL SETTING

Regulatory Background

State

Emergency Response/Evacuation Plans

Government Code Section 8607(a) directs Cal OES to prepare a Standard Emergency Management System (SEMS) program, which sets forth measures by which a jurisdiction should handle emergency disasters. The program is intended to provide effective management of multiagency and multijurisdictional emergencies in California. SEMS consists of five organizational levels, which are activated as necessary: (1) Field Response, (2) Local Government, (3) Operational Area, (4) Regional, and (5) State. Local governments must use SEMS to be eligible for funding of their response-related personnel costs under State disaster assistance programs. Contra Costa County has adopted an Emergency Operations Plan that is consistent with the SEMS.

Local

Contra Costa County Ordinance Code

Chapter 42-2 - Disaster Council and Emergency Services

Under County Ordinance Code Section 42-2.602, *Administrator of Emergency Services,* the County Administrator is the Administrator of Emergency Services, and in charge of the County's Emergency Operations Center (EOC). The Administrator of Emergency Services assumes the ultimate responsibility and authority for directing the Contra Costa Operational Area's emergency management organization (including emergency response and recovery). The Administrator of Emergency Services is responsible for implementing the Emergency Operations Plan (Contra Costa 2016).

The Contra Costa Emergency Services Policy Board (ESPB) functions as the Contra Costa County Disaster Council, as described in County Ordinance Code Section 42-2.404, *Emergency Services Policy Board*. The ESPB is an advisory body providing assistance and advice to the County Administrator and as appropriate to the Director of Emergency Services on emergency preparedness planning efforts and the coordination of such planning efforts throughout the county. The ESPB reviews and makes recommendations on emergency and mutual aid plans and agreements and such ordinances, resolutions, and regulations as are necessary to implement those plans and agreements.

Additionally, the Operational Area Council serves as an advisory council to the ESPB. The Operational Area Council consists of emergency managers from incorporated cities, special districts, key utilities and businesses, and staff of the Contra Costa County Office of the Sheriff (CCCOS), Office of Emergency Services. It discusses and considers countywide emergency management areas and issues and makes recommendations to the ESPB through the Office of Emergency Services.

Contra Costa County Board of Supervisors Policy on Police Services Impacts

The County Board of Supervisors has adopted a policy requiring projects to mitigate their impacts on law enforcement services. Minor subdivisions (subdivisions creating four or fewer lots) are required to pay a one-time fee of $1,000 per lot. Major subdivisions (subdivisions creating five or more lots) are required to create a police services district. Lots within the district are assessed with an annual base fee of $200, which is adjusted annually based on the consumer price index. A variety of other fees are assessed for residential projects that do not involve a subdivision (e.g., an apartment project) and nonresidential projects.

Existing Conditions

Contra Costa County Office of the Sheriff

CCCOS is the largest law enforcement agency in Contra Costa County with 1,100 total personnel providing a full range of services to over one million residents in the 715-square mile county (CCCOS 2023). The Office provides uniformed law enforcement services to approximately 517,454 residents in all unincorporated areas of the county except Kensington, which is served by a special district. CCCOS also provides services to contract cities (i.e., Danville, Lafayette, and Orinda) and special districts. CCCOS oversees air support (i.e., helicopters), marine patrol, dispatch, investigations, coroners, County detention facilities, custody alternative, court security, forensic services, the police academy, and the Office of Emergency Services (CCCOS 2023). According to a report made by the Contra Costa County Civil Grand Jury in 2020, the staffing ratio of patrol deputies serving the population in the unincorporated part of the county per 1,000 residents is 1.06. The state average is 1.46 sworn officers per 1,000 residents (CC Civil Grand Jury 2020). Additionally, the report claims that there were 65 unfilled sworn officer positions in the CCCOS, which accounts for approximately 10 percent of the Office's capacity.

Contra Costa County Office of Emergency Services

The Contra Costa County Office of Emergency Services is a branch of the CCCOS that provides disaster planning services, coordinates disaster outreach for public agencies and contract cities in the county, and helps County departments with emergency preparedness, disaster mitigation, and recovery. It also serves as a liaison with Cal OES for all County agencies. In addition to providing preparedness training, this division oversees responsibility for County staff in the EOC (CCCOS 2022).

The CCCOS is also aided by the Contra Costa Community Emergency Response Team (CERT). CERT facilitates the training of community members by emergency personnel in basic response skills to allow community members to help effectively and efficiently in an emergency and apply their training to help those in need of emergency services when emergency personnel are overwhelmed (CCCCERT 2022).

5.15.2.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

PP-1 Result in a substantial adverse physical impact associated with the provisions of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection services.

5.15.2.3 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies, and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to police protection services. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Public Facilities and Services Element

- **Goal PFS-3**: Adequate, fair, and cost-effective funding for public facilities, infrastructure, and services.
  - **Policy PFS-P3.1**: Coordinate with LAFCO, infrastructure and service providers, and cities to ensure infrastructure and services are reliable and provided in a cost-effective and equitable manner.
  - ***Policy PFS-P3.2****: Require new development to pay its fair share of public improvement costs for infrastructure, facilities, maintenance, and services based on the proportionate cost of serving the project.*
  - ***Policy PFS-P3.3****: When new development cannot adequately be served by existing infrastructure and facilities or through the County's impact fee programs, require a public facilities financing plan that identifies the necessary public improvements and establishes an equitable plan to pay for and develop the required improvements.*
  - ***Policy PFS-P3.4****: When communities request levels of County services that exceed the countywide standard, require creation of (or annexation into) a County Service Area, community facilities district, or equivalent mechanism to fund the supplemental service costs. Allow exceptions for enhanced services in Impacted Communities if alternative funding sources can be identified.*
  - **Policy PFS-P3.6**: When adopting, amending, and imposing impact fees, community benefits agreements, and developer exactions, consider the effects of such fees and exactions upon individual project economics, housing supply, economic development, and the County's broad goals and objectives related to overall community development. If gap funding can be identified, consider fee reductions or exemptions for projects in Impacted Communities that are consistent with the community objectives identified in their Community Profile.
  - ***Action PFS-A3.2****: Regularly update development impact fees to ensure new development pays its fair share of infrastructure and service costs.*
- **Goal PFS-6**: Efficient and effective law enforcement, fire, and emergency medical services for all communities.

- **Policy PFS-P6.2:** Design, improve, and maintain public spaces to maximize visibility and safety through appropriate lighting and landscaping.
- ***Action PFS-A6.1****: Engage community members, law enforcement, and local leaders, and amend the County Ordinance Code to incorporate standards for new development that support a safe, accessible public realm for all through environmental design..*

Proposed CAP Strategies and Actions

There are no strategies or actions in the proposed CAP that are applicable to police protection services.

5.15.2.4 ENVIRONMENTAL IMPACTS

Impact 5.15-2: The proposed project could introduce new structures and residents into the CCCOS service boundaries, thereby potentially increasing the requirement for police protection facilities and personnel. [Threshold PP-1]

Proposed General Plan

While no specific development proposals are directly associated with the proposed General Plan, theoretical development would result in an increase in population and thus an increase in demand for police protection services from the CCCOS. As discussed under Impact 5.15-1, development under the proposed General Plan could result in an increase of approximately 65,600 new residents in the county. As development occurs, there would be an increase in calls for service which may require additional police personnel. Future development is expected to generate the typical range of service calls. Additional police personnel, vehicles, and equipment would likely be required to provide adequate response times to serve future growth. Therefore, the County's costs to maintain equipment and facilities and to train and equip personnel would also increase. However, the additional personnel and materials costs would likely be gradual as the increase in population would occur incrementally over time.

Several policies and actions proposed in the General Plan would ensure that future development would be provided police services and contribute to the funding of such services. As discussed under Impact 5.15-1, Policies PFS-3.2 and PFS-3.3 would require new development to pay its fair share of costs for public improvements and services or develop a public facilities financing plan in the event that existing infrastructure cannot adequately serve the development. Action PFS-A6.1 also directs the County to revise the County Ordinance Code to incorporate standards for new development that support a safe, accessible public realm for all through environmental design, thereby decreasing potential demand for police services. The County also currently levees land development impact fees to fund police services (Contra Costa 2022). This includes a one-time fee of $1,000 per lot for subdivisions creating four or fewer lots or the requirement to create a police services district for subdivisions creating five or more lots that levy fees starting at $200 annually for lots in the district. Fees are also levied on other types of residential projects and non-residential projects.

As such, it would be possible to assess the need for additional police personnel and equipment and address these needs to ensure that the law enforcement response time standards in the county are maintained. However, as a matter of information, if and when the construction or expansion of facilities to accommodate additional personnel or equipment could become necessary, CEQA review, proposed General Plan provisions, Ordinance

Code regulations, and payment of impact fees would all be required. Therefore, the impact on police protection services would be less than significant.

Proposed CAP

As a policy document that aims to reduce GHG emissions and to help the county to adapt to changing climate conditions, the proposed CAP is not expected to result in any impacts with regard to police protection services. The CAP does not include any strategies or actions that would result in a direct increase in demand for police protection services, nor does it otherwise address police services. As such, the proposed CAP would have no impact.

Level of Significance Before Mitigation: Impact 5.15-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.15-2 would be less than significant.

5.15.2.5 CUMULATIVE IMPACTS

Cumulative increases in development in the county would require increased police protection services to serve new development. The increase in demand for police protection services from implementation of cumulative projects would have the potential to result in the need to construct or expand existing police facilities, which would have the potential to create an adverse impact on the environment. While the majority of cumulative projects require discretionary actions and would be required to demonstrate compliance with CEQA prior to project approval, they would incrementally increase the need for law enforcement services. Operational funding for the CCCOS is derived from various sources of tax revenue that contribute to the General Fund and development impact fees. Provided that staff and facilities are expanded to serve future development in the unincorporated county, the proposed project would contribute less than significant cumulative impacts.

5.15.2.6 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.15.2.7 MITIGATION MEASURES

No mitigation measures are required.

5.15.2.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

5.15.3 School Services

5.15.3.1 ENVIRONMENTAL SETTING

Regulatory Background

State

Development Impact Fees/SB 50

Proposition 1A, the Kindergarten–University Public Education Facilities Bond Act of 1998, or Senate Bill (SB) 50, was approved by the voters in November 1998. SB 50 provides a comprehensive school facilities financing and reform program and enables a statewide bond issue to be placed on the ballot. Under the provisions of SB 50, school districts are authorized to collect fees to offset the costs associated with increasing school capacity as a result of development and related population increases. The funding goes to acquiring school sites, constructing new school facilities, and modernizing existing school facilities. SB 50 establishes a process for determining the amount of fees developers would be charged to mitigate the impact of development on school districts from increased enrollment. According to Section 65996 of the California Government Code, development fees authorized by SB 50 are deemed to be "full and complete school facilities mitigation."

Under this legislation, there are three levels of developer fees that may be imposed on new development by the governing school district. Level I fees are assessed based on the proposed square footage of residential, commercial/industrial, and/or parking structure uses. Level II fees require the developer to provide one-half of the costs of accommodating students in new schools, and the State provides the remaining half. To qualify for Level II fees, the governing board of the school district must adopt a School Facilities Needs Analysis and meet other prerequisites in accordance with Section 65995.6 of the California Government Code. Level III fees apply if the State runs out of bond funds, allowing the governing school district to impose 100 percent of the cost of school facility or mitigation on the developer, minus any local dedicated school monies.

Local

Contra Costa County Ordinance Code

Division 812 - School Facility Dedications

The purpose of the County's School Facilities Dedication Ordinance is to provide a method for financing interim school facilities necessitated by new residential developments causing conditions of overcrowding. The Ordinance states that in an attendance area that has been considered overcrowded according to Chapter 812-6 of the Code, the owner of a proposed residential development as a condition of approval of obtaining of a building permit shall dedicate land, pay fees in lieu thereof, or do a combination of both, for classroom and related facilities for elementary and/or high schools, including all mandated educational programs.

Existing Conditions

Contra Costa County has the nineth largest public-school population in the state, containing 18 public school districts and 285 total schools, including both public and private schools. The Contra Costa County Office of Education (CCCOE) provides support services including budget approval, fiscal, technology infrastructure,

and communication support to schools and school districts in the county. Table 5.15-3, *Contra Costa County School Enrollment 2013-2023,* shows the trends in enrollment over the last decade, as reported by CCCOE. Overall, the county experienced 0.92-percent growth in school enrollment over this time.

Table 5.15-3 Contra Costa County School Enrollment 2013-2023

School Year	Enrollment	Percentage Change
2013-2014	173,020	0.93%
2014-2015	174,802	1.03%
2015-2016	176,413	0.92%
2016-2017	177,370	0.54%
2017-2018	177,770	0.23%
2018-2019	177,516	-0.14%
2019-2020	178,406	0.5%
2020-2021	173,021	-3.02%
2021-2022	170,955	-1.19%
2022-2023	169,225	-1.10%

Source: CCCOE 2021; CDE 2023.

According to the California Department of Education's Overcrowded School Program, 20 schools in Contra Costa County are considered critically overcrowded. These include 16 schools in West Contra Costa Unified, two in Antioch Unified, and two in San Ramon Valley Unified (DOE 2022).

Table 5.15-4, *Contra Costa School Districts Characteristics,* shows the current enrollment and latest available capacity of each district. The capacities shown in this table were obtained from publicly available school impact fee justification studies that twelve of the eighteen public school districts in the county conducted between the years of 2016 and 2022. Moraga School District provided a capacity estimate in its 2015 School District Master Plan. As indicated in the table, Brentwood Union Elementary, Liberty Union High, Pittsburg Unified, Martinez Unified, and West Contra Costa Unified have enrollments that exceed the districts' estimated capacities according to their respective school fee justification reports and the enrollment for the districts during the 2021 to 2022 school year.

Table 5.15-4 Contra Costa School Districts Characteristics

School District	Number of Schools[1]	Students[1]	Student-Teacher Ratio[1]	Capacity
Acalanes Union High	5	5,535	19.5	5,892[2]
Antioch Unified	25	15,652	22.4	--
Brentwood Union Elementary	11	9,023	24.3	9,015[3]
Byron Union Elementary	4	1,319	22.9	--
Canyon Elementary	1	72	24	--
John Swett Unified	4	1,312	20.1	--
Knightsen Elementary	2	608	21.7	--
Lafayette Elementary	5	3,261	20.8	3,706[4]
Liberty Union High	5	8,222	22.4	6,840[5]
Martinez Unified	9	3,983	21.3	3,976[14]
Moraga	4	1,769	21.7	2,280[13]
Mt. Diablo Unified	53	29,908	22.9	34,411[6]
Oakley Union Elementary	9	4,939	22.8	6,483[7]
Orinda Union Elementary	5	2,478	20.2	3,087[8]
Pittsburg Unified	13	11,015	21.8	10,208[9]
San Ramon Valley Unified	37	30,726	22.6	30,938[10]
Walnut Creek Elementary	7	3,467	22.9	3,976[11]
West Contra Costa Unified	54	27,383	23.5	24,464[12]

Source:

[1] *NCES 2022*

[2] *Acalanes Union High School District 2020*

[3] *Brentwood Union Elementary School District 2020*

[4] *Lafayette Elementary School District 2020*

[5] *Liberty Union High School District 2016*

[6] *Mt. Diablo Unified School District 2020*

[7] *Oakley Union School District 2020*

[8] *Orinda Union School District 2020*

[9] *Pittsburg Unified School District 2018*

[10] *San Ramon Valley Unified School District 2018*

[11] *Walnut Creek Elementary School District 2018*

[12] *West Contra Costa Unified School District 2020*

[13] *Moraga School District 2015*

[14] *Martinez Unified School District 2022*

Shaded fields indicate school districts whose capacity is exceeded by current enrollment

Pursuant to SB 50 and County Ordinance Code Division 812, all school districts in the county levy a school development impact fee to offset costs associated with increasing school capacity. Antioch Unified School District (USD), Livermore USD, Mt. Diablo USD, Oakley UESD, Pittsburg USD, San Ramon Valley USD, and West Contra Costa USD directly collect fees directly for development within the jurisdiction of the district. The remaining 12 districts levy fees through the County Building Inspection Division (Contra Costa 2021).

As mentioned previously, 12 of the 18 districts in the county have conducted developer fee studies for the purposes of calculating and justifying the appropriate developer impact fee for development within the district. The studies include a student generation factor (SGF) that was used to estimate the number of students that will be added to the district through the development of new housing, commercial, and industrial development. These rates represent the students per residential housing unit and are shown for each of the districts with available data in Table 5.15-5, *Student Generation Factors for Contra Costa County School Districts*.

Table 5.15-5 Student Generation Factors for Contra Costa County School Districts

School District	Single-Family SGF	Multiple-Family SGF	Commercial/Industrial SGF
Acalanes Union High[1]	0.1579	0.0679	0.0073
Brentwood Union Elementary[2]	0.407	0.397	0.053
Lafayette Elementary[3]	0.3459	0.1658	--
Liberty Union High[4]	0.1436	0.056	--
Martinez Unified[12]	0.3649	0.1668	0.189
Mt. Diablo Unified[5]	0.3546	0.3049	0.0036
Oakley Union Elementary[6]	0.4033	0.3516	0.028
Orinda Union Elementary[7]	0.3495	0.1772	0.01
Pittsburg Unified[8]	0.6671	0.3637	0.055
San Ramon Valley Unified[9]	0.656		0.492
Walnut Creek Elementary[10]	0.3334	0.1237	--
West Contra Costa Unified[11]	0.131		0.0005

Source:
1 Acalanes Union High School District 2020
2 Brentwood Union Elementary School District 2020
3 Lafayette Elementary School District 2020
4 Liberty Union High School District 2016
5 Mt. Diablo Unified School District
6 Oakley Union School District 2020
7 Orinda Union School District 2020
8 Pittsburg Unified School District 2018
9 San Ramon Valley Unified School District 2022
10 Walnut Creek Elementary School District 2018
11 West Contra Costa Unified School District 2020 (commercial/industrial SGF: students/square foot of commercial/industrial space)
12 Martinez Unified School District 2022
Note:
All commercial/industrial student generation factors are expressed in students per employee housing unit, except for West Contra Costa Unified School District which is expressed in students per square foot of commercial/industrial space.

5.15.3.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

SS-1 Result in a substantial adverse physical impact associated with the provisions of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for school services.

5.15.3.3 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to school services. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project. The existing General Plan goals, policies, and actions that have been incorporated into the proposed goal, policy, or action are shown in paratheses following the text, when applicable.

Public Facilities and Services Element

- **Goal PFS-9:** Primary, secondary, and higher education facilities that serve the varied educational needs of all county residents.
  - ***Policy PFS-P9.1****: When reviewing new development proposals, coordinate with affected school districts to ensure adequate school capacity is or will be available, school sites are designated or dedicated if necessary, and adequate access is provided.*
  - **Policy PFS-P9.2**: Encourage dedication of school sites through density transfer of the dedicated acreage or other incentives.
  - **Policy PFS-P9.3**: Encourage school districts to use school sites for multiple community purposes, such as recreation, and to locate new schools in conjunction with and/or adjacent to parks and trails.

Proposed CAP Strategies and Actions

There are no strategies or actions in the proposed CAP that are applicable to school services.

5.15.3.4 ENVIRONMENTAL IMPACTS

Impact 5.15-3: Development under the proposed project could generate new students who would impact the school enrollment capacities of area schools and result in the need for new and/or expanded school facilities, the construction of which could result in environmental impacts [Threshold SS-1].

Proposed General Plan

A significant impact would result if, in order for the school districts to adequately serve the EIR Study Area, increased school enrollment would require the construction of new facilities or the expansion of existing schools, the construction or operation of which would cause significant environmental impacts. New development under the proposed General Plan would cause an increase in student population over the next 20 years. The projected increase in students across the EIR Study Area would likely be gradual for the duration of the proposed project as more housing units are incrementally added to the EIR Study Area.

Under the proposed project, approximately 23,200 new housing units are projected to be developed across the unincorporated county by 2045. The average of all school districts' published single- and multiple-family generation factors is 0.295 students per housing unit, per the student generation factors shown in Table 5.15-5. Therefore, approximately 6,844 new students would be added to the unincorporated county's student population from new residential development. Similarly, development under the proposed General Plan could

result in 1.2 million square feet of new commercial space and 5 million square feet of new industrial space. If using West Contra Costa USD's 2020 SGF for students per square foot of commercial/industrial space[2] shown in Table 5.15-5, the resulting increase in student population from new commercial and industrial development is approximately 3,100 students. Therefore, approximately 9,944 total new students would be added to the unincorporated county over the planning horizon of the proposed project.

To ensure that school capacities are not exceeded from new development, the proposed Public Facilities and Services Element includes Policy PFS-P9.1 which directs the County to coordinate with affected school districts to ensure adequate school capacity is or will be available, school sites are designated or dedicated if necessary, and adequate access is provided, when reviewing new development proposals. Additionally, existing funding mechanisms would lessen potential impacts related to an increase in the student population. As described in Section 5.15.3.1, all districts in the county are funded through the payment of development fees pursuant to SB 50/Government Code Section 65995 and County Ordinance 812. These fees are required to be paid by future development prior to issuance of building permits and would be used to offset the impact of the number of new students generated by the anticipated population increase under the proposed General Plan. Ultimately, the provision of schools is the responsibility of the school district. SB 50 provides that the statutory fees found in the Government and Education Codes are the exclusive means of considering and mitigating for school impacts. Imposition of the statutory fees constitutes full and complete mitigation (Government Code Section 65995[b]).

Furthermore, a school district and a development project have the option of entering into various alternative mitigation agreements to ensure the timely construction of school facilities to house students from new residential development. The primary financing mechanism authorized in these mitigation agreements is the formation of a community facilities district, pursuant to the Mello-Roos Community District Act of 1982. In lieu of an alternative mitigation agreement, State-mandated school facilities fees, which help maintain adequate school facilities and levels of service, may also reduce potential impacts, as described previously.

The existing regulatory setting, including funding mechanisms, would ensure that potential impacts to school facilities and services with development under the proposed General Plan would be less than significant. Furthermore, the proposed General Plan includes goals and policies to maintain adequate levels of service for schools. Therefore, impacts would be less than significant.

Proposed CAP

As a policy document that aims to reduce GHG emissions and to help the county to adapt to changing climate conditions, the proposed CAP is not expected to result in any impacts with regard to school services. There are no strategies or actions in the proposed CAP that relate to school services, nor would the CAP directly contribute to population growth in the EIR Study Area that would result in increased student population. Therefore, the proposed CAP would have no impacts.

[2] As seen in Table 5.15-5, most school districts express commercial/industrial SGF by students per employee housing unit. West Contra USD's commercial/industrial SGF is used to estimate the increase in student population since its school fee justification report included calculations for student generation factors that incorporate the square footage of commercial/industrial space.

Level of Significance Before Mitigation: Impact 5.15-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.15-3 would be less significant.

5.15.3.5 CUMULATIVE IMPACTS

Implementation of the proposed project is expected to result in population growth that would increase student enrollment in the county's school districts. Current State law requires that the environmental impact of new development on grade school facilities is considered fully mitigated through the payment of required development impact fees. All new development associated with the proposed project would be required to pay the applicable development impact fees. Furthermore, any significant expansion of school facilities or development of new school facilities would be subject to the appropriate CEQA environmental review, which would identify any site-specific impacts and provide mitigation to reduce those impacts. Therefore, cumulative impacts on school facilities are considered less than cumulatively considerable.

5.15.3.6 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.15.3.7 MITIGATION MEASURES

No mitigation measures are required.

5.15.3.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

5.15.4 Library Services

5.15.4.1 ENVIRONMENTAL SETTING

Regulatory Background

No existing regulations apply to library services.

Existing Conditions

The Contra Costa County Library System was founded in 1913 and currently contains 26 community libraries with approximately 650,000 cardholders. In 2019, Contra Costa County Library became the first county library in California and largest in the state to eliminate overdue fines on library materials (CCC Library 2018). The library system also provides digital resources for residents, including in such areas as newspapers, kid literature and learning, homework help, novels, and research (CCC Library 2022).

5.15.4.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

LS-1 Result in a substantial adverse physical impact associated with the provisions of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for library services.

5.15.4.3 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to library services. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Public Facilities and Services Element

- **Policy PFS-P10.1**: Prioritize expansion of library services in Impacted Communities.
- ***Policy PFS-P10.3****: Provide adequate funding for maintaining and improving library operations.*
- ***Action PFS-A10.1****: Develop library service and facility standards, identify standards not being met, and seek necessary resources to achieve those standards.*
- ***Action PFS-A10.2****: Adopt a library impact fee to ensure new development mitigates its impact on library services.*

Proposed CAP Strategies and Actions

There are no strategies or actions in the proposed CAP that are applicable to library services.

5.15.4.4 ENVIRONMENTAL IMPACTS

Impact 5.15-4: Development under the proposed project could generate new residents in the county and result in the need for new and/or expanded library facilities, the construction of which could result in environmental impacts. [Threshold LS-1]

Proposed General Plan

Projected development under the proposed General Plan would result in the potential for increased demand for library services within the county to the extent that expansion and construction of new facilities could be required. As described previously, the horizon-year projection for the proposed General Plan includes approximately 65,600 new residents in the county. To meet the future demand for library services, the proposed Public Facilities and Services Element would include Policy PFS-P10.3 which requires the County to ensure the County budget has adequate funding for maintaining and improving library services. Action PFS-A10.1 directs the County to develop library service and facility standards, while PFS-A10.2 directs the County to adopt a library impact fee to ensure that new development mitigates its impacts on library services.

Future development would also generate new tax revenues and funding sources for the Contra Costa Library System consisting of property taxes, State assistance, and revenue from fines, fees, and other miscellaneous revenue. Furthermore, development or expansion of libraries would be subject to the County's policies that protect environmental resources including environmental review and impact mitigation per CEQA. Impacts associated with development of new libraries are therefore determined to be less than significant.

Proposed CAP

As a policy document that aims to reduce GHG emissions and to help the county to adapt to changing climate conditions, the proposed CAP is not expected to result in any impacts with regard to library services. There are no strategies or actions in the proposed CAP that relate to library services, nor would the CAP directly contribute to population growth in the EIR Study Area that would result in increased population. Therefore, the proposed CAP would have no impacts.

Level of Significance Before Mitigation: Impact 5.15-4 would be less than significant.

Mitigation Measures

No mitigation measures would be required.

Level of Significance After Mitigation: Impacts 5.15-4 would be less than significant.

5.15.4.5 CUMULATIVE IMPACTS

While population within both the EIR Study Area and incorporated parts of the county is expected to increase over time, therefore increasing the use of the Contra Costa Library System services and facilities, the proposed General Plan policies and actions described would ensure that library impacts are mitigated.

In addition to an impending requirement for library impact fees, future development would generate new tax revenues, and funding sources for the Contra Costa Library System would consist of property taxes, State assistance, and revenue from fines, fees, and other miscellaneous revenue. Furthermore, development or expansion of libraries would be subject to the County's policies that protect environmental resources including environmental review and impact mitigation per CEQA. Cumulative impacts associated with development of new libraries are therefore determined to be less than cumulatively considerable.

5.15.4.6 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.15.4.7 MITIGATION MEASURES

No mitigation measures are needed.

5.15.4.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

5.15.5 Parks and Recreation

5.15.5.1 ENVIRONMENTAL SETTING

Regulatory Background

State

Quimby Act

The Quimby Act, also known as Government Code Section 66477, was established in 1965 and provides provisions in the State Subdivision Map Act for the dedication of parkland and/or payment of in-lieu fees as a condition of approval of certain types of residential projects. Previously, a city or county could only use these fees to provide parks that served the developer's proposed subdivision. However, AB 1359, signed in 2013, allows cities and counties to use developer-paid Quimby Act fees to provide parks in neighborhoods other than the one in which the developer's subdivision is located. Overall, AB 1359 provides cities and counties with opportunities to improve parks and create new parks in areas that would not have benefited before. It also allows a city or county to enter into a joint/shared use agreement with one or more public districts to provide additional park and recreational access.

Mello-Roos Community Facilities Act (California Government Code Sections 53311 et seq.)

This law allows any county, city, special district, school district, or joint powers authority to establish a Mello-Roos Community Facilities District (CFD) that can finance parks, cultural facilities, libraries, schools, fire and police protection, streets, sewer systems, and other basic infrastructure. By law, the CFD is also entitled to recover expenses needed to form the CFD and administer the annual special taxes and bonded debt.

Mitigation Fee Act

The Mitigation Fee Act allows counties and cities to establish fees that will be imposed on development projects to mitigate the impact on the jurisdiction's ability to provide specified public facilities to serve proposed development projects. In order to comply with the Mitigation Fee Act, a jurisdiction must follow four requirements: (1) Make certain determinations regarding the purpose and use of a fee and establish a nexus or connection between a development project or class of project and the public improvement being financed with the fee; (2) Segregate fee revenue from the general fund in order to avoid co-mingling of capital facilities fees and general funds; (3) For fees that have been in the possession of the jurisdiction for five years or more and for which the dollars have not been spent or committed to a project, the jurisdiction must make findings each fiscal year describing the continuing need for the money; and (4) Refund any fees with interest for which the findings noted cannot be made.

Regional

EBPRD Master Plan

The EBRPD provides and manages the regional parks for Alameda and Contra Costa Counties, a 1,400-square mile area that is home to 2.6 million people. The EBPRD Master Plan (2013) defines the overall mission and vision for the Park District. It contains policies and descriptions of programs in-place for achieving the highest standards of service in resource conservation, management, interpretation, public access, and recreation. The

goal is to maintain a careful balance between the need to protect and conserve resources and the need to provide opportunities for recreational use of the parklands, both currently and in the future (EBRPD 2013).

East Bay Watershed Master Plan

The East Bay Municipal Utility District (EBMUD) owns and manages approximately 29,000 acres of watershed land in the East Bay area These lands surround five reservoirs (Briones, San Pablo, Upper San Leandro, Chabot, and Lafayette) and one basin area that does not contain a reservoir (Pinole Valley). The East Bay Watershed Master Plan provides long-term management direction for EBMUD-owned lands and reservoirs to ensure the protection of the EBMUD water resources and preserve environmental resources on EBMUD-owned lands (EBMUD 2018). The Plan also addresses EBMUD's response to a number of rising issues in the watershed, including climate change, invasive mussels, and toxic algae. It also incorporates plans for habitat conservation, grazing, and fire protection, and proposes changes to allow access to specific watershed trails by cyclists.

Local

Contra Costa County Ordinance Code

Pursuant to Government Code Section 66001, the County adopted the uncodified Ordinance No. 2007-17, which allows the County to collect impact fees on all residential projects on a per dwelling unit basis for the purpose of funding parks and recreation facilities identified in the Capital Improvement Program. Additionally, pursuant to Government Code Section 66477, as a condition of approval of a preliminary or final development plan or a tentative or final parcel map, the County requires that developers dedicate land or pay a fee in lieu thereof under Division 920, *Park Dedications,* of the County Ordinance Code.

Parks & Recreation Services Municipal Service Review

Government Code Section 56425 and Section 56430 state that Local Agency Formation Commissions (LAFCOs) must conduct regional analyses of municipal services (i.e., Municipal Service Reviews, or MSRs) every five years or as necessary to support reviews of city, district, and jurisdictional spheres of influence (SOIs). Pursuant to this legislation, CCLAFCO is required to conduct a comprehensive review of municipal service delivery and update the SOIs of all agencies under CCLAFCO's jurisdiction. The MSR reviews services provided by public agencies—cities and special districts—whose boundaries and governance are subject to CCLAFCO. The latest MSR for parks and recreation services in the county was updated in 2021 and reviews the boundaries and services provided by four recreation and parks districts, nineteen of the county's incorporated cities and towns, eight county service areas, and four community service districts. It additionally identifies and provides recommendations for the county's disadvantaged communities.

Recreation and Parks District Master Plans

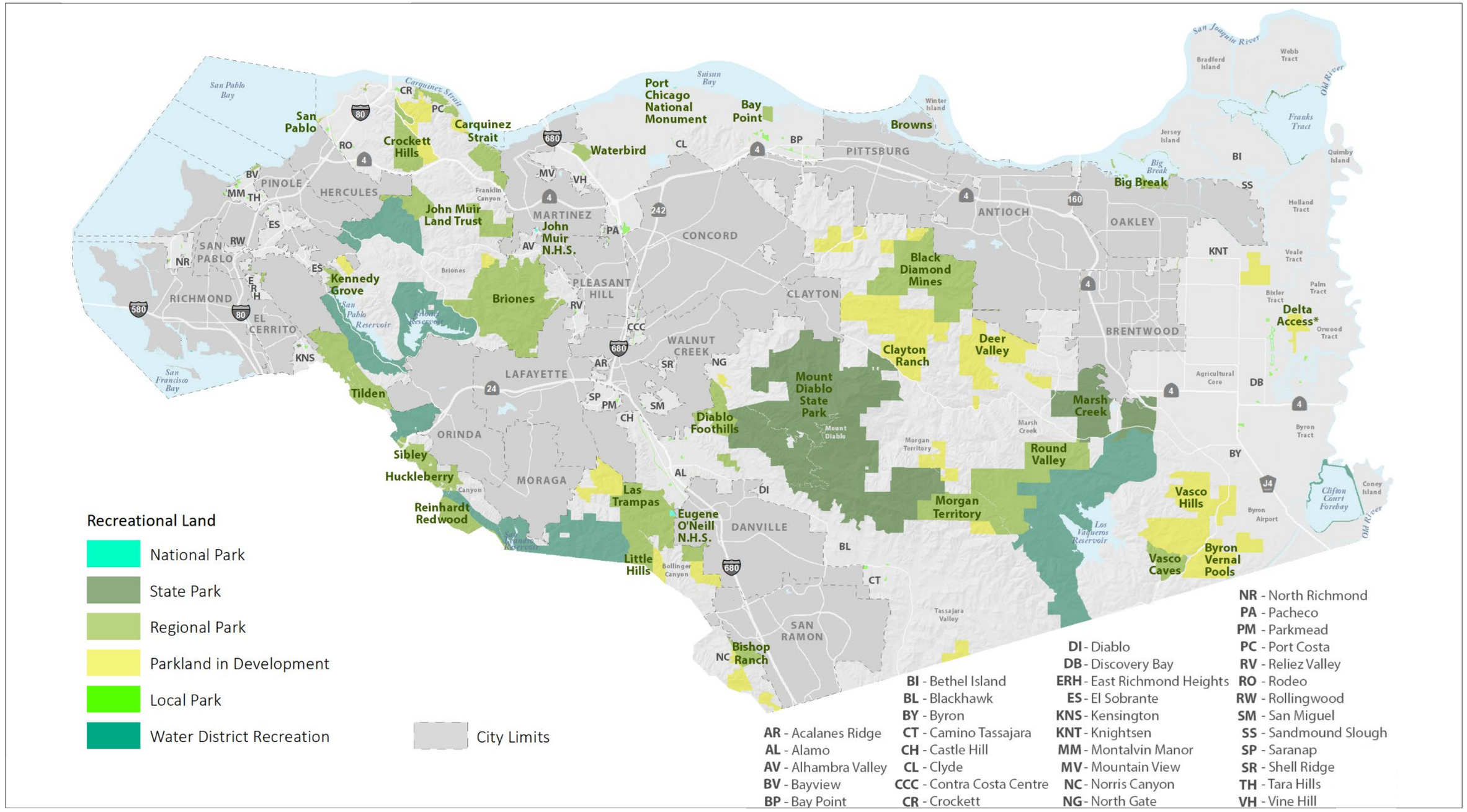
In February 2020, the Pleasant Hill Recreation and Parks District adopted a Parks, Facilities, and Recreation Master Plan that provides a thorough inventory of the District's parks and facilities and a summary of recreation programming and lays out a vision for future park and recreation facilities and investment priorities.

Existing Conditions

The parks and recreational areas in the county are managed and operated by a number of different entities. These include the U.S. National Park Service (NPS), California Department of Parks and Recreation (California State Parks), California Department of Water Resources (DWR), EBRPD, EBMUD, Contra Costa Water District (CCWD), various independent Parks and Recreation Service Districts, County Service Districts, Contra Costa County Public Works Department, and incorporated cities and towns in the county. The total acreage of all parks and recreation facilities in the county available to residents of the EIR Study Area is 108,393 acres, which includes 50,768 acres from local and regional parks/service districts, 29,950 acres from EMBUD and CCWD, 27,669 acres from NPS and California State Parks, and 6.93 additional acres from County facilities not managed under a parks or service district. The locations of all parks and recreational lands, including federal, State, regional, and locally managed facilities, are shown in Figure 5.15-2, *Contra Costa County Recreation Lands*.

National & State Parks

The NPS manages four historic sites in the county. The John Muir National Historic Site is in Martinez and consists of the Muir House and the 336-acre Strentzel-Muir fruit ranch (NPS 2020a). Additionally, the Eugene O'Neill National Historic Site on the western edge of Danville contains the Tao House in addition to other historic buildings and 13.9 acres of open and landscaped land (NPS 2020b). The Rosie the Riveter/WWII Home Front Park is at 1414 Harbour Way South in Richmond and offers interactive exhibits that explore the area's connection to WWII industrial production (NPS 2023a). The Port Chicago National Memorial is at Military Ocean Terminal Concord and is dedicated to recognizing the victims of the Port Chicago disaster during WWII (NPS 2023b). NPS also owns the 326-acre area of Mount Wanda in the Briones Hills which offers hiking trails (NPS 2021). California State Parks operates three State parks in the county for recreational uses, including the 3,523-acre Frank Tracts State Recreation Area near Bethel Island, the 3,673-acre Marsh Creek State Historic Park south of Brentwood, and the 20,124-acre Mount Diablo State Park (CSP 2019). DWR operates the Clifton Court Forebay on the southeastern edge of the county, which provides water-based recreational opportunities (CSWRD 2022).



Source: Parkland under Development by East Bay Regional Park District (EBRPD).

Figure 5.15-2
Contra Costa County Recreational Lands

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East Bay Municipal Utility District & Contra Costa Water District

Additional outdoor recreation facilities are provided by EBMUD, which owns approximately 29,000 acres of land and reservoir surface areas in the East Bay Area, including the San Pablo Reservoir, Lafayette Reservoir, and Briones Reservoir. The San Pablo and Lafayette Reservoirs allow public access for boating, fishing, and swimming, while the Briones Reservoir is limited to college crew team practice (EBMUD 2018).

CCWD also provides recreational opportunities through the Los Vaqueros Watershed and Reservoir. CCWD offers boat rentals and allows fishing on the 1,900-acre reservoir in addition to trails and picnic facilities on the surrounding lands (CCWD 2022).

Parks and Recreation Districts

Several independent parks and recreation districts operate within the county, providing services to both incorporated and unincorporated areas. These include the Ambrose Recreation and Park District (RPD) that serves Bay Point; the Green Valley RPD that serves an area of northeast Danville; and the Pleasant Hill RPD that serves a portion of Pleasant Hill, Walnut Creek, and the unincorporated area of Walden/Contra Costa Centre. The boundaries of these districts also overlap with those of nearby towns and cities, resulting in shared and jointly maintained facilities. Ambrose RPD's service boundary overlaps with the City of Pittsburg, Green Valley RPD's service boundary overlaps with the Town of Danville, and Pleasant Hill RPD's service boundary overlaps with the City of Pleasant Hill. Ambrose RPD provides two passive parks that include picnic areas and paths, and seven active parks with facilities such as playgrounds, sport fields, and basketball courts. Green Valley RPD maintains a 70-year-old swimming pool. Pleasant Hill RPD maintains 13 parks including five open space areas (CCLAFCO 2021). Further information about these districts is provided in Table 5.15-6, *Contra Costa County Parks and Recreation Services Summary*.

EBRPD provides recreation services to both Contra Costa County and Alameda County with nearly 125,000 acres across 73 parks. The District's lands are visited more than 25 million times each year, providing a variety of recreational opportunities including archery, biking, boating, kayaking, sailing, camping, day camps, resources for dogs, field trips, fishing, geocaching, golfing, hiking, horseback riding, movie nights, naturalist programs, and outdoor recreation programs (CCLAFCO 2021). EBRPD maintains 30 parks in the county and manages hundreds of additional acres of land in its land bank, which the District holds until the property is made suitable for public access (CCLAFCO 2021, EBRPD 2013).

Community Services Districts & County Service Areas

Of the six Community Services Districts (CSD) within the county, four offer park and recreation services to residents: Crockett CSD, Diablo CSD, Discovery Bay CSD, and the Kensington Police and Community Services District. Further information about the CSD's service areas and service ratios is provided in Table 5.15-6.

The County's Public Works Department maintains 63 acres of parks and recreational facilities in the unincorporated areas of the county (CCCPW 2022).[3] There are eight County Service Areas (CSA) in Contra Costa County that provide funding for enhanced park and recreation services in a specific area. CSA's M-16 (Clyde), M-17 (Tara Hills/Montalvin Manor), R-7 (Alamo), R-9 (El Sobrante), and R-10 (Rodeo) are administered by Contra Costa County, and CSAs M-29 (San Ramon), M-30 (Alamo Springs), and R-4 (Moraga) are administered by the City of San Ramon, the Town of Danville and the Town of Moraga, respectively, for enhanced park and recreation services provided within the city limits (CCLAFCO 2021).

Service District Ratios

As part of its MSR, CCLAFCO prepared an assessment of the capacity and quality of park services that are operated in the county. Table 5.15-6, *Contra Costa County Parks and Recreation Services Summary,* summarizes the acreage managed by each park district/CSD/CSA, the current and projected population in each service area that was used for the MSR, and the amount of park and recreation acreage per 1,000 residents as reported in the MSR. The table also includes a calculation of the acreage needed for each district/CSD/CSA to meet its applicable park and recreation facilities service standard. Goal 9-K in the existing Public Facilities/Services Element of the County's General Plan states that the County should achieve a level of park facilities of four acres per 1,000 population. While this target has been reduced to three acres per 1,000 residents in the proposed General Plan, four acres is used in 5.15-6 to show conservative estimates of the needed recreational acreage under existing conditions.

In addition, the Pleasant Hill RPD 2020 Master Plan recommends a service standard of 3.5 acres per 1,000 population, which is currently exceeded by the district. Furthermore, EBRPD exceeds the National Recreation and Park Association's municipal park system standard of 6.25 to 10.5 acres per 1,000 residents with its 44 acres per 1,000 residents across its service area and 17.7 acres per 1,000 residents in Contra Costa County. No other district, CSD, or CSA in the county currently implements a park and recreation facilities service standard, and therefore their acre deficits have been calculated using the County's four acres per 1,000 residents standard (CCLAFCO 2021).

[3] This calculation includes parks that are maintained by the County and within the service areas of other districts, including two parks in Discovery Bay, six parks in Bay Point, one park in Contra Costa Centre, and two parks in North Richmond.

Table 5.15-6 Contra Costa County Parks and Recreation Services Summary

Park District/Community Service District/County Service Area	Population		Acres[1]	Acres per 1,000 Residents	Acres Needed to Meet Service Standard
	2020	2040			
Ambrose RPD	28,240	35,377	28.7	1	84.7
Green Valley RPD	1,205	1,244	1.2	1	3.6
Pleasant Hill RDP	41,552	43,975	270	6.2	Standard Met
EBRPD	1,153,561	1,332,206	50,352.50	17.7	Standard Met
Crockett CSD	3,309	3,465	6.2	1.87	7
Diablo CSD	808	835	1	1.24	2.2
Discovery Bay CSD	15,215	15,754	29.8	1.96	31
Kensington Police and CSD	5,270	5,449	10	1.9	11.1
M-16 (Clyde)	733	750	2.4	3.3	0.51
M-17 (Tara Hills/ Montalvin Manor)	9,757	10,058	11	1.1	28.3
M-29 (San Ramon)	33,057	34,228	--	4.5	Standard Met
M-30 (Alamo Springs)	140	145	--	3.8	0.03
R-4 (Moraga)	17,916	18,474	--	3.4	10.7
R-7 (Alamo)	15,587	16,111	31	2	31.2
R-9 (El Sobrante)	14,546	16,217	0.1	0	58.2
R-10 (Rodeo)	9,141	9,393	11	1.2	25.6

Source: CCLAFCO 2021

[1] There are no County-owned parks in service areas M-29, M-30, and R-4. Parks and recreation services are provided to M-29 by the City of San Ramon, M-30 by service area R-7, and R-4 by the Town of Moraga.

The MSR concludes that additional parks and recreation space are needed within all districts except the Pleasant Hill RPD to meet the existing General Plan's goal of four acres per 1,000 residents. However, the MSR notes that there are park and open space areas that are either within the jurisdictions' boundaries or in close proximity, granting residents access to additional parkland and open space. These additional park and open space areas, most of which are owned/operated by EBRPD or EBMUD, effectively increase the parkland acreage per resident for each district.

Trails

Trails act as linear parks, typically just for non-motorized use. They provide safe connections between residential neighborhoods, parks, schools, and other destinations. Major regional trails in Contra Costa County include portions of the San Francisco Bay Trail, a 500-mile network of trails along San Francisco and San Pablo Bays that is managed collaboratively by several agencies, including the Metropolitan Transportation Commission, Association of Bay Area Governments, and EBRPD; portions of the 50-mile Carquinez Strait Scenic Loop Trail that is managed by the Bay Area Ridge Trail Council; and the 26-mile Iron Horse Regional Trail, 13.5-mile Contra Costa Canal Regional Trail, and 19-mile Delta de Anza Regional Trail managed by EBRPD. The county's trail network is shown in Figure 5.15-3, *County Trails Network*.

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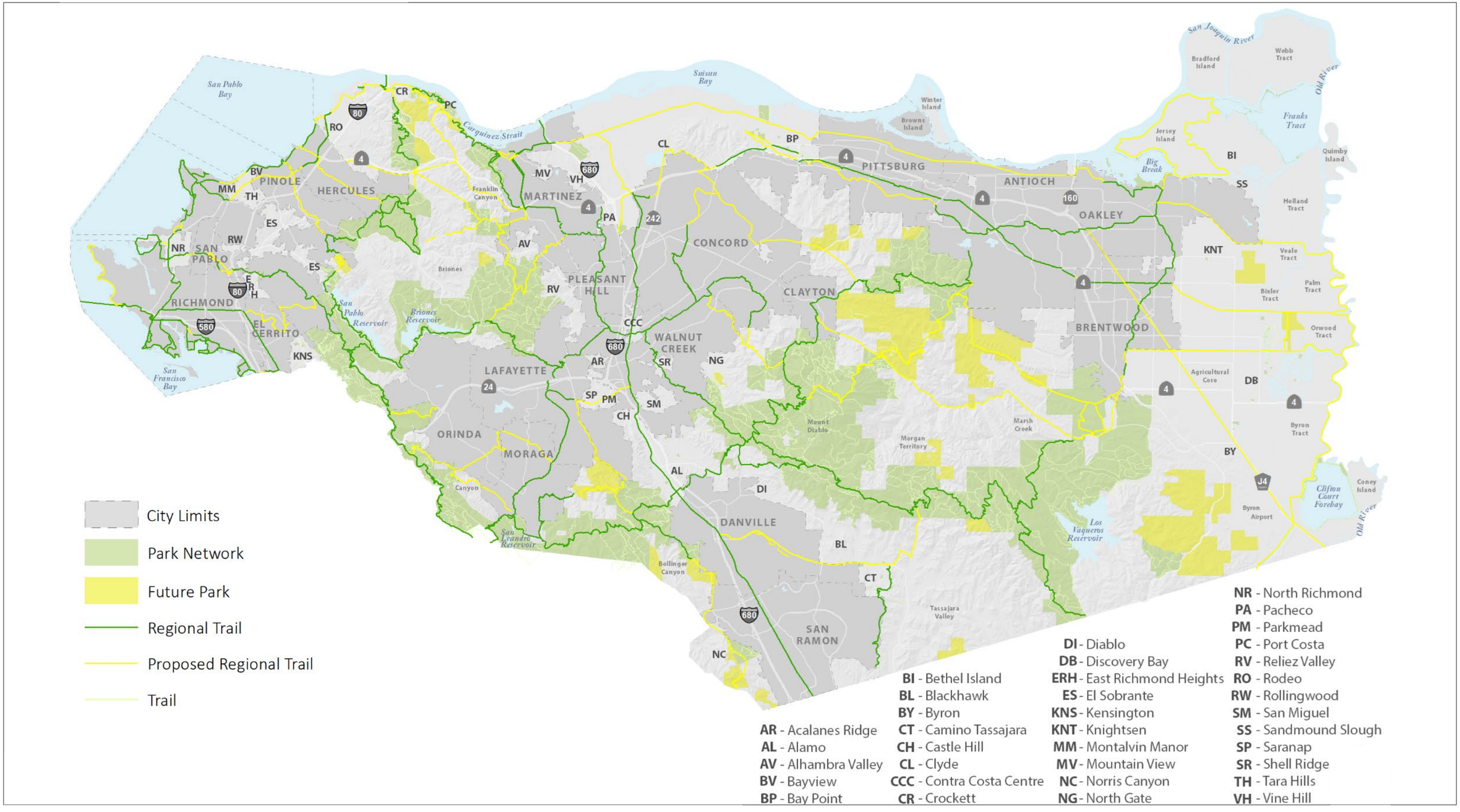

Figure 5.15-3
County Trails Network

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5.15.5.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

R-1 Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

R-2 Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

5.15.5.3 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies, and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to parks and recreation services. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Stronger Communities Element

- **Policy SC-P2.2:** Encourage development, preservation, and reinvestment that strengthen the unique character of each unincorporated community and advance community and neighborhood resilience. Ensure that future private and public projects provide infrastructure, parks and playgrounds, complete streets, trees and landscaping, streetscapes, signage, and sustainable building design that reflect and improve the character of the community, along with long-term maintenance mechanisms to ensure continued benefit from the improvements into the future.

Conservation, Open Space, and Working Lands Element

- **Policy COS-P1.3:** Discourage conversion of land designated Resource Conservation or Parks and Recreation to urban uses. If such conversion occurs, require mitigation through permanent protection of other open space or park lands for habitat, scenic, or recreation benefits at a ratio to be determined based on the biological, scenic, or recreational value of the land, but not less than 3:1.

Public Facilities and Services Element

- **Goal PFS-8:** An easily accessible, integrated system of high-quality parks and trails to meet the needs of all residents.
  - **Policy PFS-P8.1**: Support development of a variety of local amenities that meet a diverse range of recreational needs, such as ballfields, all-abilities playgrounds, tot lots, spraygrounds, adult fitness courses, gymnasiums, swimming pools, sport courts, passive parks, pocket parks, urban gardens, and trails.

- ***Policy PFS-P8.2:*** *Provide a local park within a safe 10-minute walk for all residents in urban communities or within a 5-minute drive for residents in suburban communities, as indicated in Figures PFS-9 and PFS-10 (of the Public Facilities and Services Element).*
- **Policy PFS-P8.3:** Increase access to diverse, high-quality parks, green space, recreational facilities, trails, and natural environments for residents of Impacted Communities, including through multiple transportation modes. Partner with other agencies and non-governmental organizations to obtain funding, and design and maintain these facilities to offer a safe and comfortable environment for residents of all ages and abilities.
- **Policy PFS-P8.4:** Prioritize and promote recreational activity programs and opportunities in Impacted Communities.
- ***Policy PFS-P8.5:*** *Whenever possible, require projects subject to the Park Dedication or Park Impact Fee Ordinances to develop park and recreation amenities listed in, or added to, the County's Park Capital Improvement Plan. Park Impact fees or in-lieu fees should be assessed when the County determines developer improvements are not feasible.*
- **Policy PFS-P8.6:** Support expanded access to recreation opportunities by working with other agencies to co-locate parks and trails with public facilities, such as schools and utility easements, with Impacted Communities prioritized.
- **Policy PFS-P8.8:** Support expanded public access to the waterfront and development of water-related recreational opportunities, such as fishing and boating.
- **Policy PFS-P8.9:** Support development of a comprehensive and interconnected network of trails, including intra- and inter-regional trails like the San Francisco Bay Trail, Carquinez Strait Scenic Loop Trail, Great California Delta Trail, and Marsh Creek Corridor Trail, that provides public access to shorelines, ridges, and other scenic areas, connects residents with open space and nature, and links urban areas with parks and other recreational facilities.
- **Action PFS-A8.1:** Create an internal County entity that works across departments and non-County agencies to coordinate planning and funding of unincorporated local parks, recreational facilities, and trails.
- **Action PFS-A8.2:** Coordinate with recreation and park districts and cities to prepare a parks and open space needs assessment for all unincorporated communities, prioritizing Impacted Communities. Integrate the results of the assessment into a Parks Master Plan and the Parks Capital Improvement Program and implement improvements that address barriers to outdoor physical activity, such as inadequate infrastructure and safety concerns.
- ***Action PFS-A8.3:*** *Annually update park dedication and in-lieu fee requirements based on the Consumer Price Index for All Customers, All Items for the San Francisco-Oakland-San Jose Metropolitan Area to accommodate for increases or decreases in development costs. Conduct a fee study at least once every 10 years to reflect changes in the cost of land, local park and recreational needs, and development conditions.*

Proposed CAP Strategies and Actions

The following strategies and actions from the proposed CAP are applicable to parks and recreation services:

Strategy CE-3: Increase access to parks and open space.

Strategy CE-3 Actions:

- Establish a goal for all residents to live within a half-mile of a park or other green space.
- Support land acquisition for new parks and open space areas and protect such lands through fee title acquisition or through deed restrictions like conservation easements.
- Continue to construct and develop opportunities for new trails.
- Support investment in existing park facilities, in partnership with regional agencies.
- Increase the tree canopy on public property, especially in Impacted Communities and areas with a high heat index, by prioritizing funding for new street tree planting and maintenance.

5.15.5.4 ENVIRONMENTAL IMPACTS

Impact 5.15-5: The proposed project could generate additional residents that would increase the use of existing park and recreational facilities but would not require the immediate provision of new and/or expanded recreational facilities. [Thresholds R-1 and R-2]

Proposed General Plan

As discussed in Section 5.15.5.1, *Environmental Setting*, a total of 108,393 acres of parks and recreation land are available to residents of the unincorporated county. This acreage includes regional park facilities managed by EBRPD, EBMUD, and CCWD, as well as State and federal park facilities. Development under the proposed General Plan would introduce approximately 65,600 new residents, which would increase the demand for parks and recreational facilities. The California Department of Finance's E-5 Population and Housing Estimates estimate the total 2023 population for Contra Costa County (incorporated and unincorporated) to be 1,147,653 people; based on that estimate, the existing total park acreage per 1,000 residents in all of Contra Costa County is 94.45.[4] If no further parkland is added, the ratio of parkland per 1,000 population would decrease to 89 acres of parks per 1,000 residents when the projected residential buildout of the proposed General Plan is added to the county's total population. However, this is a very conservative assumption; it is expected that parks will be acquired, expanded, and/or made publicly accessible as part of private development over the horizon of the proposed General Plan.

As shown, the combination of existing local, regional, State, and national parks and recreation facilities exceed all targets for parks and recreation service standards for both the county's existing population and future population that includes the projected growth under the General Plan. In addition, while this calculation includes the total population of both the incorporated and unincorporated county to account for the use of regional park and recreational facilities, most incorporated jurisdictions also provide local parks and recreation

[4] Note that State and federal parks and recreation facilities included in the parks and recreation acreage are available for use to residents outside of the county.

facilities for their respective populations that have not been accounted for in this calculation. However, as noted in Table 5.15-6, most local districts and service areas providing parks and recreation facilities in the county do not currently provide enough service within their district to meet the County's existing service standard of four acres per 1,000 residents. As shown in the proposed Policy PFS-P8.2, the County aims to provide a local park within a safe 10-minute walk for all residents in urban communities or within a 5-minute drive for residents in suburban communities, as indicated in Figures PFS-9 and PFS-10 of the proposed Public Facilities and Services Element. While the county does not have a deficit of regional parks and recreation facilities, additional local facilities are likely needed to meet the existing and future demand of development.

To offset impacts from future development, all new projects must adhere to County Ordinance Code Division 720 (Ordinance No. 2007-17), which collects impact fees from new development to fund parks and recreation services. The County's continued implementation of park improvement and development projects would ensure that the adequate amount of parkland would be available. Each RPD and CSD (of those that provide parks and recreation services) also collect revenue from property taxes, assessments, and service charges to fund improvements, which in turn would serve to reduce the potential for deterioration of existing facilities. Several additional policies and actions under Goal PFS-8 of the proposed Public Facilities and Services Element would also help to provide adequate local facilities. For example, Policy PFS-P8.5 states that whenever possible, the County shall require projects subject to the Park Dedication or Park Impact Fee Ordinances to develop park and recreation amenities listed in, or added to, the County's Park Capital Improvement Plan. Park impact fees or in-lieu fees should be assessed when the County determines developer improvements are not feasible. Action PFS-A8.3 would help to implement this policy by requiring an annual update of the park dedication and in-lieu fee requirements. Action PFS-A8.1 would also support local parks by creating a cross-agency County entity that coordinates the planning and funding of local parks, recreational facilities, and trails.

The estimated timing or location of new facilities or the exact nature of these facilities are not known, so project-specific environmental impacts that would occur from their construction and operation cannot be determined at this time. However, depending on the type, size, and location of new parks, the construction of new parks would be subject to environmental review and the mitigating policies and mitigation measures described in this EIR to ensure the impacts from the construction would be less than significant. The construction of project-specific parks would require permitting and review in accordance with County standards, which would ensure that any environmental impacts are disclosed and mitigated to the extent possible. This EIR is a programmatic document and does not evaluate the environmental impacts of future project-specific development. Therefore, the impact is considered less than significant.

Proposed CAP

As a policy document that aims to reduce GHG emissions and to help the county to adapt to changing climate conditions, the proposed CAP is not expected to result in any impacts with regard to parks and recreational services. As part of the CAP's climate adaptation and equity strategies, the provision of parks for health and climate-related uses is encouraged. For example, Strategy NI-5, which aims to minimize the urban heat island effect through use of green infrastructure, includes an action that encourages the County to plant trees in urbanized areas and open spaces which in turn promotes the creation of new or more inviting public spaces. Strategy CE-3 specifically targets the increase of access to parks and open space by encouraging the County to

adopt a target to provide all residents a park or other green space within a half-mile of their dwelling, supporting land acquisition for new parks and open space areas and protecting such lands through fee title acquisition or though deed restrictions like conservation easements, continuing to construct and develop opportunities for new trails, and supporting investment in existing park facilities in partnership with regional agencies.

The proposed CAP would not directly contribute to increased population growth in the EIR Study Area and includes several strategies and actions aimed at improving and providing parks and recreational facilities in the county. As such, the CAP is expected to have beneficial impacts on parks and recreational facilities, resulting in a less than significant impact finding.

Level of Significance Before Mitigation: Impact 5.15-5 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.15-5 would be less than significant.

5.15.5.5 CUMULATIVE IMPACTS

Future development, along with other existing, planned, proposed, approved, and reasonably foreseeable development in the region, would increase the use of existing parks and would contribute to the cumulative demand for regional and local parks and recreational facilities and services in the county. As discussed under Impact 5.15-5, existing local, regional, State, and national parks and recreational facilities would be able to meet the service standard for the projected growth in the county under the proposed General Plan. However, as information on cumulative growth in other jurisdictions is not currently available, this calculation does not account for all potential population growth in the county that would utilize the regional, State, and national parks and recreational facilities in the county. Regardless, future development in the county would be required to provide adequate park facilities to meet the demand of proposed development at a local level. Environmental impacts resulting from the provision of park and recreational facilities would be identified by subsequent project-level environmental review in conjunction with individual development projects.

Individual development projects would also be subject to development impact fees to fund the provision of physical parkland, community recreation, and other public purposes. These fees and policy provisions would ensure that the RPDs, CSDs, and CSAs would adequately provide for park and recreation needs for residents, while environmental review of new development would mitigate any environmental impacts of park and recreation facilities. Therefore, the proposed project would have a less than cumulatively considerable impact on parks and recreation services.

5.15.5.6 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.15.5.7 MITIGATION MEASURES

No mitigation measures are required.

5.15.5.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

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5.16 TRANSPORTATION

This section describes the regulatory framework and existing conditions of the Contra Costa County Environmental Impact Report (EIR) Study Area and evaluates the potential transportation impacts from adopting and implementing the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project.

Vehicle Miles Traveled (VMT) modeling and analysis for the proposed project was provided by Fehr and Peers and is included as Appendix 5.16-1, *Vehicle Miles Traveled (VMT) Analysis Methodology and Results for the Contra Costa County General Plan Update Memorandum*, of this Draft EIR.

5.16.1 Environmental Setting

5.16.1.1 REGULATORY BACKGROUND

State

Assembly Bill 1358 (California Complete Streets Act)

Assembly Bill (AB) 1358, or the California Complete Streets Act, was signed into law on September 30, 2008. Since January 1, 2011, AB 1358 has required circulation element updates to address the transportation system from a multimodal perspective. The Act states that streets, roads, and highways must "meet the needs of all users in a manner suitable to the rural, suburban, or urban context of the General Plan." The Act requires a circulation element to plan for all modes of transportation where appropriate, including walking, biking, car travel, and transit. In addition, the Act requires circulation elements to consider the multiple users of the transportation system, including children, adults, seniors, and the disabled. Contra Costa County adopted its Complete Streets Ordinance in 2016.

Assembly Bill 32 and Senate Bill 32

AB 32, or the Global Warming Solutions Act, was signed into law on September 27, 2006. AB 32 established a comprehensive program to reduce greenhouse gas (GHG) emissions to combat climate change. This Bill required the California Air Resources Board (CARB) to develop a plan to reduce GHG emissions to 1990 levels by 2020. The AB 32 Scoping Plan contains the main strategies identified by CARB to reduce GHG emissions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms, and an AB 32 program implementation regulation for funding. In 2016, the State Legislature passed Senate Bill (SB) 32, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. CARB recognizes cities and counties as "essential partners" in reducing GHG emissions. CARB has developed a Local Government Toolkit with guidance for GHG reduction strategies such as improving transit, developing bicycle and pedestrian infrastructure, increasing government fleet vehicle efficiency, and other strategies.

Senate Bill 375 (Sustainable Communities and Climate Protection Act)

SB 375, or the Sustainable Communities and Climate Protection Act, provides incentives for cities, counties, and developers to bring housing and jobs closer together and to improve public transit. The goal of the legislation is to reduce the number and length of automobile commuting trips, helping to meet the statewide targets for reducing GHG emissions set by AB 32.

SB 375 requires each metropolitan planning organization (MPO) to add a broader vision for growth to its transportation plan — called a sustainable communities strategy (SCS). The SCS must lay out a plan to meet the region's transportation, housing, economic, and environmental needs in a way that enables the area to lower GHG emissions. The SCS should integrate transportation, land use, and housing policies to plan for achievement of the emissions target for each region. The Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) Regional Transportation Plan (RTP) and SCS were most recently adopted in 2021 under the title Plan Bay Area 2050. However, as explained in Section 5.16.4.1, *Methodology*, the data and forecasts in MTC/ABAG's previous RTP/SCS, Plan Bay Area 2040, are currently used within the Contra Costa Countywide Travel Demand Model.

Senate Bill 743

Passed in 2013, SB 743 changes the focus of transportation impact analysis in the California Environmental Quality Act (CEQA) from measuring impacts to drivers, to instead measuring the impact of driving. The change is being made by replacing vehicle delay-based metrics (e.g., Level of Service [LOS]) with a VMT approach. This shift in transportation impact focus is intended to better align transportation impact analysis and mitigation outcomes with the State's goals to reduce GHG emissions, encourage infill development, and improve public health through development of multimodal transportation networks. LOS or other delay metrics may still be used to evaluate the impact of projects on drivers as part of land use entitlement review and impact fee programs. In December 2018, the Natural Resources Agency finalized updates to Section 15064.3 of the CEQA Guidelines, including the incorporation of SB 743 modifications. The Guidelines' changes were approved by the Office of Administrative Law and as of July 1, 2020, are now in effect statewide.

To help lead agencies with SB 743 implementation, the Governor's Office of Planning and Research (OPR) produced the Technical Advisory on Evaluating Transportation Impacts in CEQA, which provides guidance about the variety of implementation questions they face with respect to shifting to a VMT metric. Key guidance from this document includes:

- VMT is the most appropriate metric to evaluate a project's transportation impact.
- OPR recommends tour- and trip-based travel models to estimate VMT, but ultimately defers to local agencies to determine the appropriate tools.
- OPR recommends measuring VMT for residential and office projects on a "per rate" basis.
- OPR recommends that a per capita or per employee VMT that is 15 percent below that of existing development may be a reasonable threshold. In other words, an office project that generates VMT per employee that is more than 85 percent of the regional VMT per employee could result in a significant impact. OPR notes that this threshold is supported by evidence that connects this level of reduction to the State's emissions goals.

- OPR recommends that where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds described above should apply.
- Lead agencies have the discretion to set or apply their own significance thresholds.
- While requiring a change in the methodology of assessing transportation impacts (LOS to VMT), Public Resources Code Section 21099 notes that this change "does not relieve a public agency of the requirement to analyze a project's potentially significant transportation impacts related to…safety…."

Regional

Metropolitan Transportation Commission/Association of Bay Area Governments

MTC is the transportation planning, coordinating, and financing agency for the nine-county Bay Area region, including Contra Costa County. It also functions as the federally mandated MPO for the region. It is responsible for regularly updating the RTP, which is a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities.

Plan Bay Area 2050 is the Bay Area's RTP/SCS. Plan Bay Area 2050 was prepared by MTC in partnership with ABAG, the Bay Area Air Quality Management District (BAAQMD), and the San Francisco Bay Conservation and Development Commission; it was last updated on October 21, 2021 (ABAG & MTC 2021). The SCS sets a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by CARB. An overarching goal of Plan Bay Area 2050 is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger VMT and associated GHG emissions reductions.

MTC has established its policy on complete streets in the Bay Area. The policy states that projects funded all, or in part, with regional funds (e.g., federal, State Transportation Improvement Program, and bridge tolls) must consider the accommodation of all users, including bicyclists, pedestrians, and transit users, as described in Caltrans Deputy Directive 64. These recommendations do not replace locally adopted policies regarding transportation planning, design, and construction. Instead, they facilitate the accommodation of pedestrians, including wheelchair users, and bicyclists into all projects where bicycle and pedestrian travel is consistent with current adopted regional and local plans.

As part of the implementing framework for Plan Bay Area, Priority Development Areas (PDAs) and Transit Priority Areas (TPAs) are identified as areas where concentrated development can have beneficial environmental effects and reduce adverse environmental impacts. As shown on Figure 5.16-1, *Priority Development Areas and Transit Priority Areas*, the EIR Study Area has two TPAs along the Bay Area Rapid Transit (BART) line and six PDAs, including North Richmond, the San Pablo Avenue Corridor (which encompasses parts of Montalvin Manor and Rodeo), Downtown El Sobrante, Contra Costa Centre, and the Pittsburg/Bay Point BART station.

Caltrans District 4 Bike Plan for the San Francisco Bay Area

This Plan identifies infrastructure improvements that can enhance bicycle safety and mobility throughout District 4 and remove some of the barriers to bicycling in the region with respect to Caltrans-owned and operated facilities and infrastructure. The Plan was developed in cooperation with local and regional partners to ensure that the improvements on the State highway system complement proposals for local networks. The Plan is also intended to inform future investments on the State transportation network by Caltrans and other jurisdictions. The Plan's top tier projects in the county include bike corridor improvements on SR-123, -242, and -4 and on I-580, -680, and -80 (Caltrans 2018).

Caltrans District 4 Pedestrian Plan for the Bay Area

This Plan implements the goals of the 2017 Caltrans statewide bicycle and pedestrian plan, Toward an Active California, and is part of a comprehensive planning process to identify locations with bicycle and pedestrian needs in each Caltrans district across California. The Plan is used by Caltrans staff, as well as regional and local agency partners, to address high priority needs along and across the State Transportation Network, which includes the State Highway System (SHS) and all other multimodal facilities owned and operated by Caltrans, including parallel paths, frontage roads, and other facilities not directly on a SHS mainline. Needs identified in this Plan also inform future investments on the SHS by Caltrans and local partners (Caltrans 2021).

Local

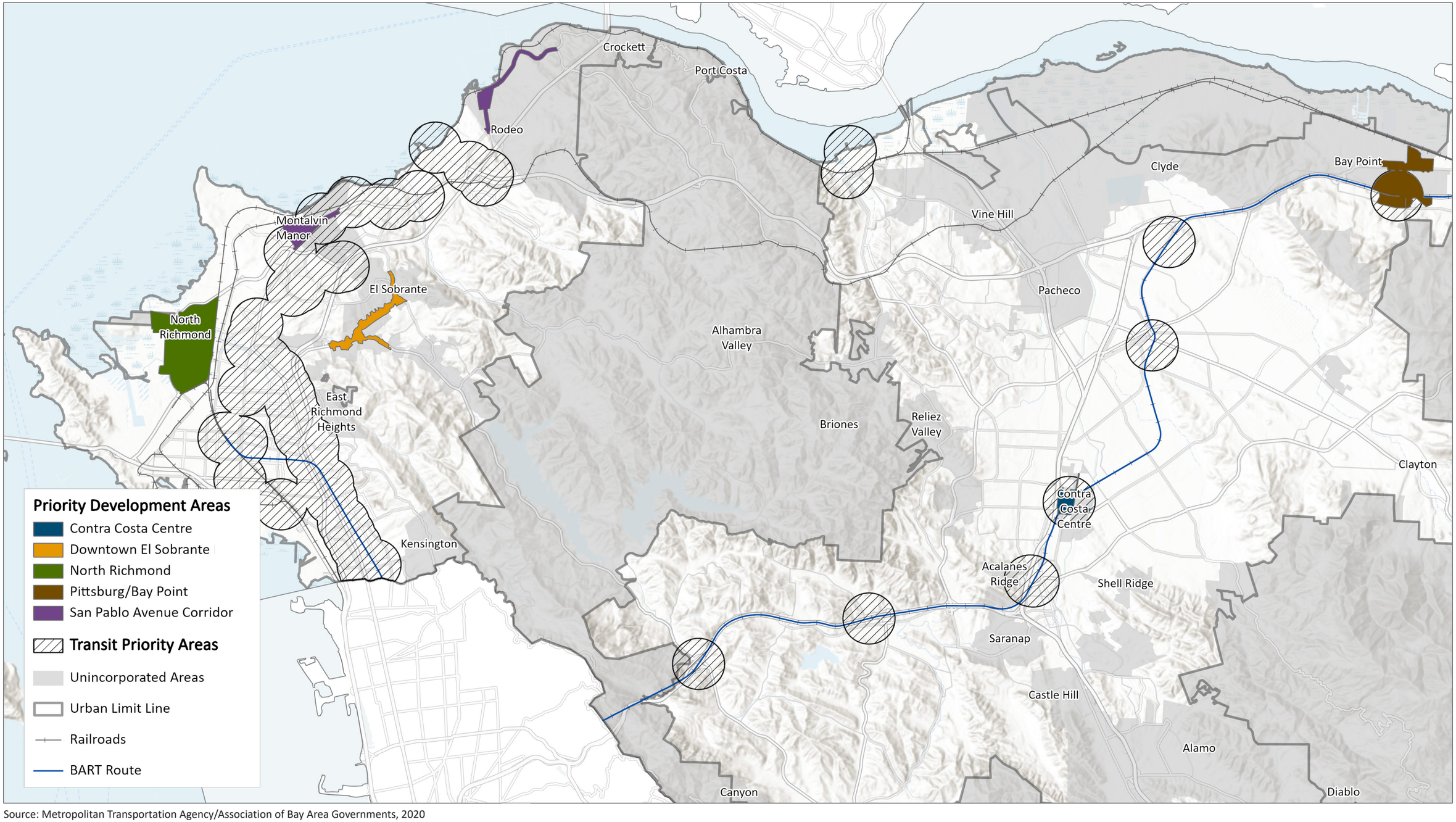
Contra Costa County Congestion Management Program

The Contra Costa Transportation Authority (CCTA) is Contra Costa County's designated Congestion Management Agency (CMA). It is responsible for implementing programs to ensure traffic levels remain manageable. As the CMA, CCTA is in charge of coordinating land use, air quality, and transportation planning among local jurisdictions. A Congestion Management Program (CMP) was created to spend the funds allocated to these projects, known as Measure J. This measure is a one-half cent countywide sales tax used for transportation improvements within the county. The revenue must be spent on projects and programs included in the CCTA Transportation Expenditure Plan (Expenditure Plan). The Expenditure Plan designates 18 percent of the annual sales tax revenue as "return-to-source" funds (CCTA 2021a).

Contra Costa Countywide Transportation Plan

The Countywide Transportation Plan (CTP) is intended to carry out the following countywide transportation goals:

- Enhance the movement of people and goods on highways and arterial roads.
- Manage the impacts of growth to sustain Contra Costa County's economy and preserve its environment.
- Provide and expand safe, convenient, and affordable alternatives to the single-occupant vehicle.
- Maintain the transportation system.



Source: Metropolitan Transportation Agency/Association of Bay Area Governments, 2020

Figure 5.16-1
Priority Development Areas and Transit Priority Areas

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The CTP incorporates five sub-regional Action Plans for Routes of Regional Significance (see Figure 5.16-2, *Routes of Regional Significance*). This is one of the primary vehicles for achieving the Measure J Growth Management Program's goal of reducing the cumulative impacts of growth. The Action Plans also fulfill a key requirement of CCTA's CMP. This is a State-mandated program for evaluating the impact of land use decisions on the regional transportation system and establishing performance measures. Each Action Plan contains these components:

- Long-range assumptions about future land uses based on local general plans and travel demand based on household and job growth.
- Designation of Routes of Regional Significance
- Regional transportation objectives that can be measured and timed.
- Specific actions to be implemented by each jurisdiction.
- A process for consultation on environmental documents.
- A procedure for reviewing the impacts of local general plan amendments that could affect transportation objectives.
- A schedule for reviewing and updating the Action Plans.

Growth Management Program and CCTA VMT Guidance

CCTA has developed guidance for member jurisdictions to use in developing their own VMT analysis methods, metrics, and thresholds of significance. This document addresses the procedures a jurisdiction should undergo when evaluating the impacts of new development, CCTA's process for assessing compliance with the growth management program requirement, and the tools and procedures that local jurisdictions must have to be in compliance with the Growth Management Program.

Countywide Bicycle and Pedestrian Plan

The Contra Costa Countywide Bicycle and Pedestrian Plan (CBPP) was initially produced in 2003 and last updated in 2018 by CCTA. The County relies on this document as its own plan rather than developing and adopting a separate plan, as some other jurisdictions choose to do. The CBPP covers the entire county, including both incorporated and unincorporated areas. It is built on the CTP, using the strategies and policies of that plan to establish bicycle and pedestrian-specific goals and identify actions the CCTA can take to accomplish them. The plan identifies a network of key low-stress connections that should be implemented to allow people of all ages and abilities to connect across the county by bicycle or walking. The Plan also addresses emerging issues and concerns such as "Vision Zero" and docked and dockless bike share. It also identifies Pedestrian Priority Areas in the county where more people are expected to walk and where safety issues are most acute (CCTA 2018).

Contra Costa Countywide Transportation Safety Policy and Implementation Guide

CCTA's Countywide Transportation Safety Policy and Implementation Guide was published in August 2021. CCTA launched their Vision Zero Framework & Systemic Safety Approach effort to serve as the basis for transportation planning, policy, design, construction, and funding throughout Contra Costa County. Vision Zero is a strategy to eliminate all fatalities and severe injuries that result from traffic collisions. The Vision Zero approach views transportation-related fatalities as preventable, not inevitable, and relies on multidisciplinary

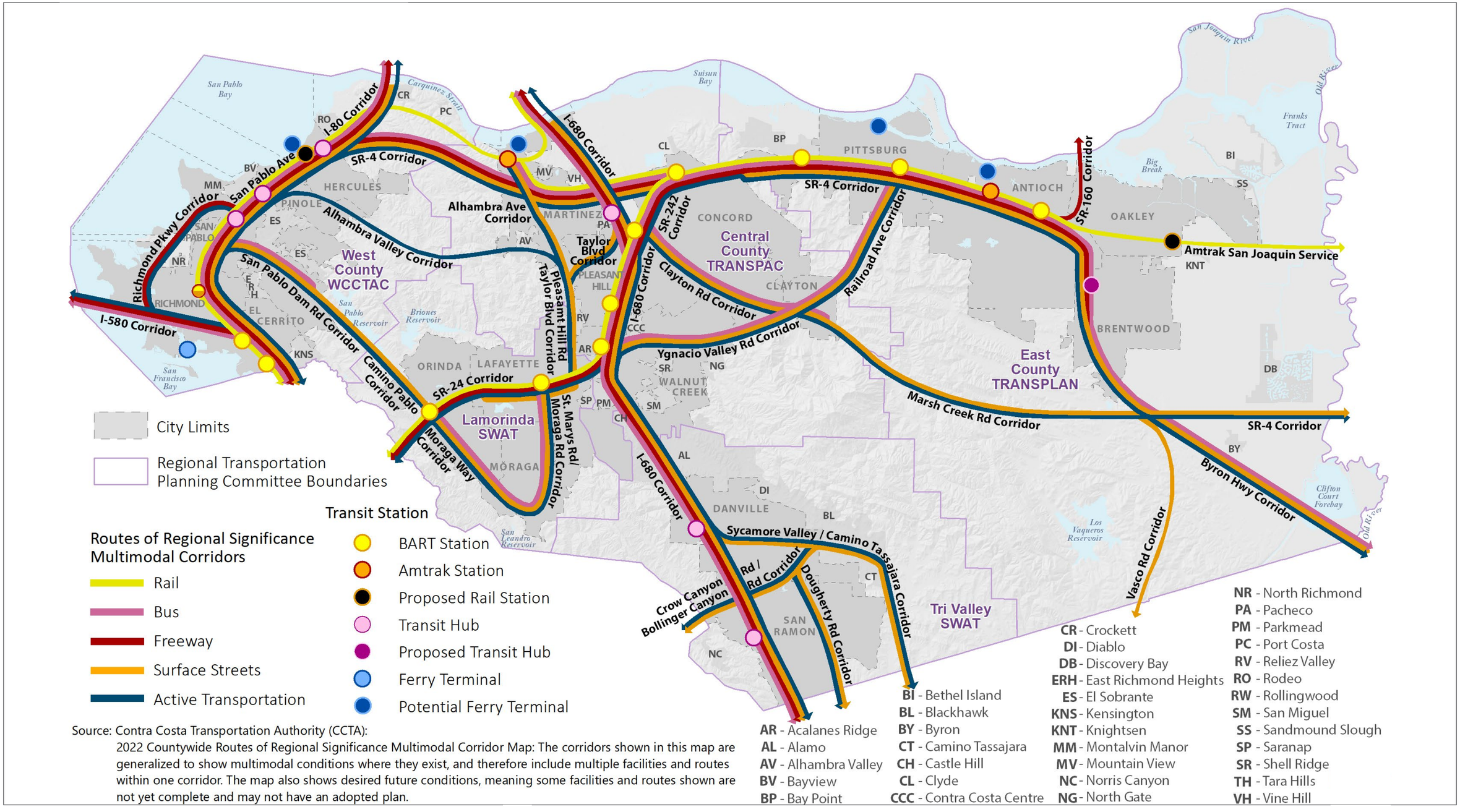
collaboration that is informed by data and focused on equity. This document establishes a countywide policy of intent to work with partner agencies to encourage each jurisdiction to adopt and implement Vision Zero by committing to encourage and support actions toward eliminating transportation-related fatalities and severe injuries using a collaborative, culturally sensitive, and multidisciplinary approach. Vision Zero is encouraged to be integrated consistently countywide as standard practice in local and regional transportation planning and engineering (CCTA 2021b).

Contra Costa Accessible Transportation Strategic Plan

The Accessible Transportation Strategic (ATS) Plan was born from the 2017 CTP. The CTP identified a need to address the challenges associated with: (1) different types of accessible transportation services for older adults and people with disabilities; (2) multiple transportation providers, including cities, transit operators, social services agencies, and non-profit organizations; and (3) diverse, and sometimes overlapping, service areas. The ATS Plan is also intended to address the unfulfilled recommendations of three previous studies which were similar in scope. While the 2016 and 2020 Transportation Expenditure Plans did not succeed in accessing sales tax measure funds, they did further set expectations for the Plan to ultimately "implement a customer-focused, user friendly, seamless coordinated system." The ATS Plan also helps fulfill a requirement by MTC in its Resolution 4321 that CMAs must meet the following mobility management requirement: "Each county must establish or enhance mobility management programs to help provide equitable and effective access to transportation." Mobility management in this context refers to a centralized point of contact that facilitates ease of use of a variety of transportation modes by people with disabilities and older adults (CCTA 2021c).

Community-Based Transportation Plans

Community-based transportation plans (CBTPs) are sponsored by MTC and intended to improve mobility options for low-income and underserved communities. There are two CBTPs that include unincorporated areas of Contra Costa County, one for the Richmond area that was completed in 2004 and updated in 2020, and another for the Pittsburg-Bay Point area that was completed in 2007 and updated in 2020. Each plan was developed with key stakeholders, transportation service providers, and community members to develop actions toward improving all types of transportation, increasing access to services, improving local quality of life, providing environmental benefits, and adding to the sense of community in the area.



Source: Contra Costa Transportation Authority (CCTA):
2022 Countywide Routes of Regional Significance Multimodal Corridor Map: The corridors shown in this map are generalized to show multimodal conditions where they exist, and therefore include multiple facilities and routes within one corridor. The map also shows desired future conditions, meaning some facilities and routes shown are not yet complete and may not have an adopted plan.

Figure 5.16-2
Routes of Regional Significance

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Regional Transportation Planning Committee 'RTPC' Development Impact Fees

Development impact fees are levied by Regional Transportation Planning Committees (RTPC) in the jurisdictions of their member agencies. The Tri-Valley Transportation Council/Southwest Area Transportation Committee (TVTC/SWAT) oversees the expenditures of development fees for transportation in the Tri-Valley area and includes Alameda and Contra Costa Counties, Town of Danville, and Cities of Dublin, Livermore, Pleasanton, and San Ramon as member agencies. The Lamorinda Program Management Committee/Southwest Area Transportation Committee (LPMC/SWAT) provides the same oversight for the Lamorinda area, representing Contra Costa County and the Cities of Lafayette, Moraga, and Orinda. The West Contra Costa Transportation Advisory Committee (WCCTAC) administers the West County Subregional Transportation Mitigation Program and includes as member agencies Contra Costa County and the Cities of El Cerrito, Hercules, Pinole, Richmond, and San Pablo, along with the transit providers AC Transit, BART, and WestCAT. TRANSPLAN coordinates the regional transportation interests of the communities in eastern Contra Costa County and includes Contra Costa County and the Cities of Antioch, Brentwood, Oakley, and Pittsburg as member agencies. TRANSPLAN administers the East Contra Costa Regional Fee Program. TRANSPAC (Transportation Partnership and Cooperation) is the RTPC for central Contra Costa County and represents the Cities of Clayton, Concord, Martinez, Pleasant Hill, Walnut Creek, and the unincorporated areas of central Contra Costa County. The fee program for the TRANSPAC region requires jurisdictions to execute a "developer-sponsored mitigation agreement" with affected central county jurisdictions when a proposed development would generate more than 100 peak hour trips of which 50 or more are interregional trips on Routes of Regional Significance as opposed to a uniform fee for all development (TRANSPAC 2008).

Short-Range Transit Plans

All transit agencies are required to submit Short-Range Transit Plans (SRTPs) to comply with various Federal Transit Administration and California Department of Transportation (Caltrans) requirements. As described in Section 5.16.1.2, *Existing Conditions*, several transit agencies provide service within the EIR Study Area. Each of the following agencies have published SRTPs that guide the provision of transit service within each agency's respective service areas, some of which overlap:

- San Francisco Bay Area Rapid Transit District (BART), last updated November 1, 2022
- Alameda-Contra Contra Costa Transit District (AC Transit), last updated January 27, 2023
- Central Contra Costa Transit Authority (County Connection), last updated January 27, 2023
- Eastern Contra Costa Transit Authority (Tri-Delta Transit), last updated August 26, 2020
- Western Contra Costa Transit Authority (WestCAT), last updated January 27, 2023

Contra Costa County Transportation Analysis Guidelines

The Contra Costa County Transportation Analysis Guidelines ("TAG" or "Guidelines") are provided to aid in the preparation of traffic analysis for project applicants and staff in light of the passage of SB 743. The purpose of this document is to establish a uniform approach, methodology, and tool set to evaluate the impacts of land use decisions and related transportation projects on the County's transportation system. Given what is anticipated to be a rapidly evolving approach to VMT mitigation as a result of SB 743, this is a "living

document" and will be updated periodically to reflect newly acquired data and relevant policies. The CEQA thresholds of significance ("TOS") impact criteria listed below require a proposed project's transportation impact analysis to compare the VMT per person/employee to the VMT per person/employee for the county or Bay Area region. A proposed project should be considered to have a significant impact if the project VMT is greater than:

- **Residential Projects:** 15 percent below the countywide average home-based VMT per capita
- **Employment Projects (office, industrial and institutional projects):** 15 percent below the Bay Area average commute VMT per employee
- **Regional Retail (>50,000 square feet):** 15 percent below the Bay Area average total VMT per service population
- **Mixed-Use Projects:** 15 percent below the countywide average total VMT per service population

Contra Costa County Active Transportation Plan

The Contra Costa County Active Transportation Plan (ATP) provides a comprehensive study of the needs and opportunities to improve bicycling and walking throughout the unincorporated areas of the county. The ATP outlines investments in new bicycle facilities, upgraded crossings, enhanced trail connections, and improved walkways. The ATP was adopted by the County on March 29, 2022 (Contra Costa 2022).

Contra Costa County Vision Zero Action Plan

On March 1, 2022, Contra Costa County adopted the Action Plan from the Vision Zero Final Report that was developed collaboratively between the County's Public Works Department, Department of Conservation and Development, and Health Services Department. The purpose of the Plan is to identify opportunities to enhance safety for all modes through implementation of a Safe System approach. The report builds on the engineering-focused Systemic Safety Analysis Report (SSAR) to provide a comprehensive, multidisciplinary, and holistic approach to safety.

Complete Streets Policy of Contra Costa County

The County's Complete Streets Policy was adopted by Resolution No. 2016/374 by the Board of Supervisors on July 12, 2016. This Ordinance requires that as feasible, and as opportunities arise, Contra Costa County incorporate complete streets infrastructure into existing streets to improve the safety and convenience of users, with the particular goal of creating a connected network of facilities accommodating each category of users, increasing connectivity across jurisdictional boundaries, and accommodating existing and anticipated future areas of travel origination or destination. The Policy identifies that a well-connected network should include non-motorized connectivity to schools, parks, commercial areas, civic destinations, and regional non-motorized networks on both publicly owned roads and land and private developments (or redevelopment areas).

Contra Costa County Area of Benefit (AOB) Program

An "Area of Benefit" (AOB) is a transportation mitigation program related to a specific geographic area of unincorporated Contra Costa County in which the County imposes transportation mitigation fees. This fee is a type of development impact fee on new development to fund new development's share of the transportation improvements required to satisfy transportation demands within that geographic area. The County has a total of 14 traffic AOB programs.

Contra Costa County Ordinance Code

Transportation Demand Management Ordinance

As adopted in Chapter 82-32 of the County Ordinance Code, the intent of this the Transportation Demand Management (TDM) program is to further the transportation goals of the County's General Plan, the Measure C Growth Management Program, Contra Costa County's CMP, and the Bay Area Clean Air Plan. Section 82-32.004 states that the purpose of the program is to implement the provisions of the General Plan to promote a more balanced transportation system that takes advantage of all modes of transportation by:

- Incorporating pedestrian, bicycle, and transit access into improvements proposed in development applications
- Incorporating the overall intent and purpose of the chapter into the land use review and planning process
- Allowing requests for reductions in the off-street parking requirements for residential or nonresidential projects that have a conceptual TDM program
- Providing information to residents on opportunities for walking, bicycling, ridesharing, and transit

This Ordinance applies to all development, both residential and nonresidential (Section 82-32.006), and provides requirements for these development types separately.

Division 722, Fire Code

Division 722, *Fire Code*, of the County Ordinance Code is intended to adopt the 2022 California Fire Code, which is set forth in the California Code of Regulations, Title 24, Part 9 (based on the 2021 International Fire Code published by the International Code Council). Division 722 also lists the changes, additions, and deletions to the Fire Code that have been adopted by the County. One such amendment is to Section 105.6.25 of the Fire Code, which per the County's amendments, reads:

- **Access for fire apparatus.** Plans shall be submitted and a permit is required to install, improve, modify, or remove public or private roadways, driveways, and bridges for which Fire District access is required by the Fire Code.

Division 92, General Provisions, Division 96, Improvements, and Division 98, Streets

These divisions of the County Ordinance Code provide requirements and standards relative to frontage and subdivision improvements. Updates to these portions of the Ordinance Code will be necessary to bring them into conformance with the proposed General Plan.

Division 1006, Road Dedications and Setbacks and Division 1002, Encroachments

Article 1006-2.10, *Road Standards of Division 1006*, provides the County standards for roadways and improvement to roadways. Division 1002 provides the County's standards for encroachments on right-of-way. Development in the county is subject to these provisions of the Ordinance Code, as applicable.

5.16.1.2 EXISTING CONDITIONS

The following information pertaining to the existing roadways, transit network and services, and bicycle and pedestrian infrastructure in the county is from the Transportation Baseline Report prepared by Fehr and Peers in 2019 for the proposed General Plan.[1]

Roadway Network

Freeways

The freeways in Contra Costa County are Interstate (I-) 680, I-80, I-580, State Route (SR) 4, SR 24, SR 242, and SR 160. These roadways are identified in Figure 5.16-2, *Routes of Regional Significance*.

- **I-680** functions as a central spine for Contra Costa County, passing through the entire length of the county from north to south. On the north end, I-680 passes over the Benicia Bridge and connects to Solano County. On the south end, the freeway continues southward through Alameda County and on to Santa Clara County. Most of Contra Costa County's job centers are along or near I-680, including downtown Walnut Creek, the Contra Costa Centre/Pleasant Hill BART station area, and the Bishop Ranch Business Park. I-680 also serves as a primary commute route for county residents who work in the Tri-Valley portion of Alameda County or in Silicon Valley. Major current and upcoming investments in the I-680 corridor are focused on improving traffic flow through the addition of HOV/Express Lanes, exploring opportunities for applying innovative technologies to better manage demand, and improving the I-680/SR 4 interchange.
- **I-80** passes through the western portion of Contra Costa County from the Alameda County boundary up to the Carquinez Bridge connecting to Solano County. I-80 is a major regional and interregional travel route and is one of the busiest corridors in the region, as the primary connection from San Francisco to Sacramento and continuing on across the country to New York City. The I-80 corridor through western Contra Costa County has long been one of the most congested in the region, as it serves commuters headed to and from the employment centers of Oakland and San Francisco. Recent investments have established the I-80 Smart Corridor, using ramp metering and signal coordination, real-time traveler information, and variable speed advisories to help manage traffic on this critical corridor.
- **I-580** spans a small portion of western Contra Costa County; it separates from I-80 in the Alameda County city of Albany, then proceeds westward through Richmond to the Richmond-San Rafael Bridge, thereby connecting Contra Costa County to Marin County.
- **SR 4** is the primary east-west corridor across Contra Costa County. Starting at I-80 in western Contra Costa County, SR 4 proceeds eastward through the central part of the county and serves as the primary access route for eastern Contra Costa County, eventually connecting across the San Joaquin County boundary. The portion of SR 4 in eastern Contra Costa County was recently expanded, including HOV lanes and a BART extension to Antioch. Upcoming improvements along SR 4 will be focused in the central part of the county, including HOV lanes, targeted mixed-flow lane additions to address current

[1] This report is available online here: https://envisioncontracosta2040.org/wp-content/uploads/2019/12/CCC_Baseline_Report_Oct2019.pdf.

bottlenecks, and improvements to the I-680/SR 4 interchange, as well as exploring options for an integrated corridor mobility program through the central and eastern parts of the county.

- **SR 24** is an east-west freeway in the central part of the county. It connects to Alameda County at the Caldecott Tunnel and travels eastward to connect with I-680 in Walnut Creek.
- **SR 242** is a short freeway segment connecting I-680 to SR 4 in Concord.
- **SR 160** is a very short freeway segment connecting SR 4 in Antioch to the Antioch Bridge and on to Sacramento County.

Given Contra Costa County's central location and the presence of several major interregional corridors within the county boundaries, several roadways are subject to significant levels of traffic congestion and delay. MTC regularly tracks the most congested commute routes in the region; in their analysis of 2017 data, three of the ten most congested commute corridors in the Bay Area were found in Contra Costa County:

- #2: I-80 westbound in the morning from Hercules to the Bay Bridge
- #5: SR 4 eastbound in the afternoon between Martinez and Concord
- #10: I-680 northbound in the afternoon from Danville to Walnut Creek

Of these three corridors, eastbound SR 4 from Martinez to Concord has experienced the most dramatic change. It was not in the top ten in 2015 but by 2017 it was ranked at #5, reflecting the effects of increased residential development in eastern Contra Costa County and greater levels of commuting through central and western portion of the county.

Expressways

The existing General Plan defines expressways as controlled-access moderate speed roadways serving intercity or intercounty trips. Expressways often have at-grade intersections and typically do not allow direct access to abutting parcels. Some of the roads designated as expressways in the existing General Plan include Richmond Parkway, Kirker Pass Road, Taylor Boulevard, and Vasco Road.

Arterials

The primary function of arterial streets is to move traffic relatively long distances and connect freeways to local-serving street networks. Limited access is provided to abutting parcels in many cases. Arterials typically operate at relatively high speeds and can serve between 10,000 and 40,000 vehicles per day; minor arterials may carry fewer than 10,000 vehicles per day. Most intersections along arterials are signalized, often with a coordinated and interconnected signal system. Some of the primary arterials in Contra Costa include San Pablo Avenue, San Pablo Dam Road, Danville Boulevard/San Ramon Valley Boulevard, Camino Tassajara, and Byron Highway.

Transit Network

The County's transit routes, as described below, are also shown in Figure 5.16-2, *Routes of Regional Significance*.

BART

BART operates two lines in Contra Costa County. The Richmond line serves the western part of the county, with stations at El Cerrito Plaza, El Cerrito del Norte, and Richmond (which offers an opportunity to transfer to Amtrak). Two BART routes use this line; the Richmond-San Francisco route connects to San Francisco and on to Daly City, while the Richmond-Berryessa route connects to the Berryessa community in San Jose. Both routes operate at 15-minute frequencies throughout most of the day.

The Antioch line serves central and eastern Contra Costa County, with stations at Orinda, Lafayette, Walnut Creek, Pleasant Hill/Contra Costa Centre, Concord, North Concord/Martinez, Pittsburg/Bay Point, Pittsburg Center, and Antioch, and connects to San Francisco and on to the San Francisco International Airport and Millbrae. The Antioch–San Francisco–Millbrae route is heavily utilized and operates at as little as 5-minute frequencies during peak commute hours, including some limited-service trains that operate only between Pleasant Hill and downtown San Francisco.

The two most utilized of the 12 BART stations in Contra Costa County are El Cerrito del Norte and Pleasant Hill/Contra Costa Centre. In 2015, El Cerrito del Norte averaged approximately 8,800 daily riders, and Pleasant Hill/Contra Costa Centre averaged about 7,400 daily riders. The mode of access to Contra Costa County BART stations varies widely depending on the station's local context. For example, none of the top ten BART stations system-wide for walking and biking are in Contra Costa County. Most of the stations in the county exist in a suburban and vehicle-oriented part of the region, and thus are more frequently accessed by personal vehicle. Some of the top stations system-wide for vehicle drop-offs are in Contra Costa County, including Pittsburg/Bay Point, Walnut Creek, Lafayette, and El Cerrito del Norte. North Concord/Martinez, Orinda, Walnut Creek, Concord, and Lafayette are among the top ten stations system-wide for driving and parking at the station. Vehicle parking at most local BART stations is heavily utilized, and the parking lots typically fill up between 7:30 and 8:00 AM.

Amtrak

Amtrak service in Contra Costa County occurs along the San Joaquin line, which connects the Bay Area south to Bakersfield, and along the Capitol Corridor line, which connects southward to San Jose and northward to Sacramento. These services are locally administered by two joint powers authorities (JPA): the San Joaquin JPA and Capitol Corridor JPA. In California, Caltrans administered these Amtrak lines until transferring these duties to the local JPAs in 2015.

There are multiple departures daily on both lines. The San Joaquin line serves all three of the stops within Contra Costa County: Richmond (allowing a transfer to BART), Martinez, and Antioch. The Capitol Corridor stops at Richmond and Martinez. Amtrak also provides access to further destinations, with the California Zephyr line connecting Martinez to Chicago, and the Coast Starlight line connecting Martinez to Los Angeles and Seattle.

Parking is available at all three Contra Costa County Amtrak stations, with pricing and hours varying by location. The Martinez station parking lot is owned by the City of Martinez and includes 136 regular spaces. The Richmond station parking lot is owned by BART and includes 20 regular spaces for Amtrak users. Parking at

the Antioch station is provided in public parking lots owned by the City of Antioch, with 42 regular spaces in the nearest lot.

The City of Hercules is planning a regional intermodal transportation center, which would include a rail station, ferry terminal, and bus service. The City of Oakley has a planned station that would be served by the San Joaquin line.

San Francisco Bay Ferry

Starting in January 2019, the San Francisco Bay Ferry (operated by the San Francisco Bay Area Water Emergency Transportation Authority [WETA]) operates ferry service between the Richmond Ferry Terminal and the Ferry Building in San Francisco. There are four runs in the primary commute direction during peak commute hours, as well as limited reverse commute service.

AC Transit

AC Transit serves the western parts of the county, including Richmond, El Cerrito, San Pablo, Pinole, El Sobrante, and Kensington, and most of Alameda County, with service to San Francisco and south to Santa Clara. San Pablo Avenue is the major spine for AC Transit bus service through western Contra Costa County, with important transfer hubs at the three local BART stations (El Cerrito Plaza, El Cerrito del Norte, and Richmond), as well as at Contra Costa College in San Pablo, Hilltop Mall in Richmond, and the Richmond Parkway Transit Center. East Bay Paratransit is operated by AC Transit and BART and fulfills the ADA paratransit obligations for both agencies transporting riders within the AC Transit service area.

County Connection

County Connection, formally known as the Central Contra Costa Transit Authority, provides service throughout the central part of the county including Clayton, Concord, Danville, Lafayette, Martinez, Moraga, Orinda, Pleasant Hill, San Ramon, Walnut Creek, and nearby unincorporated areas. Important transfer hubs for County Connection buses are at the Pleasant Hill, Walnut Creek, and Concord BART stations; the Martinez Amtrak station; and the Diablo Valley College campus in Pleasant Hill. County Connection also operates several express bus routes serving the Bishop Ranch employment center in San Ramon, offering connections to BART stations in Walnut Creek and Dublin/Pleasanton as well as to the Pleasanton ACE commuter rail station. County Connection LINK is the paratransit service that operates on the same schedule and in the same area as the County Connection's buses.

Tri Delta Transit

Tri Delta Transit serves eastern Contra Costa County, including the Cities of Antioch, Brentwood, Pittsburg, and Oakley, and the unincorporated area of Bay Point. Major transfer hubs for Tri Delta Transit are at the three local BART stations (Pittsburg/Bay Point, Pittsburg Center, and Antioch), as well as at Los Medanos College in Pittsburg and the downtown Brentwood park-n-ride. Tri Delta Transit's Dial-a-Ride service offers ADA paratransit within the same service area.

WestCAT

WestCAT serves the far western communities of Richmond, Pinole, and Hercules, as well as nearby unincorporated communities such as Rodeo and Crockett. Important transfer hubs for WestCAT are at the Hilltop Mall in Richmond, the Richmond Parkway Transit Center, and the Hercules Transit Center. Express buses extend to the El Cerrito del Norte BART station, and WestCAT also operates one regional express bus (LYNX) from the Hercules Transit Center to San Francisco. WestCAT operates a dial-a-ride service, both for ADA paratransit customers and for the general public in some of the more rural parts of the service area.

Other Transit Operators with Service to Contra Costa County

Additional bus operators, including SolTrans, Golden Gate Transit, Livermore Amador Valley Transit (also known as Tri-Valley Wheels), and Napa VINE operate primarily in other parts of the Bay Area but have express service connecting to BART stations in Contra Costa County.

Existing Bicycle Network

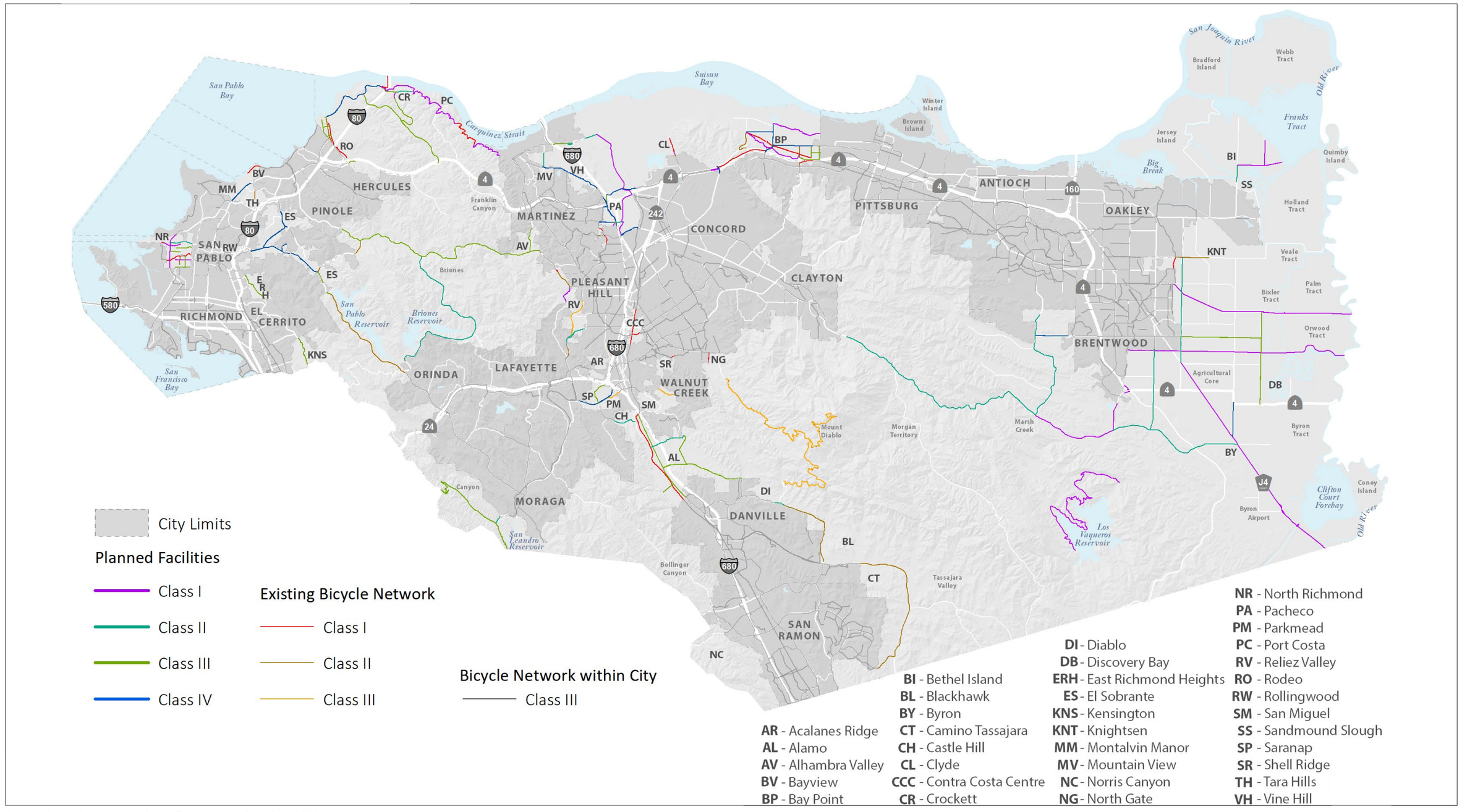
Bikeways connect areas across the county and are supported by a wide variety of agencies and jurisdictions. Countywide bikeways help connect residents in a practical and healthy alternative to driving through both on- and off-road facilities. The "countywide bikeway network" (CBN) was established in the 2003 CBPP and has been expanded on with the most recent CBPP update in 2018. This network is made up of bikeway corridors connecting cities, towns, and major destinations throughout the county. The existing network in addition to planned facilities under the CBPP are shown in Figure 5.16-3, *Existing and Planned Bicycle Network*. Key bicycle corridors included in the CBN include:

- The Bay Trail
- San Pablo Avenue corridor
- Connections between western and central parts of the county (Cummings Skyway/Franklin Canyon/SR 4; Alhambra Valley Road; San Pablo Dam Road; Carquinez Scenic Drive)
- Connections to Alameda County (Fish Ranch Road; Pinehurst Road; Canyon Road; Redwood Road)
- Iron Horse Trail
- Connections within the central part of the county (Olympic Boulevard; Mt. Diablo Boulevard; Geary Road; Main Street; Treat Boulevard; Monument Boulevard; Pleasant Hill Road; Contra Costa Boulevard; Taylor Boulevard; Ygnacio Valley Road; Concord Boulevard; Concord Avenue; Cowell Road; Turtle Creek Road)
- Connections between central and eastern parts of the county (Kirker Pass Road; Marsh Creek Road)
- Regional trails (e.g., Ohlone Greenway; Richmond Greenway; Delta de Anza Trail; American Discovery Trail)

Pedestrian Network

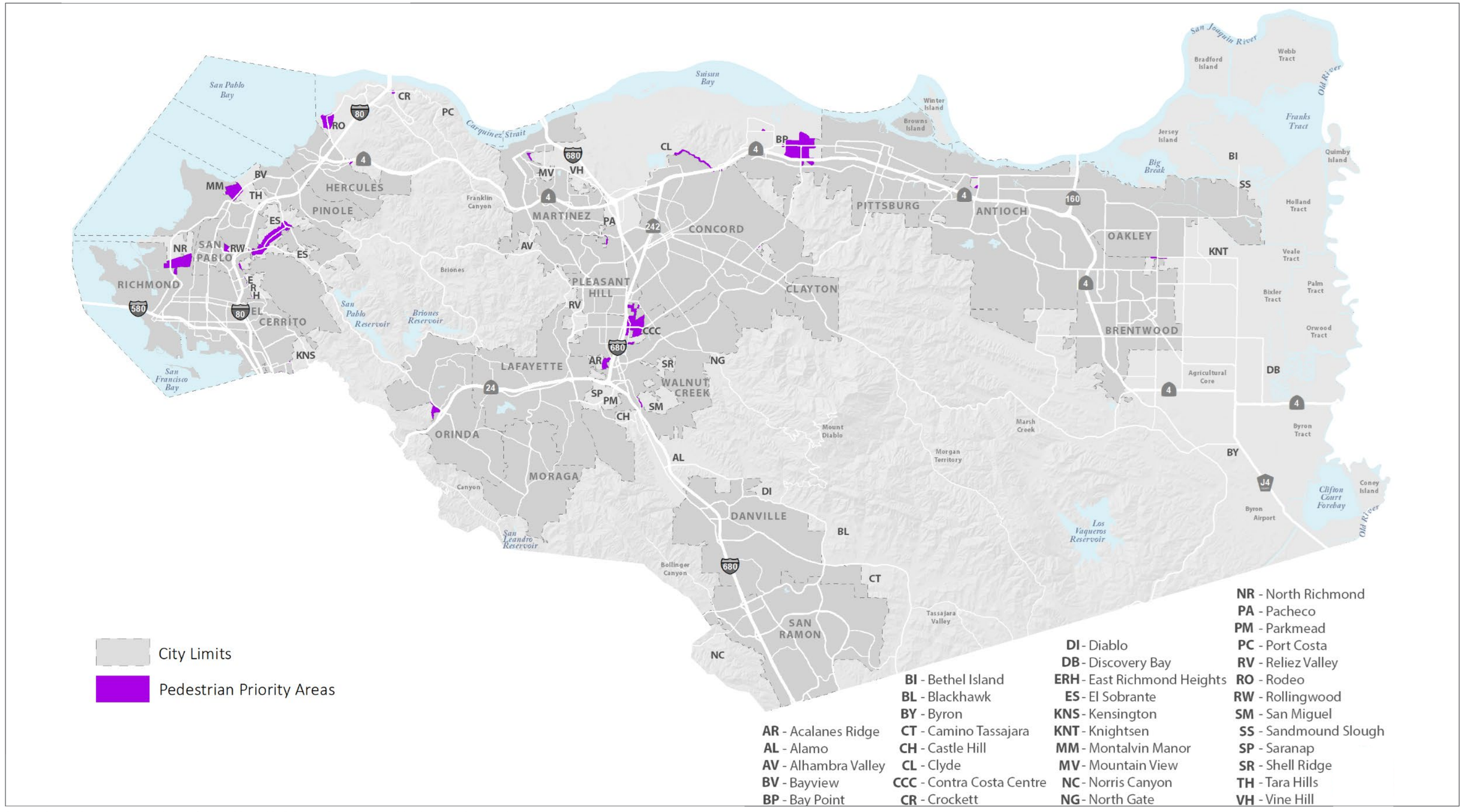
Walking as a mode of transportation is generally confined to short local trips, generally within one city or town and not across countywide networks. On a countywide level such as in the CBPP, the focus is maintained at a high level, prioritizing investments in pedestrian-oriented districts at BART stations and along routes to transit,

along routes to key activity centers such as schools, and near significant employment, shopping, or commercial centers. The CBPP identified areas of the county with high pedestrian traffic and acute safety issues, as shown in Figure 5.16-4 *Pedestrian Priority Areas*. Recommended treatments include ADA accessible walkways, curb ramps, safer intersections, traffic calming when appropriate, direct pedestrian connections, and streetscape improvements.



Source: Contra Costa County Active Transporation Plan, April 2022.

Figure 5.16-3
Existing and Planned Bicycle Network



Source: Contra Costa Transportation Authority (CCTA): 2018 Contra Costa Countywide Bicycle and Pedestrian Plan.

0 3.5
Scale (Miles)

Figure 5.16-4
Pedestrian Priority Areas

5.16.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

T-1 Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

T-2 Conflict or be inconsistent with CEQA Guidelines Section 15064.3 (b).

T-3 Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

T-4 Result in inadequate emergency access.

5.16.2.1 CONTRA COSTA COUNTY THRESHOLDS

The County's Guidelines (see Section 5.16.1.1, *Regulatory Background*, Contra Costa County Transportation Analysis Guidelines), present several forms of VMT metrics that must be used to evaluate the impacts of land development projects. For example, it is required that residential projects use a metric of VMT per resident for all home-based trips, while employment projects use a metric of VMT per employee for only the home-based-work trip purpose. Mixed-use projects are recommended to use a metric of total VMT per service population (where service population is the summation of residential population and employment).

Since the proposed General Plan will involve land development of many different types, sizes, and locations, the metric of total VMT per service population was determined to be the most appropriate for this analysis, as it captures all trip purposes from all types of development.

The County's Guidelines present thresholds of significance that can be used to determine the significance of a project's VMT impacts. The basic threshold is that a project's VMT metric be at least 15 percent below a specific point of comparison. The point of comparison varies depending on the type of project: for residential projects, the point of comparison is the countywide average home-based VMT per capita, while for employment projects the point of comparison is the Bay Area regional average commute VMT per employee. For mixed-use projects, the threshold is that the project's total VMT per service population be at least 15 percent below the countywide average VMT per service population.

It is important to note that, while the OPR guidance (see discussion of SB 743 in Section 5.16.1.1, *Regulatory Background*) recommends that project-level impacts be evaluated against baseline conditions, for this analysis the total VMT per service population of the proposed project is being evaluated under both baseline (2020) and future (2045) conditions.

5.16.3 Programs, Plans, and Policies

5.16.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to transportation. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Policy LU-P2.1**: Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.
- **Policy LU-P2.5**: Encourage infill development..
- **Policy LU-P2.6**: Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).
- **Policy LU-P3.1**: Support regional efforts to achieve a jobs-housing balance within the county and within subregions of the county by maintaining an adequate supply of developable land designated for job-generating uses. For any General Plan amendment proposing to convert commercial, industrial, or office land uses to residential or non-urban land uses, evaluate the project's effect on the local and countywide jobs-housing balance.
- **Policy LU-P3.2**: Encourage residential development in or near existing employment centers, and development of job-generating uses near areas that are primarily residential. Where large-scale residential or commercial development is planned, encourage a mix of housing and employment opportunities unless doing so would exacerbate a severe jobs-housing imbalance in the area.
- **Policy LU-P3.3**: Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.
- **Policy LU-P3.5**: Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.
- **Policy LU-P5.2**: Consider the potential locations of planned public infrastructure projects (e.g., transit lines, roadways, drainage improvements) when evaluating development proposals and deny development applications that would interfere with implementation of such projects.
- **Action LU-A5.1**: In 2025 and at least once every five years thereafter, evaluate the County's off-street parking standards to ensure their continued applicability in light of changing conditions, trends, and technology. Each evaluation should assess the appropriateness of reducing or eliminating parking minimums, taking off-site impacts into account, and recommend strategies for reducing parking demand.

- **Policy LU-P7.2:** Provide housing opportunities for all economic segments of the population, ensuring that affordable housing is distributed throughout the county and is not concentrated in traditionally lower-income areas. Promote development of affordable housing near public transit and essential services whenever possible.
- ***Policy LU-P7.5:*** *Require new residential projects to provide convenient access/connections to public transit, local destinations, and multiuse trails whenever possible.*
- ***Policy LU-P7.6:*** *Within the ULL, allow properties with existing legally established residential development that exceeds the maximum density ranges specified in Table LU-1 to retain those densities in the event the existing development must be reconstructed for any reason.*

Transportation Element

- **Goal TR-1**: A transportation system that promotes active transportation, supports effective and equitable provision of transit services, and reduces greenhouse gases and other environmental harm.
  - **Policy TR-P1.1:** In addition to any required California Environmental Quality Act (CEQA) review, evaluate the traffic operations effects of proposed projects in accordance with the County's Transportation Analysis Guidelines and other appropriate policy supplements and transportation plans and best practices. When operational deficiencies are identified, the treatments to address those deficiencies should first prioritize reducing the project's vehicular trips and collision risks, and may secondarily consider adding vehicular capacity so long as the safety and movement of active modes are not compromised. Exceptions to the level of service (LOS) operational standards presented in the Transportation Analysis Guidelines may be granted if the treatments necessary to address operational deficiencies would conflict with other priorities in this General Plan and if the project is otherwise consistent with this Plan.
  - **Policy TR-P1.2:** Prioritize expansion of bicycle and pedestrian infrastructure to address the significant latent demand for these active transportation modes.
  - **Policy TR-P1.3:** Ensure emerging transportation technologies and travel options, such as autonomous and zero-emission vehicles and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.
  - **Policy TR-P1.5:** Ensure new highways constructed outside the Urban Limit Line are not growth-inducing through land-use controls, access limitations, and other appropriate measures.
  - **Policy TR-P1.6:** Partner with the Contra Costa Transportation Authority (CCTA) and California Department of Transportation (Caltrans) to better manage traffic operations on the State highway system in Contra Costa County through the application of ramp metering, construction of high-occupancy toll (HOT)/Express or other managed lanes, and other capacity-management techniques.

- **Policy TR-P1.8:** Support improvement and expansion of passenger and commuter rail service countywide, with emphasis on transformative projects such as the Hercules Intermodal Transit Center and BART extensions in the I-80 corridor toward Crockett and SR 4 corridor toward Brentwood.
- **Policy TR-P1.9:** Encourage transit use by supporting expansion of first-mile/last-mile programs, including micro-mobility.
- **Policy TR-P1.10:** Enhance multi-modal access to all transit stops, including local routes as well as passenger and commuter rail stations and ferry terminals, prioritizing stops which serve vulnerable and mobility-impaired populations.
- **Policy TR-P1.12**: Continue to improve zero-emission vehicle (including electric bicycle) charging/fueling infrastructure within new development and public rights-of-way, incorporating new technologies whenever possible.
- **Policy TR-P1.13**: Require designs for new parking facilities to incorporate zero-emission vehicle charging/fueling infrastructure and maximize opportunities for adaptive reuse.
- **Action TR-A1.1:** Develop and promote mobility alternatives to single-occupancy vehicles, including but not limited to micromobility, zero-carbon rideshare strategies, and public transit.
- **Action TR-A1.2:** Review and update the County's Transportation Demand Management Guidelines at least once every five years to incorporate current best practices.
- **Action TR-A1.3:** Update the Contra Costa County Transportation Analysis Guidelines on an as-needed basis.
- **Action TR-A1.7:** Partner with transit providers, cities, and CCTA to develop a countywide transit stop program that takes a holistic approach to transit stop planning and construction. Push for the program to address right-of-way adequacy (i.e., sufficient space for bus pullouts and amenities), amenities (e.g., shelters, seating), and improvements around stops to increase accessibility (e.g., curb ramps, sidewalk widening).
- **Action TR-A1.8:** Work with transit agencies to provide convenient ways for residents to report transit shelters and other amenities (e.g., lighting, seating) that are in disrepair. Encourage and promote reporting countywide, especially in Impacted Communities.
- **Action TR-A1.9:** Pursue funding and other resources to implement the Accessible Transportation Services Strategic Plan and similar plans and initiatives that expand the hours of operation, operational boundaries, convenience, and quality of accessible transit to improve mobility for seniors, people with disabilities, and other vulnerable populations.
- **Action TR-A1.10:** Support establishment of a Bay Area-wide transit fare equity program that includes free or means-based transit passes for qualifying residents of Impacted Communities.
- **Action TR-A1.11:** Coordinate with CCTA and other local and regional agencies to implement the Contra Costa Electric Vehicle Readiness Blueprint and related policies and apply best practices in zero-emission vehicle charging/fueling infrastructure requirements.
- **Action TR-A1.12:** Update the County Ordinance Code as necessary to support advances in zero-emission vehicle charging/fueling infrastructure, including for medium- and heavy-duty vehicles.

- **Action TR-A1.13:** Advocate for legislation requiring micromobility and other transportation technology providers to accept responsibility for and mitigate the physical, operational, and financial impacts of their services upon local jurisdictions.

- **Goal TR-2**: A transportation system that protects human life.
  - **Policy TR-P2.1:** Pursue the priorities identified in the County's Vision Zero and other safety programs, through prioritization of safety projects and incorporation of safety considerations into all transportation planning efforts.
  - **Policy TR-P2.2:** Minimize conflicts between vehicles and people who walk, bike, or use micromobility through careful site planning, paying particular attention to driveway locations and internal pedestrian circulation, and prioritizing safety for active modes of travel.
  - **Policy TR-P2.3:** Require installation of or provide energy-efficient street lighting to improve public safety and comfort in urbanized areas. Prioritize installation in Impacted Communities, particularly at parks, transit stops, alleyways, bike and pedestrian paths, trails, and other appropriate areas, consistent with community preferences.
  - **Action TR-A2.1:** Maintain a Vision Zero Working Group to regularly review collision data and evaluate the effectiveness of Vision Zero and other safety strategies.
  - **Action TR-A2.2:** Identify and address neighborhood-specific issues and needs in Impacted Communities, prioritizing installation of sidewalks, enhanced crosswalks, street lighting, street trees, bicycling infrastructure, transit stop amenities, traffic calming, and other safety and comfort improvements, especially in residential areas and near schools, libraries, and recreational facilities. Explore innovative methods to ensure these facilities are maintained. Engage school districts, neighborhood groups, and the local Safe Routes to School Program in implementing this action.
  - **Action TR-A2.3:** Coordinate with the California Public Utilities Commission and railroads to design and implement projects that address safety concerns and conflicts from at-grade rail crossings.

- **Goal TR-3:** Transportation facilities and services that are planned, funded, built, and maintained in a coordinated, cooperative, and effective manner.
  - **Policy TR-P3.1:** Maintain an inclusive and orderly approach to interagency, inter-departmental, and stakeholder coordination on long-range capital planning and the design of specific transportation projects, including consultation with affected community and stakeholder organizations and appropriate commissions and committees.
  - ***Policy TR-P3.2:*** *Coordinate planning, construction, and maintenance of streets, transit infrastructure, non-motorized rights-of-way and associated facilities, the countywide bicycle network, and Pedestrian Priority Areas with neighboring jurisdictions and CCTA.*
  - **Policy TR-P3.3:** Partner with cities, the San Francisco Bay Area Water Emergency Transportation Authority (WETA), and other involved agencies to plan and implement ferry service that benefits unincorporated county residents.

- **Policy TR-P3.4:** Work with project applicants and property owners to establish community facilities districts or other funding mechanisms to pay for construction, operation, and maintenance of new transportation infrastructure and programs without creating an undue financial burden on existing residents, businesses, or the County. Consider that new, innovative infrastructure may cost more to maintain than facilities installed in the past, and that the increase in ongoing maintenance costs is a potential reason to deny a development application.
- **Policy TR-P3.5:** Pursue regional, State, and federal funding to augment locally generated funds to construct and maintain transportation infrastructure.
- **Action TR-A3.1:** Coordinate with neighboring jurisdictions, CCTA, and the Regional Transportation Planning Committees to plan, design, and implement Complete Streets concepts on Routes of Regional Significance.
- **Action TR-A3.2:** Partner with CCTA, neighboring and regional agencies, and stakeholders to explore and implement options for transportation system funding, including assessment districts, county service areas, impact fees, tax revenue, and other funding sources.
- **Action TR-A3.3:** Continue updating the County's Area of Benefit impact fee programs as a mechanism to collect fair-share contributions from new development and fund needed transportation improvements.

- **Goal TR-4**: A roadway network that accommodates multi-modal travel options for all county residents, businesses, and visitors, regardless of age, ability, race, culture, or economic status.
  - ***Policy TR-P4.1:*** *Plan, design, and maintain improvement projects involving County roadways in accordance with the County's adopted Complete Streets Policy, other applicable policies (e.g., Vision Zero and other safety initiatives), planning documents such as the County Active Transportation Plan and CCTA Countywide Bicycle and Pedestrian Plan, and best practices (e.g., Caltrans, American Association of State and Highway Transportation Officials, and National Association of City Transportation Officials guidance).*
  - ***Policy TR-P4.2:*** *Require transportation infrastructure serving new development to be designed using best practices, contemplating existing and planned land uses, roadways, bicycle and pedestrian facilities, transit facilities, and connections to adjoining areas.*
  - **Policy TR-P4.3:** Create connections between neighborhoods in unincorporated areas and adjacent jurisdictions to improve multi-modal access to local destinations, such as schools, parks, shopping, health services, and workplaces.
  - **Policy TR-P4.4:** Manage access points along arterial and collector roadways to minimize the number of new driveway or street-type intersections. Consolidate existing street and driveway intersections to limit conflict points as opportunities arise.
  - **Policy TR-P4.5:** Require installation of or provide wayfinding signage (accessible to persons who are vision impaired), to aid navigation where necessary or desirable.
  - **Policy TR-P4.6:** Enhance streetscapes in nonresidential areas, making them more pedestrian-friendly by reducing off-street parking and setback requirements and augmenting traffic-calming measures. **Policy TR-P4.7:** Encourage walkability and safety by streamlining implementation of traffic-calming measures through the Neighborhood Traffic Management Program.

- **Policy TR-P4.8:** Minimize speeding through residential neighborhoods by implementing appropriate roadway design standard, traffic-calming, and other holistic solutions, as well as enforcement.
- **Policy TR-P4.9:** Protect residential neighborhoods from outside or cut-through traffic by implementing appropriate design solutions aimed at keeping through traffic on arterials and collectors.
- ***Policy TR-P4.10:*** *Design roadway infrastructure, including traffic-calming and complete streets features, to accommodate emergency response vehicles while maintaining the safety of vulnerable road users.*
- **Action TR-A4.1**: Update the County Standard Plans on an as-needed basis to reflect best practices in context sensitivity, complete streets, travel safety, and environmental sustainability.
- **Action TR-A4.2**: Ensure that the (CRIPP):

  a) Reflects current and best transportation planning practices.
  b) Implements adopted transportation and land development policies.
  c) Complies with public review requirements.
  d) Presents planned transportation system improvements with an implementation schedule.
- **Action TR-A4.3**: Develop guidance for managing curb space in ways that are sensitive to the land use context, with considerations for freight deliveries, parking, active transportation use, users with limited mobility, transportation network companies, outdoor dining, and other curb uses that may emerge.

- **Goal TR-5**: Support people who walk, bike, roll, or use mobility devices by creating safe, equitable, connected, and comfortable facilities for all ages and abilities.

  - **Policy TR-P5.1:** Plan, design, construct, and maintain facilities for walking, bicycling, and rolling to serve people of all ages, abilities, and income levels, including children, seniors, families, and people with limited mobility.
  - **Policy TR-P5.2:** Coordinate with Caltrans to provide safe and comfortable highway interchange crossings for people of all ages and abilities who walk, bike, or use micromobility.
  - **Policy TR-P5.3:** Prioritize construction of capital improvement projects identified in the County's Active Transportation Plan.
  - ***Policy TR-P5.4:*** *Ensure that fee programs include active transportation facilities, and require new development to contribute funds, right-of-way, and/or provide active transportation facilities themselves, where feasible.*
  - **Policy TR-P5.5:** Maintain pedestrian and active transportation facilities to the same standard as roads and other transportation infrastructure, including repair and cleanup of all bikeway types and shared-use pathways.
  - **Policy TR-P5.6:** Support use of temporary, quick-build, demonstration, and pilot pedestrian and bicycle improvements to test their effectiveness, and promote active transportation strategies to the public.

- **Policy TR-P5.7:** Encourage walking, bicycling, and micromobiliy as the travel modes of choice for short to medium-length trips, such as trips to schools, parks, transit stops, local shopping areas, and neighborhood services.
- **Policy TR-P5.8:** Partner with neighboring jurisdictions, transit agencies, community members, and business organizations to plan and construct sustainable streets in business and commercial areas. Consider forming community facilities districts or business improvement districts to help fund and maintain improvements.
- **Policy TR-P5.9:** Support micromobility options such as bike-, e-bike-, and e-scooter-share.
- **Policy TR-P5.10:** Require generous parking for bicycles and other mobility devices at key destinations, such as shopping centers, schools, workplaces, transit stations, and multiple-family housing.
- **Action TR-A5.1:** Partner with CCTA and neighboring jurisdictions to build out the countywide bicycle and pedestrian network, prioritizing completion of the Low-Stress Countywide Bicycle Network and pedestrian safety improvement projects in the County's Pedestrian Priority Areas, as described in the Countywide Bicycle and Pedestrian Plan.
- **Action TR-A5.2:** Construct innovative bicycle and pedestrian facilities, including Class IV separated and protected bikeways, bicycle superhighways, and other low-stress facility types, as described in the Countywide Bicycle and Pedestrian Plan and in contemporary, best-practice transportation planning and engineering guidance. Use contextually appropriate green infrastructure and landscaping to separate vehicular lanes from bicycle and pedestrian facilities whenever feasible.
- **Action TR-A5.3:** Periodically review the scoring formula for active transportation projects to ensure continued prioritization of projects in Impacted Communities.
- **Action TR-A5.4:** Partner with the cities, EBRPD, and CCTA to develop uniform guidance to manage active shared mobility services.
- **Action TR-A5.5**: Consider allowing temporary and permanent re-orientation of public space towards increased outdoor activity, including walking, bicycling, rolling, dining, and other social uses.

- **Goal TR-6**: Safe and efficient movement of goods consistent with the County's goals to reduce emissions, protect public safety, and support economic development, local access, and circulation.
  - **Policy TR-P6.1**: Partner with neighboring jurisdictions, CCTA, and the MTC to manage regional movement of goods through unincorporated areas, minimizing impacts on residents and other sensitive receptors.
  - **Policy TR-P6.2**: Support roadway improvements that facilitate regional goods movement, such as construction of SR 239 and the Vasco Road-Byron Highway Connector near Byron, and replacement of the Old River Bridge near Discovery Bay.
  - **Policy TR-P6.3**: Work with ABAG/MTC to improve resilience, speed, and reliability of goods movement through expansion of smaller ports-of-entry which will increase redundancy, thereby limiting exposure to disruptive events at larger congested ports.

- **Policy TR-P6.4**: Use all available policy tools to ensure that trucks use designated truck routes.
- **Policy TR-P6.5**: Work with railroads to preserve non-operational contiguous railroad rights-of-way, and highly encourage construction of grade-separated railroad crossings along active lines to support current and future rail operations and ensure the long-term viability of these rail corridors. When no longer in operation, maintain options for future use of the corridors for trails or other public purposes.
- **Policy TR-P6.6**: Support development of short-line railroad infrastructure and operations in industrial areas to facilitate rail access to Class I railroad lines, attract potential businesses seeking rail-served properties, ease traffic congestion caused by goods movement on regional highways, and reduce greenhouse gas emissions.
- **Policy TR-P6.7**: Support deepening and ongoing maintenance of the deep-water ship channels between San Francisco Bay and Stockton and continued deep-water access to the county's Northern Waterfront.
- **Policy TR-P6.8**: Support continued operation, maintenance, and further development of ports and terminals consistent with federal, State, and County environmental policies and economic priorities.

- **Goal TR-7**: Safe and viable general and commercial aviation activities in Contra Costa County.

  - **Policy TR-P7.1**: Partner with other agencies to obtain funding for planning, development, improvement, operation, and maintenance of general and commercial aviation facilities.
  - **Policy TR-P7.2**: Work with the Federal Aviation Administration and aviation operators to minimize conflicts with residential areas and other sensitive receptors.
  - **Policy TR-P7.3**: Regulate the location of private airfields and heliports to protect public safety and minimize impacts on nearby residents and sensitive receptors.
  - **Policy TR-P7.4**: Protect the County's airports from encroachment by incompatible uses and minimize the public's exposure to safety hazards and excessive noise by ensuring that all future development within each Airport Influence Area is consistent with the Contra Costa County Airport Land Use Compatibility Plan.
  - **Policy TR-P7.5**: Partner with the cities of Concord and Pleasant Hill in making land use decisions that support Buchanan Field Airport's ongoing viability while protecting public safety, consistent with the Airport Master Plan and Airport Land Use Compatibility Plan.
  - **Policy TR-P7.6**: Enhance Byron Airport's viability by protecting it from incompatible urban encroachment, such as large-scale residential development, and providing infrastructure that supports existing and planned airport activities, consistent with the Airport Master Plan and Airport Land Use Compatibility Plan.
  - **Policy TR-P7.7**: Embrace emerging aviation-related technologies, such as drones, electric-powered aviation, and vertical takeoff and landing aircraft, to promote economic development and support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.

- **Action TR-A7.1**: Update the Airport Land Use Compatibility Plan every 5 to 10 years to maintain consistency with applicable federal and State requirements, regional plans, and this General Plan, and to achieve the County's goals for Buchanan Field Airport and Byron Airport.

Health and Safety Element

- ***Policy HS-P7.3***: *Require new development within a Very High Fire Hazard Severity Zone in the LRA or SRA (as shown on Figure HS-10) or in the WUI (as shown on Figure HS-11), and on a residential parcel with evacuation constraints (as shown on Figure HS-21), to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with evacuation plans during the construction period. Work with the appropriate fire protection district to review and approve the traffic control plan prior to issuance of building permits.*
- ***Policy HS-P7.4:*** *Require subdivisions in the High Fire Hazard Severity Zone in the LRA or SRA and projects requiring a land use permit in the High or Very High Fire Hazard Severity Zone in the LRA or SRA, as shown in Figure HS-10, to complete a site-specific fire protection plan. Work with the appropriate fire protection district to review and revise the fire protection plans. The fire protection plan shall include measures for fire-resistant construction materials and modifying fuel loading, as well as a plan to maintain that protection over time. The fire protection plan shall include:*
  - *a) A risk analysis*
  - *b) Fire response capabilities*
  - *c) Defensible space requirements*
  - *d) Fire safety requirements for infrastructure*
  - *e) Building ignition resistance*
  - *f) Mitigation measures and design for non-conforming fuel modification*
  - *g) Wildfire education*
  - *h) Maintenance and limitations*
  - *i) A plan for emergency preparedness, response, and evacuation*
- **Policy HS-P13.1**: Except for infill sites, require new development in High and Very High Fire Hazard Severity Zones, the WUI, and 100-year or 200-year floodplain to have access to at least two emergency evacuation routes, and encourage the same for existing development.
- **Action HS-A13.1**: Partner with cities and public protection agencies to delineate evacuation routes, identifying their capacity, safety, and viability under different hazard scenarios, as well as emergency vehicle routes for disaster response, and where possible, alternate routes where congestion or road failure might reasonably be expected to occur. Update as new information and technologies become available.
- **Action HS-A13.2**: At least once every five years, update maps identifying neighborhoods with only one emergency evacuation route.

- **Action HS-A13.3**: Coordinate with local fire districts to develop and maintain minimum roadway, ingress, and egress standards for evacuation of residential areas in Very High Fire Hazard Severity Zones.

Growth Management Element

- **Policy GM-P1.1:** Maintain in place a local program to mitigate development impacts on nonregional routes and other facilities to ensure that new growth pays its share of the costs associated with that estimated growth. Ensure revenue provided from this program is not used to replace private developer funding of any required improvements that have or would have been committed to any project.
- **Policy GM-P1.2:** Participate in a regional development mitigation program to establish fees, exactions, assessments, or other mitigation measures to fund regional or subregional transportation improvements needed to mitigate the impacts of planned or forecast development on the regional transportation system.
- **Action GM-A1.1:** Require development projects to provide local mitigation or fees as established for proposed new development.
- **Action GM-A1.2:** Require development projects to pay regional development mitigation fees established by the locally applicable Regional Transportation Planning Committees(s) (RTPC) in accordance with the RTPC's adopted program.
  - TRANSPAC (Central County): Subregional Transportation Mitigation Program (STMP)
  - TRANSPLAN (East County): East Contra Costa Regional Fee and Financing Authority (ECCRFFA)
  - SWAT (Southwest County): Lamorinda Transportation Improvement Program (LTIP)
  - WCCTAC (West County): Subregional Transportation Mitigation Program (STMP)
  - TVTC: Tri-Valley Transportation Development Fee Program (TVTDF)
- **Action GM-A1.3:** Biennially prepare the seven-year Capital Road Improvement and Preservation Program (CRIPP) outlining capital projects sponsored by the County that are necessary to maintain and improve mobility, and implement the transportation-related goals, policies, and actions of this General Plan. The CRIPP must include approved projects and an analysis of the costs of the proposed projects as well as a financial plan, including funding sources, for providing the improvements.
- **Policy GM-P2.1**: Participate in an ongoing and collaborative multi-jurisdictional planning process with other jurisdictions and agencies, the RTPCs, and the CCTA to create a balanced, safe, and efficient transportation system and manage the impacts of growth.
- **Policy GM-P2.2**: Work with the RTPCs and CCTA to develop, update, and implement Action Plans for the network of designated Routes of Regional Significance (Figures TR-2 through TR-4 in the Transportation Element), set Regional Transportation Objectives (RTOs) for those routes, and identify actions for achieving the RTOs. The Action Plans must also include a process for reviewing and monitoring the traffic impacts of proposed new developments.

- **Policy GM-P2.3**: Apply CCTA's travel demand forecasting model and *Technical Procedures* to the analysis of General Plan amendments affecting land use or circulation and development projects that generate more than 100 peak-hour trips to determine their effects on the regional transportation system, and compliance with the applicable Action Plan Multimodal Transportation Service Objectives/Regional Transportation Objectives.
- **Policy GM-P2.4**: Circulate traffic impact analyses to affected jurisdictions and the RTPCs for review and comment and cooperate in assessment and mitigation of traffic impacts in neighboring jurisdictions resulting from County actions.
- **Policy GM-P2.5**: Work with the appropriate RTPCs to develop the mitigation program outlined in GM-A1.2.
- **Policy GM-P2.6**: Participate in preparation of the CCTA's Countywide Comprehensive Transportation Plan and the ongoing countywide transportation planning process.
- **Policy GM-P2.7**: Help maintain the CCTA's travel demand modeling system by providing information on proposed land uses, planned and approved development and transportation projects, and proposed improvements to the transportation system, including those projects the County has adopted as part of its seven-year CRIPP, and long-range plans relative to the Association of Bay Area Government's (ABAG's) projections for households and jobs within the unincorporated area.
- **Action GM-A2.1**: Work with the RTPCs and CCTA to help develop other plans, programs, and studies to address transportation and growth management issues.
- **Action GM-A2.2:** Participate in the CCTA's established conflict resolution process as needed to resolve disputes related to development and implementation of Action Plans and other programs described in the GME and other applicable General Plan elements.
- **Policy GM-P3.1**: Consider the impacts that the County's land use development policies have on the local, regional, and countywide transportation system, including the level of transportation capacity that can reasonably be provided.
- **Policy GM-P3.2**: Through the development review process, support accommodation of transit, bicycle, and pedestrian access for new development by applying the County Transportation Analysis Guidelines, Complete Streets Policy, Active Transportation Plan, and related best practices.
- **Policy GM-P3.3**: Demonstrate reasonable progress in providing housing opportunities for all income levels and demonstrate reasonable progress in meeting housing goals.
- **Policy GM-P3.4**: Incorporate policies and standards into the development approval process that support transit, bicycle, and pedestrian access in new developments.
- **Policy GM-P3.5**: Promote carpools, vanpools, other ridesharing, and park-and-ride lots by maintaining in place and enforcing a TDM ordinance that reflects best practices and, at a minimum, conforms to the CCTA's adopted model TDM ordinance or resolution.

- **Policy GM-P4.1**: Maintain a voter-approved ULL as defined in the Principles of Agreement to the Measure J GMP (as amended by CCTA Ordinance 06-04), through March 31, 2034, the end of the Measure J sales tax. Enforce the ULL as stipulated in the Land Use Element.

5.16.3.2 PROPOSED CAP UPDATE STRATEGIES AND ACTIONS

The following strategy and actions from the proposed Climate Action Plan (CAP) are applicable to transportation impacts:

Strategy TR-1: Improve the viability of walking, biking, zero-carbon commuting, and using public transit for travel within, to, and from the county.

Strategy TR-1 Actions:

- Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report and Action Plan; Active Transportation Plan; and equity-focused plans, programs, and policies.
- Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities.
- Work with CCTA to fill gaps in the countywide Low-Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bicycle facilities.
- In collaboration with key partners, support efforts to establish or join a shared mobility program that provides access to conventional bicycle, e-bikes, and other micromobility modes.
- Support efforts to expand the service area and frequency of regional transit agencies, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT.
- Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance.
- Market the county's Northern Waterfront to attract innovative companies with jobs for residents.
- Maintain in place and enforce a Transportation Demand Management (TDM) Ordinance that reflects best practices, and, at a minimum, conforms to Contra Costa Transportation Authority's adopted model TDM ordinance or resolution. (GM-P3.5)
- Improve county-wide safety for bicyclists by advocating for the passage of Vulnerable Road User Laws.
- Secure additional funding for the maintenance and expansion of bicycle and pedestrian infrastructure improvements. Support efforts to obtain additional funding to maintain and expand public transit operations and infrastructure improvements.
- Support CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions.

- Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.
- Encourage and support increased regional integration of transit systems to promote more equitable fare structures, fare integration, easier transfers, including coordinated transfers between different transit systems and reduced wait times, improved information sharing, and generally a more seamless and modern system.

5.16.4 Environmental Impacts

5.16.4.1 METHODOLOGY

As described in the Guidelines, project VMT should be estimated using the Contra Costa Countywide Travel Demand Model that is maintained by CCTA (often referred to as the CCTA Model). The CCTA Model allows analysts to forecast regional and local travel behavior as a function of local land use development decisions, transportation network infrastructure planning, and land use and network policies. The currently available CCTA Model reflects data included in Plan Bay Area 2040 and has a horizon year of 2040. Although the Bay Area RTP/SCS was recently updated with adoption of Plan Bay Area 2050, the currently available CCTA Model is still the best available tool for analysis of VMT impacts in Contra Costa County as it has the greatest level of detail of land uses and transportation facilities throughout the county.

The CCTA model can be used to determine both the trip generation and trip lengths of the vehicle trips associated with the proposed project. This calculation is done in the Model via the production and attraction trip matrices to be able to attribute automobile vehicle trips to the land use that generates the trip. The CCTA Model accounts for all trips within the nine-county Bay Area, and accounts for trips between the Bay Area and neighboring regions.

Using data derived from the proposed General Plan development projections (see Chapter 3, *Project Description*), the CCTA model was applied for two different scenarios and VMT calculations were prepared for each one:

- **Baseline No Project**: VMT was calculated using the year 2020 CCTA Model. This scenario serves as the baseline or point of comparison for environmental impact determinations related to the 2045 General Plan scenario.
- **Cumulative Plus Project**: VMT was calculated using the year 2045 CCTA Model with the proposed General Plan land use changes added to the appropriate transportation analysis zones (TAZs). The horizon year of the CCTA model available at the time this analysis was conducted was 2040. To create a year 2045 scenario, land use in the areas outside of unincorporated county was extrapolated based on the 2020 and 2040 data sets from the available CCTA Model. Further, the recently adopted Plan Bay Area 2050 was checked to see if additional transportation network enhancements were planned in Contra Costa County between 2040 and 2045, and that information was used to update the 2040 CCTA Model roadway network to reflect anticipated year 2045 conditions.

Impact 5.16-1: Implementation of the proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. [Threshold T-1]

Proposed General Plan

As discussed in Section 5.15.1.1, *Regulatory Background*, several programs, plans, and policies guide the planning of circulation systems in the EIR Study Area. In general, the overarching goals of these policy documents are to ensure a safe, efficient, and accessible multi-modal transportation network for all users that also reduces VMT to improve air quality and reduce GHG emissions. As discussed in Chapter 3, *Project Description*, the proposed General Plan would guide development in the unincorporated county to the planning horizon year of 2045, but it would not otherwise result in any immediate development actions and impacts to the county's circulation system. Therefore, impacts would be less than significant if the proposed General Plan goals, policies, and actions are consistent with and support the equivalent policy guidance of the applicable program, plan, ordinance, or policy.

While the proposed General Plan includes several policies and actions specific to roadway, bicycle, transit, and pedestrian facilities, the policies and actions listed under Goal TR-3 specifically target coordination and consistency with other agencies for the purpose of providing well-planned, funded, and maintained transportation facilities. For example, Policy TR-P3.1 would direct the County to coordinate planning, construction, and maintenance of streets, transit infrastructure, non-motorized rights-of-way and associated facilities, the countywide bicycle network, and Pedestrian Priority Areas with neighboring jurisdictions and CCTA. Action TR-A3.1 similarly directs the County to work with neighboring jurisdictions, CCTA, and the RTPCs (see Section 5.16.1.1) to implement complete streets concepts. Action TR-A3.2 would also have the County partner with these agencies to explore and implement options for transportation system funding, including assessment districts, county service areas, impact fees, tax revenue, and other funding sources. Similarly, the policies and actions included in the proposed Growth Management Element ensure that the County fulfills its obligations under Measure J. Each of these policies and actions, as listed in Section 5.16.3.1, *Proposed General Plan Goals, Policies, and Actions*, address coordination with other transportation-related agencies. These policies and actions, in addition to others shown under Goal TR-3 in Section 5.16.3.1, and those discussed below related to specific transportation facility types, express a commitment to consistency with the planning efforts of other agencies and would help to ensure that the proposed project does not conflict with these efforts.

With regard to impacts of future development under the proposed General Plan, the County requires all development to go through a review of pedestrian, bicycle, and transit facilities in the area surrounding the individual development project to ensure that developments do not conflict with existing or planned facilities supporting those travel modes. Therefore, development under the proposed General Plan would not conflict with any adopted plans, policies, ordinances or programs related to circulation systems and impacts would be less than significant.

Roadway

CCTA implements and manages several countywide programs that direct circulation improvements on County roadways, including the CMP and Growth Management Program. These programs help to ensure that County roadway improvements are organized and funded. The County's Transportation Demand Management Ordinance (Chapter 82-32 of the County Ordinance Code) helps to implement these CCTA programs within the EIR Study Area. Development under the proposed General Plan would be subject to TDM requirements in addition to transportation impact development fees, as applicable. Projects would also be subject to review under the County's Transportation Analysis Guidelines. Several proposed General Plan policies and actions also demonstrate compliance with and support CCTA's and the County's roadway-related programs. These include Policy TR-P1.4, which would direct development to comply with the TDM strategies for reducing single-occupant vehicle usage, and Policy TR-P1.6, which directs the County to partner with CCTA and Caltrans to better manage traffic operations on the State highway system in the county. Action TR-A1.1 would ensure that the County reviews and updates the TDM guidelines at least every five years to incorporate best practices. Through these and other policies and actions throughout the Transportation Element, the proposed General Plan shows consistency with the goals and intent of the County/CCTA's roadway-related programs, plans, policies, and ordinances. Therefore, impacts are less than significant.

Bicycle and Pedestrian Facilities

Both CCTA and the County also manage and implement several bicycle and pedestrian-related planning efforts, including the Countywide Transportation Safety Policy and Implementation Guide and CBPP from CCTA, which focus on improving safety for and access to active transportation options across both the incorporated and unincorporated county, and the County's ATP, Vision Zero Action Plan, and Complete Streets Policy that promote similar goals and efforts within the jurisdiction of unincorporated Contra Costa County. The policies and actions included under Goal TR-5 of the proposed Transportation Element express the County's commitment to improving active transportation including by prioritizing construction of capital improvement project in the County ATP, per Policy TR-P5.3, and supporting the explicit goals of the Complete Streets Policy, per Policy TR-P5.1. Action TR-A5.1 would also support CCTA bicycle and pedestrian planning efforts by directing the County to partner with CCTA to build out the countywide bicycle and pedestrian network. Through these and other policies and actions throughout the Transportation Element, the proposed General Plan shows consistency with the goals and intent of the County/CCTA's bicycle and pedestrian facility-related programs, plans, policies, and ordinances. Therefore, impacts are less than significant.

Transit Service and Facilities

As discussed in Section 5.16.1.2, *Existing Conditions*, the EIR Study Area is served by numerous transit agencies that provide residents opportunities for long-range and short-range travel across the county and Bay Area region. Each of these agencies has published planning documents that guide the provision of their services and update the documents as necessary to accommodate demand for service. Future potential development under the proposed General Plan would contribute to an increased use of transit in the EIR Study Area due to growth in population and employment. However, several goals, policies, and actions within the proposed Transportation Element would support the goals of these agencies by encouraging enhanced transit access and

increased coordination of service needs and opportunities in the county. For example, Policy TR-P1.8 would support improvement and expansion of passenger and commuter rail service countywide and Policy TR-P1.10 directs the County to enhance multi-modal access to all transit stops. Several actions under Goal TR-1 would also ensure that transit planning efforts are coordinated between the County and providers, including Action TR-A1.6 which directs the County to partner with transit providers, cities, and CCTA to develop a countywide transit stop program that takes a holistic approach to transit stop planning and construction. Action TR-A1.7 would have the County work with transit agencies to provide options for residents to report transit shelters and other amenities that are in disrepair.

Through these and other policies and actions throughout the Transportation Element, the proposed General Plan shows consistency with the goals and intent of transit agency's programs, plans, policies, and ordinances. Therefore, impacts are less than significant.

Summary

In summary, the proposed Transportation Element includes goals, policies, and actions that both support the goals of circulation-related planning efforts and requirements and specifically direct consistency and coordination with the county's circulation planning and other transportation-related agencies' efforts. All development under the proposed General Plan would be required to comply with existing transportation-related laws and policies as applicable, so impacts would be less than significant.

Proposed CAP

As a policy document that aims to reduce GHG emissions and help the county to adapt to changing climate conditions, the proposed CAP is not expected to result in any specific impacts with regard to conflicts with circulation-related policies and planning. Similar to the proposed General Plan, the proposed CAP provides a policy framework that supports the goals of the transportation planning efforts discussed previously. For example, Strategy TR-1 provides actions for improvements to walking, biking and other zero-carbon commuting options to reduce GHG emissions, which reference support of the County's TDM program, CCTA programs, and regional transit agencies. As such, the proposed CAP is expected to result in beneficial impacts with regard to this impact and would have no significant impact.

Level of Significance Before Mitigation: Impact 5.16-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.16-1 would be less than significant.

Impact 5.16-2: Implementation of the proposed project would conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). [Threshold T-2]

Proposed General Plan

CEQA Guidelines Section 15064.3(b) states that a land use project would have a less-than-significant impact if the VMT in the project area are expected to be less than that of existing conditions. As discussed under Section 5.16.2.1, *Contra Costa County Thresholds*, VMT can be measured in different ways. For the purpose of this analysis, the metric of total VMT per service population was determined to be the most appropriate, as it captures all trip purposes from all types of development. This approach aligns with the guidance provided by OPR and follows the methodology described in the County's Transportation Analysis Guidelines.

Screening

As described in the County Guidelines, there are four screening criteria that can be applied to screen projects out of conducting project-level VMT analysis:

1. **Small Projects**. Projects that generate or attract fewer than 110 daily vehicle trips, projects of 10,000 square feet or less of nonresidential space or 20 residential units less, or otherwise generating less than 836 VMT per day.

2. **Projects in Transit Priority Areas (TPAs).** Residential, retail, office, or mixed-use projects proposed within a half- mile of an existing major transit stop or an existing stop along a high-quality transit corridor (see Figure 5.16-1).

3. **Projects in Low VMT Areas.** Residential projects (home-based VMT) at 15 percent or below the baseline countywide home-based average VMT per capita, or employment projects (employee VMT) at 15 percent or below the baseline Bay Area average commute VMT per employee in areas with low VMT that incorporate similar VMT-reducing features (e.g., density, mix of uses, and transit accessibility).

4. **Public Facilities.** Public facilities (e.g., emergency services, passive parks [i.e., low-intensity recreation and open space], libraries, community centers, and public utilities) and government buildings.

The County Guidelines are primarily focused on analyzing the effects of individual, site-specific land use projects, and the screening criteria are designed as such. The proposed General Plan is a long-range and large-scale plan that will affect land uses of a wide range of sizes and types, in a range of locations throughout the EIR Study Area, and over a long planning horizon. As such, the proposed project does not fit within any of the above screening criteria and thus requires a full VMT assessment.

VMT Assessment

As described in Section 5.16.1.1 and Section 5.16.2.1, the County has adopted VMT thresholds for land use development projects. For the purposes of this evaluation and based on the VMT thresholds described previously, the impact would be significant if the implementation of the project would generate total VMT per

service population that is higher than 85 percent of the Contra Costa countywide average total VMT per service population. It is important to note that, while the OPR guidance recommends that project-level impacts be evaluated against baseline conditions, for this analysis the total VMT per service population of the proposed project is being evaluated under both baseline (2020) and future (2045) conditions, as described in Section 5.16.2.1. This is because a General Plan is a long-range, large-scale planning document that will be implemented over many years, so a comparison to both baseline and future conditions can provide relevant and meaningful information to project reviewers.

A summary of the two CCTA model scenarios (baseline and cumulative) are shown in Table 5.16-1, *Summary of VMT Results.*

Table 5.16-1 Summary of VMT Results

Boundary	Metrics	Baseline (2020) No Project	Cumulative (2045) Plus Project
EIR Study Area	Total VMT	6,764,785	8,130,277
	Service Population[1]	203,484	274,311
	Total VMT per Service Population	33.2	29.6
Contra Costa County (combined incorporated and unincorporated areas)	Total VMT	40,148,708	48,504,298
	Service Population[1]	1,360,651	1,712,018
	Total VMT per Service Population	29.5	28.3
	Threshold: 85% of Countywide Total VMT per Service Population	25.1	24.1

Notes:
[1]Service Population is defined as the sum of residential population and employment.
Source: Contra Costa Countywide Travel Demand Model; Fehr & Peers 2023 (Appendix 5.16-1).

This analysis shows that VMT rates in the EIR Study Area are projected to decline between the 2020 Baseline and the 2045 Cumulative Plus Project scenario with implementation of the proposed General Plan, from 33.2 in the baseline to 29.6 in the cumulative scenario. This Cumulative Plus Project scenario VMT per service population is slightly higher than the countywide average VMT per service population of 29.5 in the 2020 Baseline; it is also higher than the countywide average of 28.3 in the Cumulative Plus Project scenario. These results indicate that, despite the projected per capita VMT reduction in the EIR Study Area between the 2020 baseline and the future 2045 scenario, implementation of the proposed project would result in VMT per service population that exceeds the 85-percent threshold values of 25.1 (baseline) and 24.1 (cumulative).

Figures 5.16-5a, *VMT Map 2020 Baseline*, and 5.16-5b, *VMT Map 2045 Cumulative Plus Project,* show the areas of the EIR Study Area that have relatively higher and lower values of VMT. Areas of relatively lower VMT tend to be areas with higher density residential development, good proximity to high-quality transit, and a mix of land uses so that residents need to travel shorter distances to visit shops, essential businesses, and places of employment, for both modeled scenarios.

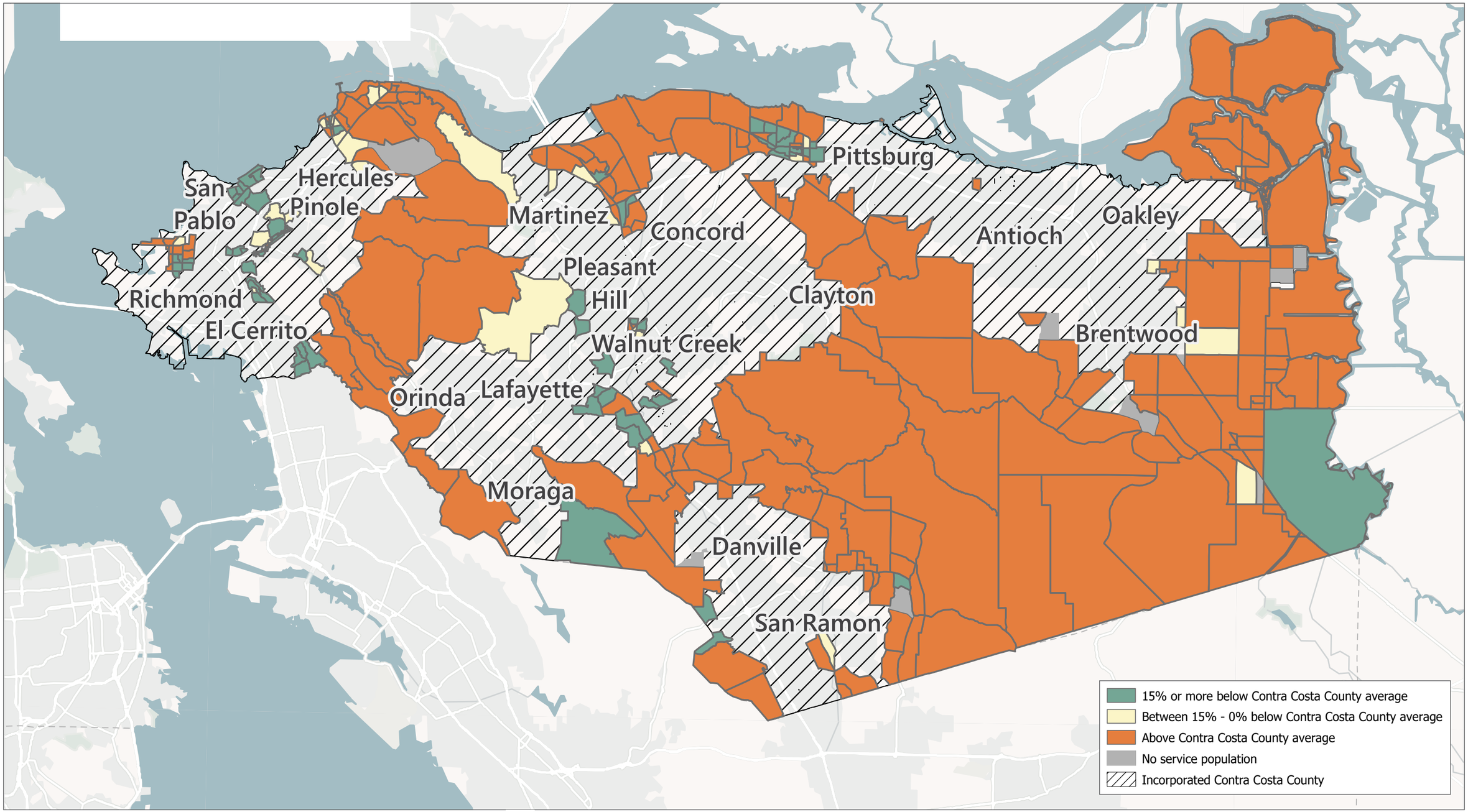
Policy Considerations

The VMT impacts of projects consistent with the proposed project have been addressed in the VMT analysis of this EIR and no further analysis would be necessary. All projects must comply with the County's VMT guidelines. Projects that result in a significant impact may be required to implement TDM strategies and other specific project design strategies to reduce VMT.

The County's TDM Ordinance and guidelines encourage project developers to use creative and effective ways to reduce motor vehicle trips and their associated impacts. The Ordinance requires that all residential projects containing 13 or more dwelling units provide information to the residents about public transit, ridesharing, and active transportation options available in the vicinity of the project. Both residential and non-residential project developers are required to consult with the local transit provider about any needed infrastructure to connect the project with nearby transit services. Further, the guidelines present a range of potential TDM measures that project developers can consider, ranging from physical improvements that would be incorporated into the project's design (such as bike racks, traveler information kiosks, or pedestrian facilities linking the project site to a nearby transit stop) to operational programs that would be implemented once the project is occupied (such as providing transit or rideshare incentives).

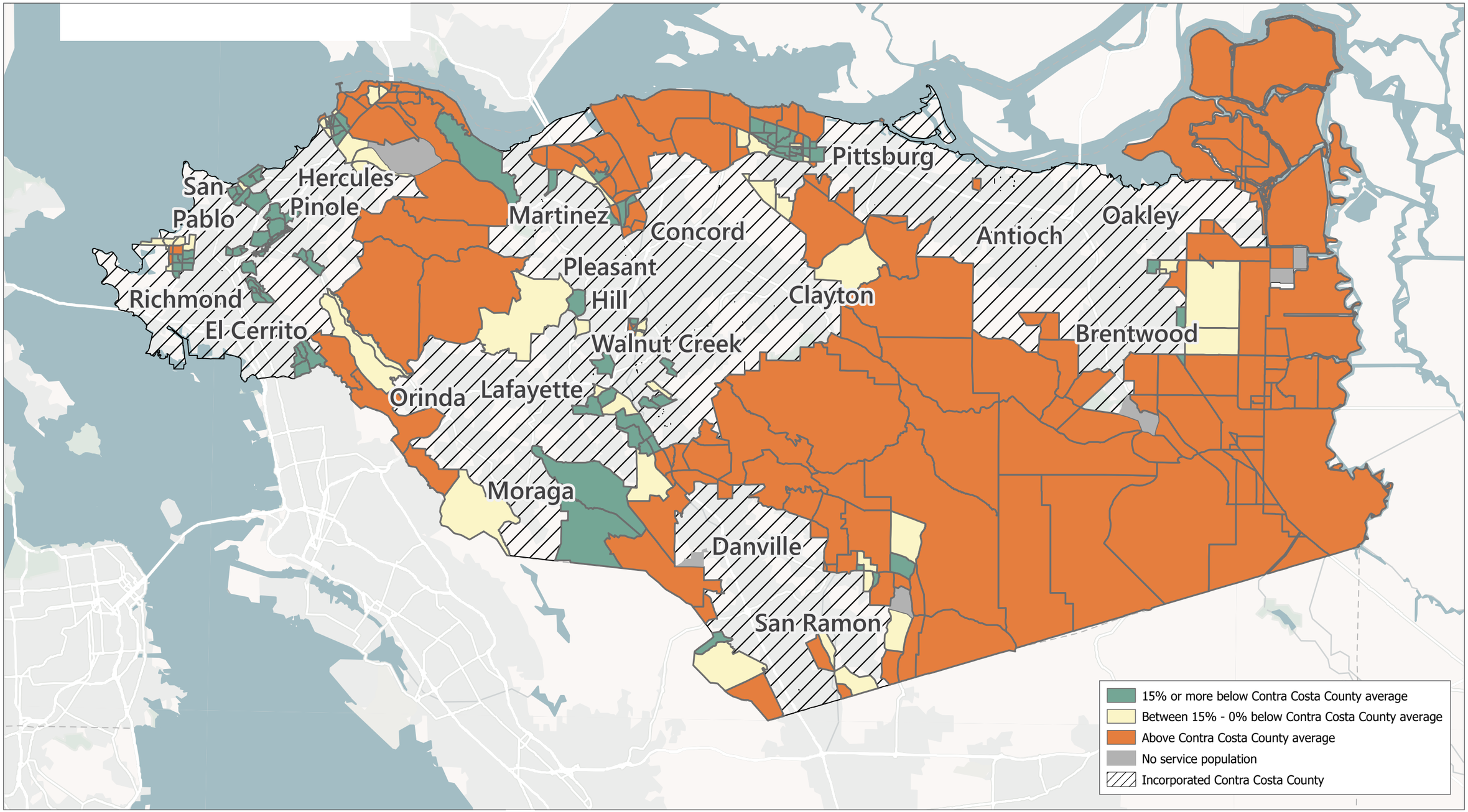
Other strategies that may be implemented on a project-level to reduce VMT, consistent with the California Air Pollution Control Officers Association's (CAPCOA) Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, are as follows:

- Increase building density.
- Integrate a higher number of affordable and below-market-rate housing units.
- Increase the mix of uses by adding retail or services within a residential site or within convenient walking distance.
- Reduce the number of parking spaces provided.
- Unbundle parking costs (i.e., sell or lease parking separately from the housing unit or the commercial enterprise).
- Provide car-sharing, bike-sharing, or scooter-sharing programs.
- Subsidize transit passes, with particular emphasis on transit passes for residents of affordable housing that is in proximity to high-quality transit services.
- Consider participation in a future VMT mitigation program, such as a fee program, bank, or exchange, to provide funding for actions that operate at a scale larger than an individual development site, such as constructing bicycle facilities, operating shuttle services around employment centers, or increasing the frequency of existing transit services. No local or regional VMT mitigation program currently exists; however, should such a program be implemented, development projects could participate in the program to purchase mitigation credits to achieve needed VMT mitigation instead of, or in addition to, on-site TDM measures.



Source: Fehr & Peers, 2023.

Figure 5.16-5a
VMT Map 2020 Baseline



Source: Fehr & Peers, 2023.

0 3.5
Scale (Miles)

Figure 5.16-5b
VMT Map 2045 Cumulative Plus Project

The potential effectiveness of each strategy should be evaluated based on the calculation steps, recommendations, and limitations described in the CAPCOA Handbook.

In addition to VMT-reducing strategies that can be implemented on a project level, the proposed General Plan includes numerous policies that target the reduction of VMT through County planning efforts, including prioritizing the construction of active transportation infrastructure and safety improvements to existing infrastructure (i.e., Policy TR-P1.2, Action TR-A3.1, Action TR-A2.2, all policies and actions under Goal TR-2, TR-4, and TR-5); expanding transit access (i.e., Policies TR-P1.8, TR-P1.9, TR-P1.10, TR-P1.11, and TR-P4.2 and Actions TR-A1.5, TR-A1.6, TR-A1.7, TR-A1.8, TR-A1.9); encouraging high-density, infill, and mixed-use development where feasible (i.e., Policies LU-P2.1, LU-P2.5, LU-P2.6, LU-P3.3); encouraging efforts to put jobs near housing and housing near transit (i.e., Policies LU-P3.1, LU-P3.2, LU-P5.2, LU-P7.2, and LU-P7.5); evaluating reductions to parking minimums (i.e., Action LU-A5.1); and the requirement for all projects to support these VMT-reducing efforts (i.e., Policy LU-P3.4). Many of these policies and actions overlap with the CAPCOA handbook strategies listed previously.

Summary

The proposed General Plan will guide long-range development over a broad geographic area; therefore, it is not possible to predict with precision which strategies may be implemented at specific locations and at specific times. Further, the CCTA Model does not readily account for many of these measures, particularly those related to site-specific physical improvements, pedestrian and bicycle facilities, and ongoing operational or incentive programs. For those reasons, the potential effects of the TDM and VMT reduction strategies outlined in this discussion are not included in the VMT estimates presented in this analysis.

Since there is considerable uncertainty about the feasibility of any particular TDM measure for any specific future development project, as well as uncertainty about the timing of implementation and about whether a program to fund off-site mitigation options might be implemented at some point in the future, it would not be possible to conclude that adding the strategies listed would definitely bring the future EIR Study Area VMT down to the 15 percent threshold level. Because the proposed project would exceed the countywide average total VMT per service population under both the baseline and cumulative scenarios, impacts are considered significant and unavoidable.

Proposed CAP

The proposed CAP is a policy document that aims to reduce GHG emissions in the unincorporated county and provide guidance to the County for adapting to changing climate conditions; therefore, it is consistent with the intent of CEQA Guidelines Section 15064.3(b) to reduce VMT. As shown in Table 4, *Proportion of GHG Emissions, 2005 to 2019*, of the proposed CAP, transportation-related emissions have accounted for the highest share of emissions across all sectors and all years in the unincorporated county. To address this, the proposed CAP includes the "Clean Transportation Network" group of strategies, which includes Strategy TR-1 that provides actions for reducing VMT. As discussed under Impact Discussion 5.16-1, this strategy supports the County's existing plans to ensure accessibility and safety for alternative transportation options, in addition to a suite of other actions that reflect OPR and CAPCOA guidance. These also include actions consistent with proposed General Plan policies and actions like establishing a micro-mobility program per Policy TR-P5.10,

maximizing jobs and housing near transit similar to Policies LU-P3.3 and LU-P7.2, and encouraging "last mile" connections for transit per Policy TR-P1.9.

The proposed CAP would therefore result in beneficial impacts to VMT and no environmental impacts would occur.

Level of Significance Before Mitigation: Impact 5.16-2 would be potentially significant.

Mitigation Measures

No feasible mitigation measures are available. As discussed previously, the proposed project is a programmatic General Plan and CAP and considerable uncertainty exists with regard to the implementation and feasibility of mitigation for individual development projects. A combination of the County's TDM program, proposed General Plan policies and actions, proposed CAP strategies and actions, as well as additional mitigation strategies may mitigate impacts to less-than-significant for future development projects under the proposed project. However, while such measures are likely to result in less-than-significant VMT impacts when considered at an individual project level, they cannot be guaranteed and are not possible to fully quantify or mitigate at a countywide level as part of this programmatic analysis, particularly given the reduction needed to reach the applied significance threshold. As a result, the VMT impacts associated with the proposed project would be considered significant and unavoidable.

Level of Significance After Mitigation: Impact 5.16-2 would be significant and unavoidable.

Impact 5.16-3: Implementation of the proposed project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). [Threshold T-3]

Proposed General Plan

While adoption of the proposed General Plan would not directly result in any physical development projects or construction activities, implementation of the policy framework in the proposed General Plan could result in transportation improvement projects. While these types of improvements could be installed and implemented under the proposed General Plan, they would be intended to facilitate movement throughout the EIR Study Area and accommodate existing local development, and would therefore be unlikely to introduce conflicts, hazards, or incompatible uses.

All subsequent development under the proposed General Plan, including residential, commercial, and industrial development, in addition to transportation improvement projects, would be subject to and designed in accordance with County standards and specifications that address potential design hazards, including sight distance, driveway placement, and signage and striping. Additionally, any new transportation facilities or improvements to such facilities associated with subsequent projects would be constructed based on industry design standards and best practices consistent with the County Ordinance Code, building design and inspection requirements, and any applicable community-based transportation plans. The County's evaluation of projects'

access and circulation will incorporate analysis with respect to County standards for vehicular level of service and queueing, as well as for service to pedestrians, bicyclists, and transit users.

Furthermore, the proposed Transportation Element provides additional guidance to help design a sustainable and comprehensive transportation system that is safe and accessible for all users and modes of travel. For example, the policies and actions included under Goal TR-2 provide several strategies for reducing roadway hazards and improving safety. Policy TR-P2.1 directs the County to pursue the priorities in the County's Vision Zero program and Policy TR-P2.2 advises careful site planning and prioritization of safety for active modes of travel. Action TR-A2.3 would require coordination with the California Public Utilities Commission and railroads to design and implement projects that address safety concerns and conflicts from at-grade rail crossings. In compliance with the County's standards and the proposed General Plan policies and actions, development under the proposed General Plan would result in a less-than-significant impact to transportation hazards.

Proposed CAP

The proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions. While the proposed CAP would not directly result in any new development, the implementation of its actions, which may indirectly result in new development, would be subject to the same County standards that apply to development under the proposed General Plan, as applicable. The proposed CAP does not include any strategies or actions that would otherwise result in roadway hazards, so impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.16-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.16-3 would be less than significant.

Impact 5.16-4: Development associated with the proposed project would not result in inadequate emergency access. [Threshold T-3]

Proposed General Plan

The implementation of transportation improvements supported by the proposed project would include modifications to the existing transportation network that could potentially impact emergency access response times. These modifications, along with land use changes under the proposed General Plan, could result in increased vehicle delays at intersections as well as along roadway segments. Although the project would reduce VMT overall, as described in Impact Discussion 5.16-2, increased delays at intersections could result in an increase in emergency response times. However, future development under the proposed project would be subject to the requirements contained in the County Ordinance Code, which includes requirements for emergency access, and would be reviewed by public safety officials for compliance with applicable safety, fire, and building codes as part of the County's entitlement process.

Additionally, the proposed General Plan includes several policies and actions that would help to ensure that roadways accommodate emergency access, including Policy TR-P4.10 in the proposed Transportation Element, which would ensure that roadway infrastructure within new development areas balances the accommodation of emergency response vehicles with the day-to-day safety of vulnerable road users. Additionally, policies and actions in the proposed Health and Safety Element that apply to evacuation routes would have similar impacts on emergency access routes. These include Policy HS-P7.3, which requires new development within a Very High Fire Hazard Severity Zone in the Local Responsibility Area (LRA) or State Responsibility Area (SRA) or in the Wildland-Urban Interface (WUI), and on a residential parcel with evacuation constraints, to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with evacuation plans during the construction period; this policy would ensure that temporary roadway impairments are addressed within traffic control plans. In addition, Policy HS-P13.1 requires new development in High and Very High Fire Hazard Severity Zones, the WUI, and 100-year or 200-year floodplains to have access to at least two emergency evacuation routes. Action HS-A13.1 would direct the County to partner with cities and public protection agencies to delineate evacuation routes, identifying their capacity, safety, and viability under different hazard scenarios, as well as emergency vehicle routes for disaster response, and where possible, alternate routes where congestion or road failure could occur.

Furthermore, emergency vehicles are able to use vehicle preemption technology (where possible) and sirens to reduce their response times, and they would continue to do so regardless of any roadway capacity modification. Locations that would experience a reduction in vehicular roadway capacity would undergo individual operations analyses to assess the potential impacts to emergency vehicle access, and mitigation measures would be developed as needed to reduce potentially significant impacts.

Implementation of the proposed General Plan goals, policies, and actions identified would address emergency access by considering access routes, developing and updating emergency response plans, and incorporating emergency access considerations in the design of future street improvements Therefore, implementation of the proposed General Plan would not result in inadequate emergency access. Impacts would be less than significant.

Proposed CAP

The proposed CAP is a policy document that aims to reduce GHG emissions and provide guidance to the County for adapting to changing climate conditions. Therefore, the proposed CAP would not have any direct impacts on emergency access. Strategy NI-2 of the proposed CAP provides an action that would require any new development in a Very High Fire Hazard Severity Zone, WUI, or SRA (as mapped in the Contra Costa County General Plan or most recently updated CAL FIRE maps) to prepare, maintain, and regularly implement a fire protection plan. Such development must meet or exceed State requirements for development in fire-prone areas, including for ingress and egress, water supply, and firefighting equipment access. This action supports the policies and actions in the proposed Health and Safety Element and would further ensure proper emergency access for the purpose of firefighting. As such, the proposed CAP would have potentially beneficial impacts on emergency access and no significant impacts would occur.

Level of Significance Before Mitigation: Impact 5.16-4 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.16-4 would be less than significant.

5.16.5 Cumulative Impacts

The context of the impact evaluation described in Impact Discussions 5.16-1 through 5.16-4 are in the cumulative context of the region. As described in these discussions, impacts related to bus transit, bicycle and pedestrian facilities, and roadways in the EIR Study Area would be less than significant, as would those associated with emergency access (with mitigation) and roadway hazards. Most impacts would require project-specific evaluation to determine whether the project's design is consistent with relevant plans, ordinances, and policies; would create or increase roadway hazards; or result in inadequate emergency access. Additionally, projects would be evaluated under the County's Guidelines for assessing VMT impacts, during which it would be determined whether such projects would require VMT analysis or be screened out under the Guideline criteria. However, as determined under Impact 5.18-2, impacts associated with per capita regional VMT from the projected development under the proposed General Plan would be significant and unavoidable. Therefore, the impact on VMT would be cumulatively considerable.

5.16.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.16-1, 5.16-3, and 5.16-4.

Without mitigation, the following impacts would be **potentially significant**:

- **Impact 5.16-2:** Implementation of the proposed project would conflict or be inconsistent with CEQA Guidelines Section 15064.3 (b).

5.16.7 Mitigation Measures

Impact 5.16-2

No mitigation measures are feasible. While site-specific mitigation measures are available to reduce VMT impacts of future projects, the uncertainty regarding the timing and feasibility of implementing these measures at the scale of the proposed project prevents a finding of less-than-significant impacts.

5.16.8 Level of Significance After Mitigation

Impact 5.16-2

Impacts would be significant and unavoidable, as described previously. The potential reductions in VMT from the measures discussed above cannot be accurately quantified and therefore impacts regarding VMT would remain significant and unavoidable.

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5. Environmental Analysis
TRANSPORTATION

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5.17 UTILITIES AND SERVICE SYSTEMS

This section describes the regulatory framework and existing conditions of the Environmental Impact Report (EIR) Study Area and evaluates the potential utilities and service system impacts from adopting and implementing the proposed project and from future development and activities that could occur under the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project. This section covers the following utilities and service systems:

- Wastewater Treatment and Collection
- Water Supply and Distribution Systems
- Storm Drainage Systems
- Solid Waste
- Energy Infrastructure

Impacts associated with the following public service and utility issues are addressed in other sections of this Draft EIR:

- Groundwater, water quality, floodzones, levees, and sea-level rise – Section 5.10, *Hydrology and Water Quality*
- Electricity and natural gas infrastructure – Section 5.6, *Energy*

5.17.1 Wastewater Treatment and Collection

5.17.1.1 ENVIRONMENTAL SETTING

Regulatory Background

Federal

Clean Water Act

The Clean Water Act (CWA) of 1972 regulates the discharge of pollutants into watersheds throughout the nation. Under the CWA, the United States Environmental Protection Agency (USEPA) sets wastewater standards and makes it unlawful to discharge pollution from a point source into any navigable waterway without obtaining a permit. Point sources include any conveyances, such as pipes and man-made drainage channels, from which pollutants may be discharged.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established as part of the CWA to regulate municipal and industrial discharges to surface waters of the United States. Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify effluent and receiving water limits on allowable connections and/or mass emissions of pollutants contained in the discharge; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required

actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities. Wastewater discharge is regulated under the NPDES permit program for direct discharges into receiving waters and by the National Pretreatment Program for indirect discharges to a wastewater (sewage) treatment facility.

Pretreatment standards are pollutant discharge limits which apply to industrial users. The USEPA established the National Pretreatment Program and applies three types of standards: (1) general and specific prohibitions; (2) categorical pretreatment standards; and (3) local limits. All three types of standards can be enforced by the USEPA, the State, or local government and are typically expressed as numeric limits, narrative prohibitions, and best management practices (BMPs).

State

State Water Resources Control Board: General Waste Discharge Requirements

On May 2, 2006, the State Water Resources Control Board (SWRCB) adopted Statewide General Waste Discharge Requirements (Order No. 2006-0003) and a monitoring and reporting program (Order No. WQ-2013-0058-EXEC) for all publicly owned sanitary sewer collection systems in California with more than one mile of sewer pipes. All public agencies that own or operate a sanitary sewer system comprising more than one mile of pipes or sewer lines which convey wastewater to a publicly owned treatment facility must apply for coverage under this order. The order provides a consistent statewide approach to reducing sanitary sewer overflows (SSO).

The Waste Discharge Requirements require public agencies that own or operate sanitary sewer systems to develop and implement Sewer System Management Plans (SSMPs) and report all SSOs to the SWRCB's online reporting system. The SWRCB has delegated authority to nine Regional Water Quality Control Boards (RWQCBs) to enforce these requirements within their regions. Contra Costa County is under the jurisdiction of two RWQCBs: the San Francisco Bay RWQCB (Region 2) and the Central Valley RWQCB (Region 5). The RWQCBs are charged with conducting inspections of permitted discharges and monitoring permit compliance.

The SSMP evaluates existing sewer collection systems and provides a framework for minimizing the frequency and impact of SSOs. The SSMP includes an overflow emergency response plan; a fats, oil, and grease control program; scheduled inspections and condition assessment; design and construction standards; capacity assessment and management; and a monitoring program.

In addition, the RWQCBs issue NPDES permits to wastewater treatment plants (WWTPs) within the county. Each NPDES permit has limits on discharge volumes and effluent concentrations, which includes a sampling and monitoring program. RWQCBs are also charged with conducting inspections of permitted discharges and monitoring permit compliance.

Sanitary District Act of 1923

The Sanitary District Act of 1923 (California Health and Safety Code Section 6400 et seq.) authorizes the formation of sanitation districts and enables the sanitation districts to construct, operate, and maintain facilities for the collection, treatment, and disposal of wastewater.

On-site Wastewater Treatment Systems

The SWRCB implements regulations to reduce the impact of wastewater sources on groundwater quality in accordance with State law (Assembly Bill [AB] 885) through its water quality control policy for siting, design, operation, and maintenance of on-site wastewater treatment systems (OWTS) (i.e., septic systems) (Resolution No. 2012-0032). This policy establishes a statewide, risk-based, tiered approach for the regulation and management of OWTS installations and replacements that have affected, or will affect, groundwater or surface water to a degree that makes it unfit for drinking water or other uses or causes a health or public nuisance condition. RWQCBs incorporated the standards established in the OWTS policy or standards that are more protective of the environment and public health into their water quality control plans. Implementation is overseen by the SWRCB, RWQCBs, and local agencies (e.g., county and city departments and independent districts).

Local

NPDES Permits for Wastewater Treatment Plants

Waste discharge requirements for effluent discharged from various wastewater treatment facilities within the county are set forth in permits issued by RWQCBs—the San Francisco Bay RWQCB for facilities in the western portion of the county and the Central Valley RWQCB for facilities in the eastern portion of the county. The permitted discharge volumes and wastewater concentrations are listed in each NPDES permit for the WWTPs within the county and can be found on the websites of the two RWQCBs.

Municipal Service Reviews

Government Code Section 56430 requires the Contra Costa Local Agency Formation Commission (CCLAFCO) conduct municipal service reviews (MSRs) for services provided in the county. The purpose is to evaluate the current services and potential impacts to those services from projected future growth. The MSR is a prerequisite for a sphere of influence determination. CCLAFCO conducts MSRs on a countywide basis for water and wastewater as well as MSRs for West Contra Costa County, Central Contra Costa County, and East Contra Costa County. CCLAFCO also has prepared a MSR for Byron Sanitary District.

Contra Costa County Environmental Health Division

The Land Use Program under the Environmental Health Division is responsible for reviewing building plans for new structures or alterations and changes of use for existing structures on properties that have septic systems or are proposing to use a septic system. There are two categories of plan reviews. The general building plan review focuses on the location of a structure and whether it will meet the required setbacks from a septic system and will not interfere with the use of an approved sewage disposal system, reserve area, or disposal field area. The building plan review focuses on the proposed means of sewage disposal for structures. This process requires an applicant to prepare a building plan review application and submit required fees for review. The site and soil evaluation, septic system design review, and septic construction is a separate process (Contra Costa Environmental Health Division 2023).

Contra Costa County Ordinance Code

Chapter 420-6 – Sewage Collection and Disposal

Chapter 420-6 of the County Ordinance Code, *Sewage Collection and Disposal*, requires all structures in which plumbing fixtures are installed to be connected to either a sanitary sewer system or a septic system. Article 420-6.8 includes design standards, construction permits, and permit procedures for the design of OWTS. The Environmental Health Division reviews building plans for new structures and alterations and changes of use for properties with septic systems.

Chapter 916-4 – Sewers

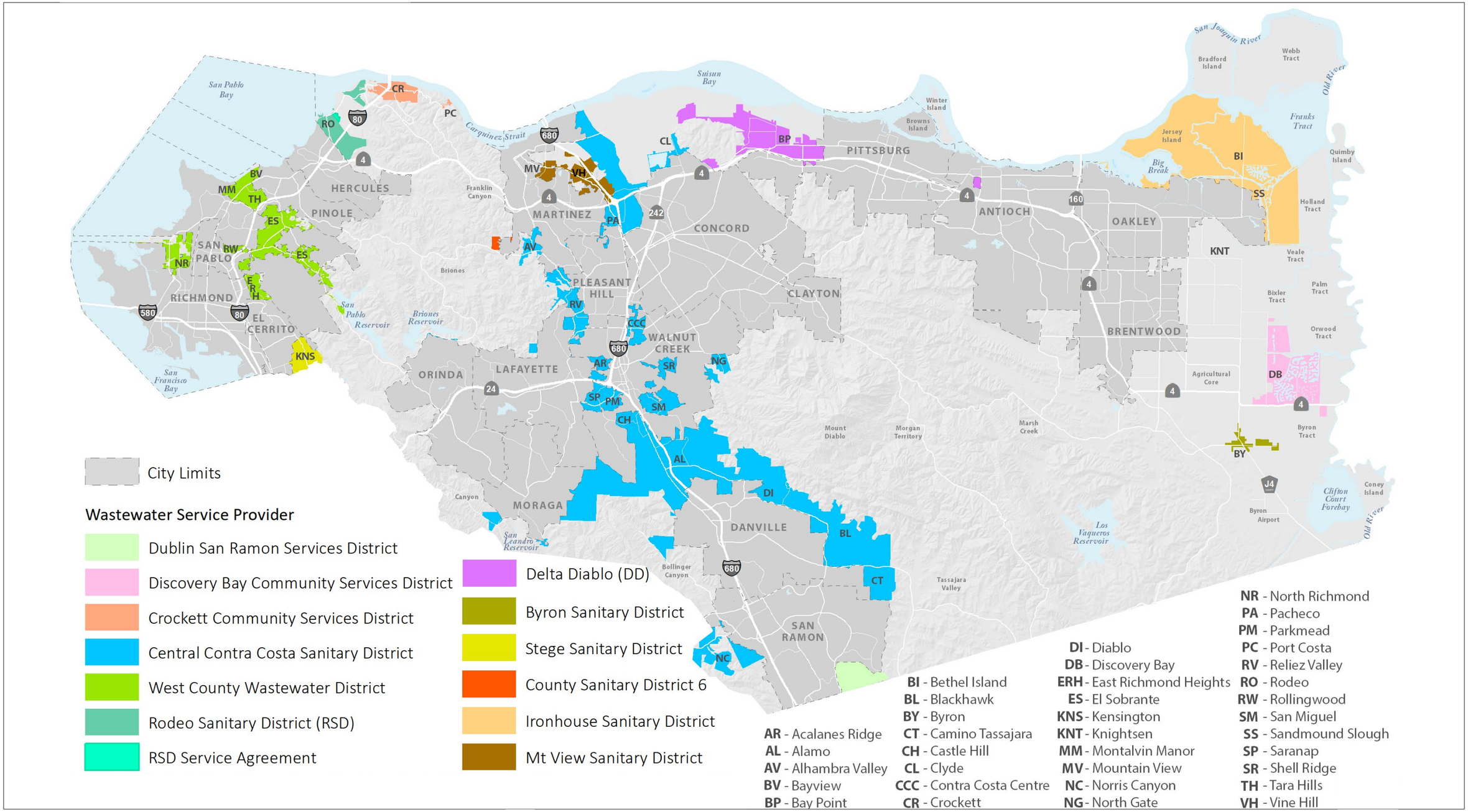
Chapter 916-4, *Sewers*, states that sewerage to a subdivision shall be provided by a public sanitation district or utility with adequate plant and facilities. If it is not feasible to construct, install, or connect to a sewerage system, a request for an alternate means of sewer disposal may be submitted to Environmental Health. The chapter further states that in those areas served by a sanitation district under the jurisdiction of the County, all sewage treatment facilities and appurtenances shall be constructed in accordance with the requirements and inspection of the Public Works Department subsequent to payment of all required fees and charges.

Existing Conditions

There are many wastewater treatment and collection services throughout Contra Costa County. Wastewater services are provided through 20 agencies: 7 cities and 13 sanitary districts. (CCLAFCO 2014). The largest wastewater service providers are the Central Contra Costa Sanitary District (CCCSD), which serves most of the Central County, and the West County Wastewater District, which serves much of West County. There are many smaller special districts that provide wastewater service in unincorporated Contra Costa County. Rural areas rely on OWTS to treat sewage on-site.

Figure 5.17-1, *Wastewater Service Districts,* shows the various wastewater service districts in the unincorporated county. Table 5.17-1 summarizes the 20 wastewater providers within the county, including the cities that are their own wastewater service providers.

UTILITIES AND SERVICE SYSTEMS



Source: Contra Costa Local Agency Formation Commission (LAFCo), 2023.

0 3.5
Scale (Miles)

Figure 5.17-1
Wastewater Service Districts

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Communities on Septic Systems

Generally, rural portions of the county rely on private septic systems because there are no close regional sewer services. Areas where septic systems are the predominant means of sewage disposal include:

- Alhambra Valley
- Briones
- Knightsen
- Unincorporated Brentwood
- Tassajara Valley
- Unincorporated South and Southwest County
- Ayers Ranch in unincorporated Concord
- Marsk Creek corridor east of Clayton

There previously was a moratorium on the construction of septic systems within certain areas of the county due to poor soil conditions, steep slopes and hills, and proximity to reservoirs. The areas included the former San Pablo Sanitary District, the Rodeo Creek watershed drainage area, the unincorporated area of Canyon, the area serviced by Sanitation District 15 on Bethel Island, the Muir Oaks-Vine Hill Way area of Martinez, and the El Toyonal area of Orinda. This moratorium has since been rescinded because new site and soil testing criteria and OWTS design standards are sufficient to protect water quality and public health. All applications in these areas will be reviewed on a case-by-case basis to see if the required criteria and standards can be met. In some rural areas of the county, OWTSs may not be permitted because of shallow groundwater tables, high nitrate concentrations in groundwater, and/or soil with poor percolation capacity.

Wastewater Treatment

Wastewater treatment facility providers in the western portion of Contra Costa County are within the jurisdiction of the San Francisco Bay RWQCB and wastewater treatment plants in the eastern portion of the county are under the jurisdiction of the Central Valley RWQCB. Table 5.17-2 provides a list of the WWTPs in the county. The largest WWTPs are Contral Contra Costa County Sanitary District (CCCSD), which serves most of the central portion of the county, and East Bay Municipal Utility District (EBMUD), which serves Alameda County and Kensington, El Cerrito, and portions of Richmond in Contra Costa County. All of the WWTPs currently have residual capacity to serve the increases in population with future growth in the county. In addition, water conservation efforts, Code requirements for low flow plumbing fixtures, and decreases in per capita water demands will reduce the wastewater generation rates and enable the WWTPs to accommodate future growth.

5. Environmental Analysis
UTILITIES AND SERVICE SYSTEMS

Table 5.17-1 Summary of Wastewater Collection Providers

Wastewater Collection Provider	Population Served[1]	Communities Served	Wastewater Discharge Location
Cities			
Antioch	105,117	Antioch	Delta Diablo Wastewater Treatment Plant (WWTP)
Brentwood	53,278	Brentwood	Brentwood WWTP
Concord	134,095	Concord, Clayton, and Ayers Ranch	Flows into Central Contra Costa Sanitary District system
Hercules	24,060	Hercules	Pinole-Hercules WWTP shared with City of Pinole
Pinole	6,500	Pinole	Pinole-Hercules WWTP shared with City of Hercules
Pittsburg	64,294	Pittsburg	Delta Diablo WWTP
Richmond	68,000	Richmond	City of Richmond WWTP
Special Sanitation Districts			
Bryon Sanitary District	995	Byron	Bryon Sanitary District WWTP
Central Contra Costa Sanitary District	467,500	Central Contra Costa County	Central Contra Costa Sanitary District WWTP
County Sanitation District No. 6	100	Stonehurst Subdivision within City of Martinez (Alhambra Valley)	Septic tank systems, community disposal system with sand filter, UV disinfection and leach field disposal
Crockett Community Services District	3,284	Crockett and Port Costa	C&H Sugar-Crocket/Philip F. Meads WWTP and Port Costa WWTP
Delta Diablo Special District	190,567	Antioch, Pittsburg, and Bay Point	Delta Diablo WWTP and Recycled Water Facility
Dublin San Ramon Services District	78,327	Multi-county district serving Alameda and Contra Costa Counties, all locations within Dublin	Dublin San Ramon WWTP
East Bay Municipal Utility District	678,107 (includes Alameda County)	Parts of Contra Costa County and Alameda County	EBMUD WWTP
Ironhouse Sanitary District	37,569	Oakley, Bethel Island, Holland Tract, Hotchkiss Tract, Dutch Slough, and Sand Mound Slough	Water Recycling Facility – effluent used for agricultural irrigation and discharge into San Joaquin River
Mt. View Sanitary District	18,253	Portion of Martinez and adjacent unincorporated areas	Mt. View Sanitary District WWTP
Rodeo Sanitary District	8,000	Tormey and Rodeo	Rodeo Sanitary District WWTP
Stege Sanitary District	33,000	El Cerrito, Kensington, and portion of Richmond	EBMUD WWTP
Town of Discovery Bay Community Services District	13,500	Discovery Bay	Two WWTPs

Wastewater Collection Provider	Population Served[1]	Communities Served	Wastewater Discharge Location
West County Wastewater District	92,976	San Pablo, portion of Richmond, portion of Pinole. and other unincorporated areas	West County Wastewater District WWTP

Source: CCLAFCO 2014
[1] Population numbers are from 2014 LAFCO report and do not reflect current values but are provided to give an idea of the size of the wastewater collection system.

Table 5.17-2 Wastewater Treatment Facilities within Contra Costa County

Wastewater Treatment Provider	Treatment Plant Capacity[1]	Average Flow Rate	Residual Capacity	Primary Disposal Method
Bryon Sanitary District WWTP	96,000 GPD	60,800 GPD	35,200 GPD	Discharge into percolation/evaporation ponds and land application
Central Contra Costa Sanitary District WWTP	53.8 MGD	34.2 MGD	19.6 MGD	Discharge to Suisun Bay with 5% of effluent diverted to its Water Recycling Plant
Crockett Community Services District - Port Costa WWTP	33,000 GPD	15,000 GPD	18,000 GPD	Discharge to Carquinez Strait
Crockett Community Services District – Joint Use C&H Sugar Company and Crockett Community Services District WWTP	35 MGD for cooling water through Outfall 1; 1.8 MGD for wastewater through Outfall 2	16 MGD for Outfall 1; 0.93 MGD for Outfall 2	19 MGD for Outfall 1: 0.87 MGD for Outfall 2	Discharge to Carquinez Strait
Delta Diablo WWTP	16.5 MGD	13 MGD	3.5 MGD	50% of effluent discharged to its Recycled Water Facility; 50% of effluent discharged to New York Slough
Dublin San Ramon WWTP	20.2 MGD plus Zone 7 reject water; proposed increase to 23.9 MGD	11.5 MGD	8.7-12.4 MGD	Discharge into Lower San Francisco Bay and Alamo Canal
East Bay Municipal Utility District WWTP	120 MGD	63 MGD	57 MGD	Discharge to Central San Francisco Bay via deep water outfall; about 2.3 MGD of effluent becomes recycled water as part of the East Bayshore Recycled Water Project
Ironhouse Sanitary District WWTP	4.3 MGD	2.78 MGD	1.52 MGD	Discharge into San Joaquin River through a 550-foot outfall with 16 diffusers
Mt. View Sanitary District WWTP	3.2 MGD	1.3 MGD	1.9 MGD	Advanced secondary treatment and discharge into constructed wetland and then Peyton Slough, a tributary to Carquinez Strait
Rodeo Sanitary District WWTP	1.14 MGD	0.6 MGD	0.54 MGD	Discharge into San Pablo Bay
Town of Discovery Bay Community Services District WWTP	2.35 MGD	1.8 MGD	0.55 MGD	Two WWTPs with secondary treatment and discharge into Old River
West County Wastewater District WWTP	12.5 MGD	8.3 MGD	4.2 MGD	Treated wastewater sent to Richmond Advanced Recycled Expansion (RARE) facility and the North Richmond Water Reclamation Plan for recycling or is pumped to the Richmond WWTP for dichlorination and discharge into Central San Francisco Bay through a deep water outfall

Source: CCLAFCO 2014 and various WWTP NPDES permits.
*MGD – million gallons per day, GPD = gallons per day

5.17.1.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project would normally have a significant effect on the environment if the project would:

U-1 Require or result in the relocation or construction of new or expanded wastewater treatment facilities, the construction or relocation of which could cause significant environmental effects.

U-2 Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

5.17.1.3 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies, and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to wastewater treatment and collection systems. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- ***Policy LU-P5.1:*** *Allow development only where requisite community services, facilities, and infrastructure can be provided.*
- **Policy LU-P5.2**: Consider the potential locations of planned public infrastructure projects (e.g., transit lines, major roadway, drainage improvements) when evaluating land use applications and deny applications that would interfere with implementation of such projects.
- **Policy LU-P6.2:** Work collaboratively with cities and special districts (e.g., East Bay Regional Park District and utility providers) to address regional issues of mutual concern and coordinate on decisions and actions that affect residents of nearby unincorporated areas.

Conservation, Open Space, and Working Lands Element

- **COS-P7.2**: Partner with water and wastewater providers, GSAs, irrigation districts, and private well owners to increase participation in water conservation programs countywide.
- **COS-P7.9**: Support wastewater reclamation and reuse programs that maximize use of recycled water.

Public Facilities and Services Element

- ***PFS-A1.3****: Notify and request comments from utility service providers on development applications.*
- **PFS-A1.4**: Upon each update to the Housing Element, perform an analysis of infrastructure needs and deficiencies in DUCs and explore funding mechanisms that could make extension of needed services and facilities feasible.

- **PFS-P2.2**: Pursuant to SB 1000, as part of the County's annual budgeting process, prioritize investments in public facilities, infrastructure, and services that benefit Impacted Communities and respond to their needs, particularly those needs identified in their Community Profiles.
- **PFS-P2.3**: Coordinate with service providers (e.g., water, wastewater, transit, and recreation districts) and advocate for proper planning, maintenance, and implementation of services and infrastructure to ensure efficient service delivery in Impacted Communities.
- ***PFS-P3.1:*** *Coordinate LAFCO, infrastructure and service providers, and cities to ensure infrastructure and services are reliable and provided in a cost-effective and equitable manner.*
- ***PFS-P3.2****: Require new development to pay its fair share of public improvement costs for infrastructure, facilities, maintenance, and services based on the proportionate cost of serving the project.*
- ***PFS-P3.3****: When new development cannot adequately be served by existing infrastructure and facilities or through the County's impact fee programs, require a public facilities financing plan that identifies the necessary public improvements and establishes an equitable plan to pay for and develop the required improvements.*
- ***PFS-P3.4****: When communities request levels of County services that exceed the countywide standard, require creation of (or annexation into) a County Service Area, community facilities district, or equivalent mechanism to fund the supplemental service costs. Allow exceptions for enhanced services in Impacted Communities if alternative funding sources can be identified.*
- **PFS-P3.5**: *When new development needs ongoing infrastructure maintenance that exceeds County standards or existing funding levels, require creation of or annexation to a County service area, community facilities district, benefit assessment district, or other special funding unit to pay for those maintenance activities.*
- **PFS-P3.6**: When adopting, amending, and imposing impact fees, community benefits agreements, and developer exactions, consider the effects of such fees and exactions upon individual project economics, housing supply, economic development, and the County's broad goals and objectives related to overall community development. If gap funding can be identified, consider fee reductions or exemptions for projects in Impacted Communities that are consistent with the community objectives identified in their Community Profile.
- **PFS-A3.1**: Implement an equitable and standardized approach to property tax sharing with cities during the annexation process.
- **PFS-A3.2:** *Regularly update development impact fees to ensure new development pays its fair share of infrastructure and service costs.*
- ***PFS-P4.6****: Require new development to demonstrate the availability of a safe, sanitary, and environmentally sound wastewater treatment system with adequate capacity.*

Proposed CAP Strategies and Actions

The proposed Climate Action Plan (CAP) provides estimates of greenhouse gas (GHG) emissions in the wastewater sector and accounts for the increase in emissions with implementation of the proposed General Plan. It also provides reduction strategies to minimize GHG emissions through water conservation, water-efficient retrofits, water-wise landscaping, and graywater and recycled water programs. Any reduction in indoor

water demand would also result in a reduction in wastewater generation rates. There are a few specific actions that pertain to the wastewater sector, described herein.

Strategy DR-1: Reduce indoor and outdoor water use.

Strategy DR-1 Actions:

- Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and recycled water, where available. (COS-P7.1)
- Require homes and businesses to install water-efficient fixtures at time of retrofit activities, in accordance with the California Building Standards Code.
- Continue to enforce the Model Water Efficient Landscaping Ordinance and encourage the use of native and drought-tolerant landscaping for exempt residential and commercial landscapes through partnership with local and regional water agencies and other organizations.
- Partner with water and wastewater service providers, Groundwater Sustainability Agencies, irrigation districts, and private well owners to increase participation in water conservation programs countywide. (COS-P7.2)
- Facilitate offering of BayREN water bill savings programs through eligible community water providers.
- Encourage the installation of graywater and rainwater catchment systems, particularly for new construction, as feasible for wastewater infrastructure. Reduce regulatory barriers for these systems and explore creating incentives for installing these systems in new and existing buildings.
- Identify opportunities for graywater use in public spaces and implement them as feasible.
- Promote the installation of composting toilets at appropriate County facilities in locations without wastewater service.

5.17.1.4 ENVIRONMENTAL IMPACTS

Impact 5.17-1: Sewer and wastewater treatment systems are adequate to meet project requirements. [Thresholds U-1 and U-2]

Proposed General Plan

Wastewater generation associated with the proposed General Plan was calculated using the 2045 horizon-year growth projections shown in Table 3-2 in Chapter 3, *Project Description*, of this Draft EIR. The following generation rates were used (CCCSD 2010):

- Single-family residential: 195 gallons per day per dwelling unit (gpd/du)
- Multi-family residential: 105 gpd/du
- Commercial/Office: 0.1 gpd/square foot (sf)
- Industrial: 1,000 gpd/acre

These wastewater generation rates are conservative because new construction will be required to comply with the latest CALGreen Building Code, which typically results in a 20-percent reduction in water use and therefore wastewater generation (see Section 5.17.2.1 for more information about the CALGreen Building Code). The estimated increase in wastewater generation from 2020 to 2045 is shown on Table 5.17-3.

Table 5.17-3 Wastewater Demand Increase: Proposed General Plan

Category	No. of DUs or Square Feet	Wastewater Generation Factor (gpd/du or gpd/sf)	Increase in Wastewater Demand (gpd)
Single-Family Residential	7,100	195	1,384,500
Multi-Family Residential	16,100	105	1,690,500
Commercial/Office	1,200,000	0.1	120,000
Industrial	5,000,000	0.023[1]	114,784
Total			**3,309,784**

[1]Conversion from 1,000 gpd/acre to 0.023 gpd/sf
Sources: CCCSD, 2010; PlaceWorks, 2023.

The projected increase in wastewater discharge resulting from implementation of the proposed General Plan is estimated to be 3.31 MGD. This increase would be distributed throughout the entire county such that the level of service would not substantially impact any individual wastewater collection provider or wastewater treatment facility. This projection also assumes that all new construction is connected to an existing or future sewer collection system, but some of the projected growth may be in rural areas where there is no available sewer connection and the residences would be on individual OTWSs. However, the Land Use Element (Policy LU-P5.1) states that new development should be focused in areas where infrastructure and services, such as sewer collection and wastewater treatment, can be provided. Also, as shown in Table 5.17-2, the wastewater treatment facilities within the county have a residual capacity of 99.7 MGD and therefore would be able to accommodate the projected growth.

In addition, many of the wastewater treatment and wastewater collection providers have capital improvement programs that will be fully implemented by 2045. EBMUD has a $2.8 billion, five-year capital improvement program, which includes:

- Upgrades to its wastewater treatment facility
- Replacement and rehabilitation of aging pipelines and sewage collections systems
- Rebuilding neighborhood reservoirs
- Modernizing wastewater facilities

CCCSD's $1.1 billion, 10-year capital improvement program includes improvements to its collection system, treatment facility, and expansion of recycled water facilities. Delta Diablo and the other wastewater collection and treatment providers have similar plans to expand wastewater treatment facility capacities and/or rehabilitate and replace aging sewer infrastructure.

In addition, all wastewater collection providers require new development projects to pay a sewer connection fee as well as monthly wastewater collection fees, which are used to continually upgrade components of the wastewater collection and treatment system through the capital improvement plan programs.

The proposed Land Use Element and Public Facilities and Services Element contain policies and actions that require local planning and development decisions to consider impacts to wastewater services. Policy LU-P5.1 states that development should only occur where community infrastructure can be provided. Policy PFS-P3.1 promotes cooperation between LAFCO and service providers to ensure that infrastructure and services can be provided. And Action PFS-A3.2 requires regular updates to development impact fees to ensure that new development pays its fair share of infrastructure and service costs.

Therefore, implementation of the proposed General Plan would not require the construction or expansion of wastewater treatment facilities within the county. Adherence to the County Ordinance Code requirements, continued water conservation efforts, and implementation of the proposed General Plan policies and actions would reduce wastewater generation rates over time, and therefore impacts associated with the sewer collection and wastewater treatment systems would be less than significant.

Proposed CAP

The proposed CAP provides estimates of GHG emissions in the water and wastewater sectors and accounts for the increase in emissions with implementation of the proposed General Plan. It also provides reduction strategies to minimize GHG emissions through water conservation, water-efficient retrofits, water-wise landscaping, and graywater and recycled water programs. Any reduction in indoor water demand would also result in a reduction in wastewater generation rates. Therefore, the proposed CAP would not require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which would cause significant environmental effects, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.17-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.17-1 would be less than significant.

5.17.1.5 CUMULATIVE IMPACTS

The area considered for cumulative impacts is all of Contra Costa County, including the EIR Study Area and incorporated parts of the county. Cumulative projects could cause significant impacts if they either exceeded wastewater treatment requirements of RWQCBs with jurisdiction in the county or generated wastewater exceeding the combined capacities of wastewater treatment facilities. Projects developed in the county are required to comply with the existing wastewater collection and treatment regulations discussed under Impact 5.17-1. The total increase in wastewater generation resulting from implementation of the proposed General Plan is estimated at about 3.3 MGD (see Table 5.17-3). As discussed in Impact 5.17-1, the wastewater treatments facilities throughout the county have enough capacity for the 2045 projected flow rates.

Where infrastructure is available, all projects are required to connect to a wastewater collection system in one of the various districts identified in Table 5.17-1. Each of the districts maintains master service plans that include accommodations for future growth and collect development impact fees during the building permit

process to fund expansion and rehabilitation of the existing infrastructure. The County and RWQCB monitor the wastewater treatment facilities through their operating permits and will require action to expand treatment services if needed to address growth. The County may restrict or deny permits in areas that have no wastewater service until the expansion occurs, or it is demonstrated to be available at the time of building occupancy. As the County coordinates with the service providers as part of the development review process, and there are mechanisms in place to both monitor the capacity of the systems and to expand them should need arise, cumulative impacts would be less than cumulatively considerable.

5.17.1.6 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.17.1.7 MITIGATION MEASURES

No mitigation measures are required.

5.17.1.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

5.17.2 Water Supply and Distribution Systems

5.17.2.1 ENVIRONMENTAL SETTING

Regulatory Background

Federal

Safe Drinking Water Act

The Safe Drinking Water Act, the principal federal law intended to ensure safe drinking water to the public, was enacted in 1974 and has been amended several times. The Safe Drinking Water Act authorizes the USEPA to set national standards for drinking water, called the National Primary Drinking Water Regulations, to protect against both naturally occurring and human-made contaminants. These standards set enforceable maximum contaminant levels in drinking water and require all water providers in the United States to treat water to remove contaminants, except for private wells serving fewer than 25 people. In California, the SWRCB conducts most enforcement activities. If a water system does not meet standards, it is the water supplier's responsibility to notify its customers.

America's Water Infrastructure Act of 2018

America's Water Infrastructure Act (AWIA), signed into law on October 23, 2018, authorizes federal funding for water infrastructure projects; expands water storage capabilities; assists local communities in complying with the Safe Drinking Water Act and CWA; reduces flooding risks for rural, western, and coastal communities; and addresses significant water infrastructure needs in tribal communities. Additionally, AWIA requires that drinking water systems that serve more than 3,300 people develop or update risk assessments and emergency response

plans. Risk assessments and emergency response plans must be certified by the USEPA within the deadline specified by the AWIA.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, which was passed in California in 1969 and amended in 2013, is the basic water quality control law for California. Under this Act, the SWRCB has authority over State water rights and water quality policy. This Act divided the state into nine regional basins, each under the jurisdiction of a RWQCB to oversee water quality on a day-to-day basis at the local and regional level. RWQCBs engage in a number of water quality functions in their respective regions. RWQCBs regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. As noted in Section 5.17.1, Contra Costa County is within the jurisdiction of the San Francisco Bay RWQCB (Region 2) and Central Valley RWQCB (Region 5).

California's Urban Water Management Planning Act

The California Urban Water Management Planning Act and Section 10620 of the California Water Code require all urban water suppliers in California that provide water for municipal purposes to more than 3,000 customers or supply more than 3,000 acre-feet[1] of water annually to prepare and adopt an urban water management plan (UWMP) and update it every five years. This Act is intended to support conservation and efficient use of urban water supplies at the local level. The UWMP describes the service area of the water supplier; the projected 20-year water supply and demand for the service area in normal years, dry years and multiple dry years; and water recycling strategies.

Senate Bills 610 and 221

Senate Bill (SB) 610 and SB 221 amended State law to ensure better coordination between local water supply and land use decisions and confirm that there is an adequate water supply for new development. Specific projects are required to prepare a water supply assessment (WSA). The WSA is composed of information regarding existing and forecasted water demands as well as information pertaining to available water supplies for the new development. The following projects that are subject to the California Environmental Quality Act (CEQA) are required to prepare a WSA:

- Residential developments consisting of more than 500 dwelling units.
- Shopping centers or business establishments employing more than 1,000 persons or having more than 500,000 square feet of floor space.
- Commercial office buildings employing more than 1,000 persons or having more than 250,000 square feet of floor space.
- Hotels or motels, or both, having more than 500 rooms.
- Industrial, manufacturing, or processing plants or industrial parks planned to employ more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

[1] 1 acre-foot is the amount of water required to cover 1 acre of ground (43,560 square feet) to a depth of 1 foot.

- Mixed-use projects that include one or more of the projects specified above.
- Projects that would demand an amount of water equivalent to, or greater than, the amount of water required for 500 dwelling units.

SB 221 requires written verification that there is sufficient water supply available for new residential subdivisions that include over 500 dwelling units. The verification must be provided before commencement of construction for the project.

Sustainable Groundwater Management Act of 2014

On September 16, 2014, a three-bill legislative package was signed into law, composed of AB 1739, SB 1168, and SB 1319, collectively known as the Sustainable Groundwater Management Act. The Governor's signing message states "a central feature of these bills is the recognition that groundwater management in California is best accomplished locally." Under the roadmap laid out by the legislation, local and regional authorities in medium and high priority groundwater basins must form groundwater sustainability agencies that oversee the preparation and implementation of groundwater sustainability plans.

Water Conservation in Landscaping Act of 2006

The Water Conservation in Landscaping Act of 2006 (AB 1881) required the California Department of Water Resources (DWR) to update the State Model Water Efficient Landscape Ordinance (MWELO) by 2009. The State's model ordinance was issued on October 8, 2009. Under AB 1881, cities and counties were required to adopt a State-updated model landscape water conservation ordinance by January 31, 2010, or to adopt a different ordinance that is at least as effective in conserving water as the updated MWELO.

The MWELO was revised In July 2015 via Executive Order B-29-15 to address the ongoing drought and to build resiliency for future droughts. The 2015 revisions to the MWELO increased water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, and on-site stormwater capture and by limiting the portion of landscapes that can be covered in turf.

California Building Code: CALGreen

The California Building Standards Commission adopted the California Green Building Standards Code, also known as CALGreen (California Code of Regulations, Part 11 of Title 24). CALGreen establishes building standards for sustainable site development, including water efficiency and water conservation measures. New residential and non-residential development must install water-conserving plumbing fixtures and fittings and comply with the MWELO for outdoor water use. The building efficiency standards are enforced through the local building permit process. The mandatory provisions of CALGreen became effective January 1, 2011. The County has regularly adopted each new CALGreen update under the Contra Costa County Ordinance Code, Title 7, *Building Regulations*. CALGreen is updated on a three-year cycle; the latest Code is dated 2022.

Recycled Water Regulations

To establish uniform requirements for the use of recycled water, the SWRCB adopted a statewide Recycled Water Policy on February 3, 2009. The purpose of the policy is to increase the use of recycled water from municipal wastewater sources and streamline permitting for recycled water projects. The Recycled Water Policy

was recently amended in 2018 and includes numeric goals for the use of recycled water, goals to encourage recycled water use in groundwater over-drafted areas and coastal areas, and annual reporting requirements for the volume of recycled water produced and used as well as the volume of wastewater treated and discharged (SWRCB 2023).

Two State agencies have primary responsibility for regulating the application and use of recycled water: the California Department of Public Health and the SWRCB. Planning and implementing water recycling projects entail numerous interactions with these regulatory agencies prior to project approval. The California Department of Public Health establishes the statewide effluent bacteriological and treatment reliability standards for recycled water uses in California Code of Regulations, Title 22, Division 4, Environmental Health. Title 22 establishes standards for each general type of use based on the potential for human contact with recycled water. The SWRCB is responsible for establishing and enforcing requirements for the application and use of recycled water within California. Permits are required from the SWRCB for water recycling operations. As part of the permit application process, applicants are required to demonstrate that the proposed recycled water operation would not exceed the ground and surface water quality objectives in the basin management plan and that the operation is compliant with Title 22 requirements.

California Health and Safety Code

A portion of the California Health and Safety Code is dedicated to water issues, including testing and maintenance of backflow prevention devices, coloring of pipes carrying recycled water, and programs addressing cross-connection control by water users.

California Plumbing Code

The California Plumbing Code was adopted as part of the California Building Code (CBC) and specifies technical standards of design, materials, workmanship, and maintenance for plumbing systems. The CBC is updated on a three-year cycle; the latest edition is dated 2022 and is effective as of January 1, 2023. One of the purposes of the Plumbing Code is to prevent conflicting plumbing codes within local jurisdictions. Among many topics covered in the Code are water fixtures, potable and non-potable water systems, and recycled water systems. The County adopts the latest 2022 California Plumbing Code under the Contra Costa County Ordinance Code, Title 7, *Building Regulations*, Division 78, *Plumbing Code*.

California Water Code

The California Water Code states that the water resources of the State must be put to beneficial use and that waste or unreasonable use of water should be prevented. The Water Code contains statutes regarding various water-related issues, including flood control, water rights, riparian rights, water quality, and the formation of municipal water districts.

Water Conservation Act of 2009

The Water Conservation Act of 2009 (SB X7-7) requires all water suppliers to increase water use efficiency. The legislation set an overall goal of reducing per capita water use by 20 percent by 2020, with an interim goal of a 10 percent reduction in per capita water use by 2015. Effective in 2016, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for State water grants

or loans. SB X7-7 requires that urban water retail suppliers determine baseline water use and set reduction targets according to specified standards.

2018 Water Conservation Legislation

In 2018, the California Legislature enacted two policy bills (SB 606 and AB 1668) to establish long-term improvements in water conservation and drought planning to adapt to climate change and longer and more intense droughts in California. Pursuant to this legislation, DWR and the SWRCB will develop new standards for:

- Indoor residential water use
- Outdoor residential water use
- Commercial, industrial, and institutional (CII) water use for landscape irrigation with dedicated meters
- Water loss

Urban water suppliers will be required to stay within annual water budgets, based on their standards for their service areas, and to calculate and report their urban water use objectives in an annual water use report. For example, the bills define a daily standard for indoor residential use of 55 gallons per person until 2025, when it decreases to 52.5 gallons; it further decreases to 50 gallons by 2030. The legislation also includes changes to UWMP preparation requirements.

Mandatory Water Conservation

Following the declaration of a state of emergency on July 15, 2014, due to drought conditions, the SWRCB adopted Resolution No. 2014-0038 for emergency regulation of statewide water conservation efforts. These regulations, which went into effect on August 1, 2014, were intended to reduce outdoor urban water use and have all California households voluntarily reduce their water consumption by 20 percent. Water companies with 3,000 or more service connections were required to report monthly water consumption to the SWRCB. Most recently, Executive Order N-7-22 was issued by the State in March 2022 to adopt emergency water conservation regulations that include the following:

- Each urban water supplier shall submit to DWR an annual water supply and demand assessment.
- Urban water suppliers shall implement Level 2 restrictions from their water shortage contingency plans for water savings up to 20 percent.
- A ban on watering nonfunctional turf shall be implemented in the commercial, industrial, and institutional sectors.
- A county, city, or public agency shall not approve a permit for a new groundwater well in a basin that is classified as medium or high priority under the Sustainable Groundwater Management Act without obtaining written verification from the Groundwater Sustainability Agency, and shall determine that the proposed extraction would not interfere with existing nearby wells and would not likely cause subsidence. This does not apply to domestic wells that provide less than 2 acre-feet per year (AFY) of groundwater or wells that exclusively provide groundwater to public water supply systems.

SWRCB Division of Drinking Water

The California Division of Drinking Water regulates public water systems within California; oversees water recycling projects; permits water treatment devices; and supports and promotes water system security. The Division of Financial Assistance provides funding opportunities for drinking water system improvements; provides support for small water systems and for improving technical, managerial, and financial capacity; and certifies drinking water treatment and distribution operators. The Field Operations Branch of the Division of Drinking Water is responsible for the enforcement of the federal and California Safe Drinking Water Acts and the regulatory oversight of approximately 7,500 public water systems to ensure the delivery of safe drinking water to all Californians. In this capacity, Field Operations Branch staff perform field inspections, issue operating permits, review plans and specifications for new facilities, take enforcement actions for noncompliance with laws and regulations, review water quality monitoring results, and support and promote water system security.

Local

Contra Costa County Water Agency

The Contra Costa County Water Agency (CCCWA) is part of the Department of Conservation and Development and advises the Board of Supervisors on water policy that may affect the county. The CCCWA advocates on local, state, and federal levels to protect and improve the water quality, flows, and overall health of the Sacramento-San Joaquin Delta. East Contra Costa County covers a large area within the southwestern portion of the Delta, which is the sole water source for half of the county. The CCCWA is proactive in developing new strategies to export and store water during high flow periods in the Delta so that the current levels of exports during drier months can be decreased. These strategies and others are documented in the Delta Water Platform, which was adopted by the Board of Supervisors in May 2014. The CCCWA is also a member of the Delta Counties Coalition, which also includes Solano County, Yolo County, San Joaquin County, and Sacramento County. The Delta Counties Coalition advocates on behalf of local government, counties, and the four million people who live throughout the Delta region to protect and improve water quantity and quality in the Delta region (CCCWA 2023).

Urban Water Management Plans

UWMPs were prepared in 2020 by the water purveyors serving the county. These are important long-term planning documents for each water purveyor and are updated every five years in accordance with the California Water Code. Each UWMP assesses water supplies against expected water demands over a 30-year planning horizon and outlines actions to deal with shortages that may occur. Each UWMP contains a water shortage contingency plan to ensure that there is sufficient water supply during drought conditions.

East Contra Costa County Integrated Regional Water Management Plan

The East Contra Costa County (ECCC) Integrated Regional Water Management (IRWM) planning effort is a collaborative process to support all aspects of regional water management in East Contra Costa County. This includes integrated planning for water supply, water quality, watershed and habitat protection, and flood and stormwater management. Members include the cities of Antioch, Brentwood, and Pittsburg, several water purveyors that serve the area, and Contra Costa County. In 2019, the members of the ECCC IRWM prepared

an update to the 2013 IRWM Plan to include a discussion of the regional impacts of climate change to water supply and demand. Many of the water suppliers in the region are dependent on surface water supplies from the Delta. There is concern that climate change related to sea-level rise and extreme weather can impact access and the quality of surface water supplies from the Delta. Also, changes in seasonal runoff patterns can further reduce water supply reliability (East County Water Management Association 2019).

Groundwater Sustainability Plans

There are eight groundwater basins within the county. However, five of the basins are designated as very low priority because they have very low groundwater usage, mainly from private groundwater wells. Three of the groundwater basins are designated as medium priority basins and require the preparation and submittal of groundwater sustainability plans (GSPs) to DWR. A groundwater sustainability agency (GSA) can submit an alternative plan instead of a GSP if the basin has operated within its sustainable yield for at least ten years. The Zone 7 Water Agency submitted an alternative plan for the Livermore Valley Groundwater Basin, which was approved by DWR. EBMUD and the City of Hayward submitted a GSP to DWR for the East Bay Plain groundwater basin. The East Contra Costa groundwater basin has seven GSAs, which are Bryon-Bethany Irrigation District, City of Antioch, Diablo Water District, East Contra Costa Irrigation District, Contra Costa County, Town of Discovery Bay Community Services District, and the City of Brentwood. They collectively submitted a GSP for this basin to DWR, which is currently under review.

Contra Costa County Ordinance Code

Chapter 414-4 – Water Supply

Chapter 414-4, *Water Supply,* states that any person proposing to subdivide or develop a property needing water for domestic purposes shall demonstrate an approved water supply and obtain written approval from the Health Officer for the development. Any person proposing to install, construct, and/or operate a small water system, which is defined as two to 199 service connections, must submit an application to the Health Officer, who will make the necessary investigation and/or site evaluation for the proposed system. All small water systems shall meet the primary and secondary drinking water standards and shall be of sufficient supply to meet the requirements of all users under maximum demand conditions. Individual water systems, which are defined as a single-family residence, two single-family residences on one parcel, or one structure serving less than 25 persons, shall conduct water quality testing and well sustainable yield or pumping tests and submit the results to the Health Officer for review. Article 414-4.8, *Wells,* requires every person proposing to dig, drill, bore, or drill a water well or perform repair or alteration activities on an existing well to obtain a permit from the Health Officer and have the work conducted by a licensed well driller. Permit application and inspection fees are collected pursuant to adopted resolutions of the Board of Supervisors. Chapter 414-6 contains requirements for transporting water for domestic use and requires a permit application and associated fees to be submitted to the Health Officer.

Chapter 82-26 - Water Efficient Landscapes

Chapter 82-26, *Water Efficient Landscapes,* adopts the MWELO issued by the DWR. The MWELO provides for the conservation and protection of water resources through the efficient use of irrigation water; appropriate use of plant materials suitable for climate and location; and regular maintenance of landscaped areas. The

MWELO applies to all new construction projects with a landscape area equal to or greater than 500 square feet and rehabilitated landscape projects with an area equal to or greater than 2,500 square feet. A landscape application must be submitted to the County during the planning review process and must include a water-efficient landscape worksheet, landscape design plan, irrigation design plan, grading plan, and soil management report, as well as an application fee.

Chapter 82-30 - Dual Water Systems

Chapter 82-30, *Dual Water Systems*, establishes procedures for County cooperation with public water and wastewater agencies to incorporate dual water systems, where feasible, in the development of projects. A dual water system is defined as two separate distribution systems: one to convey water suitable for all potable needs, and one system for non-potable needs, which could be untreated surface or groundwater and/or recycled water. All development applications filed with the County that are 1) in a dual water system area, 2) greater than 15 acres, or 3) greater than 120,000 square feet of floor space are referred to the local water or wastewater agency for determination and designation of its requirements for dual water systems.

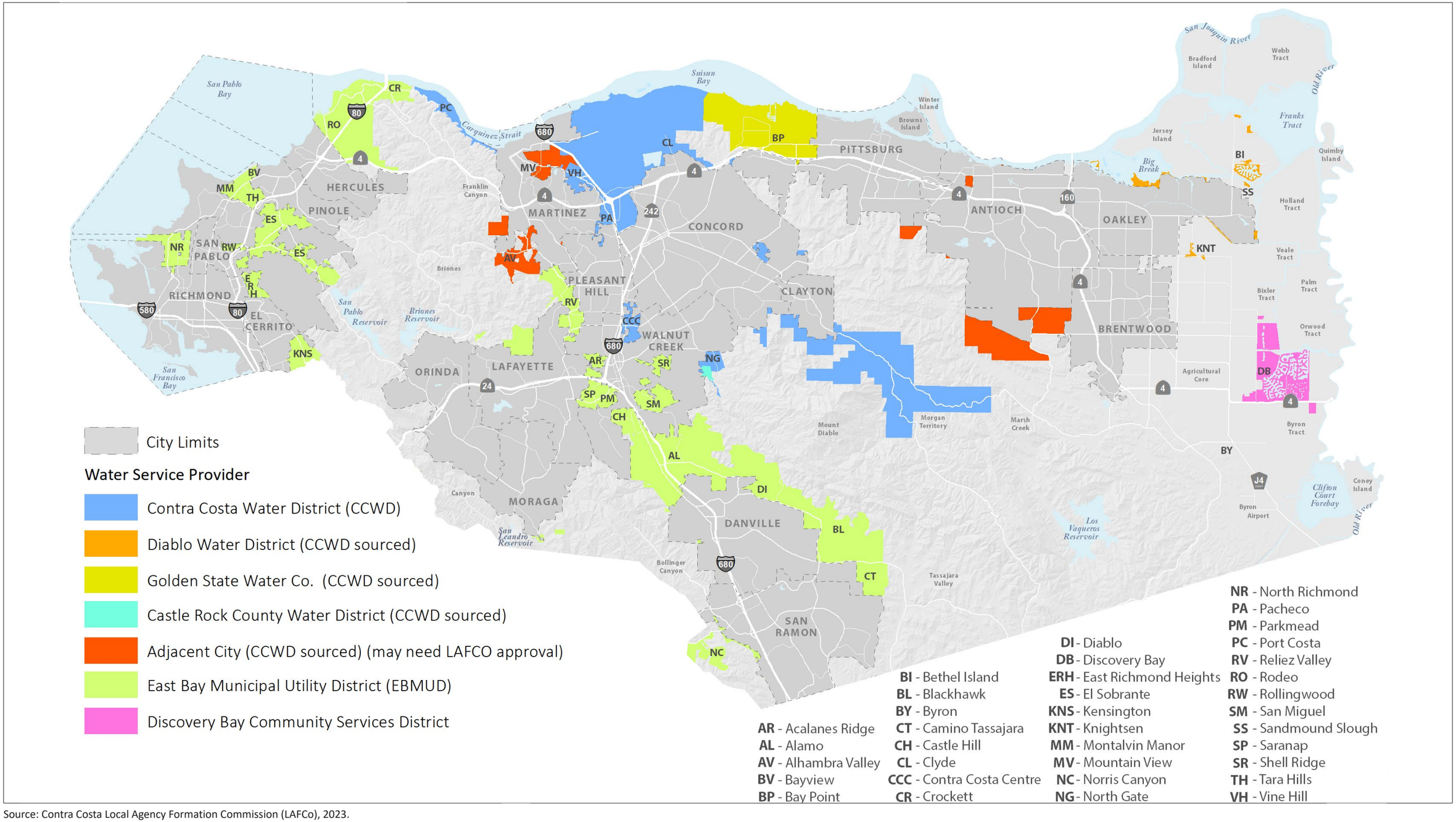
Existing Conditions

The primary source of water for residents and businesses within the county is surface water from the Sacramento-San Joaquin Delta and the Mokelumne River watershed. Some of the cities supplement their surface water supplies with local groundwater extraction, which typically is only 10 to 18 percent of the total supply. There are 14 water purveyors that provide water to residents and businesses within the county, as listed in Table 5.17-4; the water districts covering the unincorporated area are shown on Figure 5.17-2, *Water Service Districts*. The two major water providers are EBMUD and Contra Costa Water District (CCWD). Recycled water is also used by several cities and water agencies for landscape irrigation.

EBMUD's water supply is primarily from the Mokelumne River watershed in the Sierra Nevada. It is conveyed via reservoirs and aqueducts to the EBMUD service area, which includes most of Alameda County and the western portion of Contra Costa County. EBMUD's service area within the county includes the Lamorinda area, portions of Walnut Creek and Pleasant Hill, and all of San Ramon Valley. EBMUD also supplements its water supply with Central Valley Project (CVP) surface water obtained from the US Bureau of Reclamation. The surface water is treated in one of six EBMUD water treatment plants before distribution to its customers.

In the 2020 UWMP, EBMUD projected a population increase of 79,000 between 2020 and 2040 for the portion of EBMUD's service area within Contra Costa County, which exceeds the horizon-year projection of the proposed General Plan that shows a population increase of 65,600 within the entire county by 2045.

CCWD is both a wholesale and retail water provider and provides both treated and untreated water to approximately 500,000 customers in the county. CCWD obtains its surface water from the CVP, and the Contra Costa Canal is a CVP facility. Wholesale untreated water is provided to the cities of Antioch, Pittsburg, and Martinez and Diablo Water District via the Contra Costa Canal. Untreated CVP water that is sold to Diablo Water District is treated at the Randall-Bold Water Treatment Plant, which is owned jointly with CCWD. CCWD also provides wholesale treated water to the cities of Brentwood, Antioch, and the Golden State Water Company (a private company serving Bay Point).



Source: Contra Costa Local Agency Formation Commission (LAFCo), 2023.

0 3.5
Scale (Miles)

Figure 5.17-2
Water Service Districts

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Retail untreated water is provided to major industrial customers, such as oil refineries, as well as irrigation customers. Additionally, CCWD provides retail treated water services to approximately 205,000 residents in Clayton, Clyde, Concord, Pacheco, Port Costa and portions of Martinez, Pleasant Hill, and Walnut Creek.

CCWD stores the surface water in four reservoirs and operates three water treatment plants. CCWD also owns and operates a water distribution system to provide treated water to its retail customers within central Contra Costa County. CCWD does not use groundwater to meet any of its demands.

Two of the water purveyors, Byron Bethany Irrigation District and East Contra Costa Irrigation District, primarily provide agricultural irrigation water to customers within the county. Byron Bethany Irrigation District does not provide water for municipal use; however, East Contra Costa Irrigation District provides a limited amount of untreated water to ten rural customers within the county.

Four cities within the county (Antioch, Brentwood, Martinez, and Pittsburg) have their own water distribution systems and receive surface water from CCWD. Brentwood and Pittsburg also pump groundwater to supplement their surface water supplies. Antioch, Brentwood, and Pittsburg use recycled water within their cities for landscape irrigation.

Some rural areas of the county rely on groundwater extracted from private wells as the primary source of drinking water. The Contra Costa County Environmental Health Division is responsible for permitting new wells. If a community area is not within the service area of a water purveyor, well water is allowed if all setback requirements and appropriate testing are met, and the well permit is approved. Bacteriological and chemical testing are required after completion of the well to ensure that the water meets primary and secondary drinking water standards.

Table 5.17-4 Water Providers Serving Contra Costa County

Community	Water Purveyor	Water Sources	2045 Water Demand (AFY)	2045 Water Supply (AFY)	Surplus Water – Normal Year (AFY)
Cities					
Antioch	City of Antioch	SW from CCWD, RW	15,412	21,096	5,684
Brentwood	City of Brentwood	SW from CCWD, GW, RW	16,118	21,961	5,843
Martinez	City of Martinez	SW from CCWD	3,984	3,984	0
Pittsburg	City of Pittsburg	SW from CCWD, GW, RW	15,056	16,405	1,349
Water Districts					
Primarily agricultural customers in county	Byron Bethany Irrigation District	SW	No delivery of municipal water within Contra Costa County		
Rural Walnut Creek and surrounding area	Castle Rock County Water District	Untreated SW from CCWD	ND – only 55 rural service connections		
Retail and wholesale customers in county	CCWD	Untreated and treated SW from Delta, RW	175,900	184,400	8,500
Willow Mobile Home Park on Bethel Island	Community Service Area M-28	GW	Being phased out and will be annexed into CCWD and Diablo Water District service areas		
Northeast county, Oakley, Knightsen, Bethel Island	Diablo Water District	SW from CCWD, GW	4,580[1]	5,395[1]	815[1]
Dublin and Dougherty Valley in San Ramon	Dublin San Ramon Services District	SW purchased from Zone 7 Water Agency, RW	17,078	17,078	0

Table 5.17-4 Water Providers Serving Contra Costa County

Community	Water Purveyor	Water Sources	2045 Water Demand (AFY)	2045 Water Supply (AFY)	Surplus Water – Normal Year (AFY)
Alameda County and western Contra Costa County	EBMUD	SW from Mokelumne River watershed, RW	234,110	>234,110	Surplus not quantified
Agricultural customers – Brentwood, portions of Oakley and Antioch, Knightsen and unincorporated areas to the south of Brentwood	East Contra Costa Irrigation District	SW from Indian Slough on Old River	ND - only 10 non-agricultural customers that are provided with untreated water		
Bay Point	Golden State Water Company	SW purchased form CCWD, GW	1,899	1,899	0
Discovery Bay	Town of Discovery Bay Community Services District	GW	7,645	7,672	27
TOTAL					**22,218**

Source PlaceWorks 2023, various 2020 UWMPs.
AFY = acre-feet per year ND = No Data
GW = Local Groundwater SW = Surface Water
RW = Recycled Water
[1]Numbers for year 2040, 2020 UWMP does not project beyond 2040

5.17.2.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

U-3 Require or result in the construction of new water facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

U-4 Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.

5.17.2.3 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies, and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to water supply and distribution systems. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- ***Policy LU-P5.1:*** *Allow development only where requisite community services, facilities, and infrastructure can be provided.*

- **Policy LU-P5.2**: Consider the potential locations of planned public infrastructure projects (e.g., transit lines, major roadway, drainage improvements) when evaluating land use applications and deny applications that would interfere with implementation of such projects.
- **Policy LU-P6.2**: Work collaboratively with cities and special districts (e.g., East Bay Regional Park District and utility providers) to address regional issues of mutual concern and coordinate on decisions and actions that affect residents of nearby unincorporated areas.

Conservation, Open Space, and Working Lands Element

- ***COS-P7.1:*** *Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and recycled water, where available.*
- **COS-P7.2**: Partner with water and wastewater providers, GSAs, irrigation districts, and private well owners to increase participation in water conservation programs countywide.
- **COS-P7.3**: *Consult applicable GSPs and local GSAs before making land use decisions that could impact groundwater resources.*
- **COS-P7.4:** *For projects in areas with a water service provider, require proof of adequate on-site groundwater during the development review process. In addition to requiring compliance with the County's well regulations related to water quality and flow rate, require documentation that the proposed project will not have a significant cumulative impact on the aquifer or negatively affect development that already relies on the same groundwater supply.*
- **COS-P7.5**: *Prohibit new development that would create or significantly aggravate groundwater overdraft conditions, land subsidence, or other "undesirable results," as defined in Section 354.26 of the California Water Code.*
- **COS-P7.6:** Support multipurpose water storage options that incorporate water supply, flood control, surface and groundwater storage, groundwater management, and ecosystem components.
- ***COS-P7.7****: Require landscaping for new development to be drought-tolerant, filter and retain runoff, and support flood management, and groundwater recharge.*
- **COS-P7.8**: Promote installation of drought-tolerant green infrastructure, including street trees in landscaped public areas.
- **COS-P7.9**: Support wastewater reclamation and reuse programs that maximize use of recycled water.
- **COS-A7.1**: Update County Ordinance Code Chapter 414-4, *Water Supply*, to be consistent with adopted GSPs.
- **COS-A7.2**: *For areas that are not covered by an adopted GSP, amend the County Ordinance Code to include sustainability indicators, defined by the SGMA, as a guide for development to maintain and protect the quality and quantity of groundwater supplies within the county.*
- **COS-A7.3**: Evaluate the feasibility and necessity of amending the County Ordinance Code to promote rainwater harvesting, installation of dual plumbing, and water reuse.
- **COS-A7.4**: Publish information on the DCD website about alternative sources of water for irrigation and other non-potable needs, such as greywater, rainwater, air conditioning condensation, and foundation drainage.

- **COS-P8.1**: Protect public water supplies by denying applications for projects that would introduce significant new pollution sources in groundwater basins and watersheds feeding major reservoirs, and support efforts to acquire and permanently protect reservoir watersheds.
- **COS-P8.5**: Require groundwater monitoring programs for all large-scale commercial and industrial facilities using wells and prohibit discharge of hazardous materials through injection wells.

Public Facilities and Services Element

- **PFS-A1.3**: *Notify and request comments from utility service providers on development applications.*
- **PFS-A1.4**: Upon each update to the Housing Element, perform an analysis of infrastructure needs and deficiencies in DUCs and explore funding mechanisms that could make extension of needed services and facilities feasible.
- **PFS-P2.2**: Pursuant to SB 1000, as part of the County's annual budgeting process, prioritize investments in public facilities, infrastructure, and services that benefit Impacted Communities and respond to their needs, particularly those needs identified in their Community Profiles.
- **PFS-P2.3**: Coordinate with service providers (e.g., water, wastewater, transit, and recreation districts) and advocate for proper planning, maintenance, and implementation of services and infrastructure to ensure efficient service delivery in Impacted Communities.
- ***PFS-P3.1:*** *Coordinate LAFCO, infrastructure and service providers, and cities to ensure infrastructure and services are reliable and provided in a cost-effective and equitable manner.*
- ***PFS-P3.2****: Require new development to pay its fair share of public improvement costs for infrastructure, facilities, maintenance, and services based on the proportionate cost of serving the project.*
- ***PFS-P3.3****: When new development cannot adequately be served by existing infrastructure and facilities or through the County's impact fee programs, require a public facilities financing plan that identifies the necessary public improvements and establishes an equitable plan to pay for and develop the required improvements.*
- ***PFS-P3.4****: When communities request levels of County services that exceed the countywide standard, require creation of (or annexation into) a County Service Area, community facilities district, or equivalent mechanism to fund the supplemental service costs. Allow exceptions for enhanced services in Impacted Communities if alternative funding sources can be identified.*
- **PFS-P3.5**: *When new development needs ongoing infrastructure maintenance that exceeds County standards or existing funding levels, require creation of or annexation to a County service area, community facilities district, benefit assessment district, or other special funding unit to pay for those maintenance activities.*
- **PFS-P3.6**: When adopting, amending, and imposing impact fees, community benefits agreements, and developer exactions, consider the effects of such fees and exactions upon individual project economics, housing supply, economic development, and the County's broad goals and objectives related to overall community development. If gap funding can be identified, consider fee reductions or exemptions for projects in Impacted Communities that are consistent with the community objectives identified in their Community Profile.
- **PFS-A3.1**: Implement an equitable and standardized approach to property tax sharing with cities during the annexation process.

- ***PFS-A3.2:*** *Regularly update development impact fees to ensure new development pays its fair share of infrastructure and service costs.*
- **PFS-P4.1:** Support the goal of regional self-sufficiency as part of new water system planning efforts, where all regions in the state are required to implement a variety of local water supply options and institute conservation and reuse programs to reduce reliance on exports from the Delta.
- **PFS-P4.2:** Encourage water service providers to require separate service connections and meters for recycled water use or where large quantities of water are used for special purposes, such as landscape irrigation.
- **PFS-P4.3:** Support the State Water Resources Control Board's efforts to eliminate small public water systems in new development. Allow such systems only for projects that cannot feasibly be connected to a public water system.
- **PFS-P4.4:** Partner with water service providers to ensure continuity of service and provide financial relief to Impacted Communities if prices rise during drought conditions.
- ***PFS-P4.5****: Require new development to demonstrate the availability of a safe, sanitary, and environmentally sound water delivery system with adequate capacity.*
- **PFS-P4.7:** Support CCWD's planned Phase 2 Expansion of Los Vaqueros Reservoir**.**

Proposed CAP Strategies and Actions

The proposed CAP provides reduction strategies to minimize GHG emissions through water conservation, water-efficient retrofits, water-wise landscaping, and graywater and recycled water programs. Strategies and actions that pertain to water supply and conservation are listed here:

Strategy DR-1: Reduce indoor and outdoor water use.

Strategy DR-1 Actions:

- Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and recycled water, where available. (COS-P7.1)
- Require homes and businesses to install water-efficient fixtures at time of retrofit activities, in accordance with the California Building Standards Code.
- Continue to enforce the Model Water Efficient Landscaping Ordinance and encourage the use of native and drought-tolerant landscaping for exempt residential and commercial landscapes through partnership with local and regional water agencies and other organizations.
- Partner with water and wastewater service providers, Groundwater Sustainability Agencies, irrigation districts, and private well owners to increase participation in water conservation programs countywide. (COS-P7.2)
- Facilitate offering of BayREN water bill savings programs through eligible community water providers.

- Encourage the installation of graywater and rainwater catchment systems, particularly for new construction, as feasible for wastewater infrastructure. Reduce regulatory barriers for these systems and explore creating incentives for installing these systems in new and existing buildings.
- Identify opportunities for graywater use in public spaces and implement them as feasible.
- Promote the installation of composting toilets at appropriate County facilities in locations without wastewater service.

.**Strategy DR-2:** Ensure sustainable and diverse water supplies.

Strategy DR-2 Actions:

- Encourage Contra Costa Health to work with Groundwater Sustainability Agencies to ensure that new well permit applications are in accordance with County ordinances and State construction standards and require a hydrogeological evaluation in areas with known water shortages to ensure that the sustainable yield goals can be met.
- Require new development to demonstrate the availability of a safe, sanitary, and environmentally sound water delivery and wastewater treatment systems with adequate capacity. (PFS-P4.5, PFS-P4.6)
- Discourage new development that may reasonably lead to groundwater overdraft, subsidence, or other negative impacts, or which may reasonably depend on the import of unsustainable quantities of water from outside the county.
- Require the use of permeable surfaces for new or reconstructed hardscaped areas.
- In coordination with Groundwater Sustainability Agencies, expand opportunities for groundwater recharge.
- Work with water suppliers to expand recycled water systems as feasible, including considering additional treatment to allow for additional recycled water uses.

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated county, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-neutral fuels.

Strategy BE-2 Action:

- Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy. (COS-A14.6)
- Require replacement and new water heaters and space heating and cooling systems to be electric if the building electric panel has sufficient capacity in accordance with BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6. (COS-P14.10)
- Create a detailed roadmap to convert existing homes and businesses to use low- or zero-carbon appliances. The roadmap should include steps to support converting buildings to rely on low- or zero-carbon energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants. (COS-A14.7)

- Evaluate options for incentivizing and requiring additions and alterations to be energy efficient and to achieve the lowest feasible levels of GHG emissions, including upgrades to the building electric panel, as needed. (COS-P14.8)
- Ensure County-led and supported retrofit programs incentivize and prioritize conversion of buildings built before 1980 and emphasize assistance to owners of properties that are home to very low-, low-, and moderate- income residents and/or in Impacted Communities, as permitted by available funding. (COS-A14.9)
- Explore opportunities, in collaboration with partner agencies, to create new incentives or publicize existing ones to support updating existing buildings to achieve the lowest feasible levels of GHG emissions.
- Work to continue to obtain funding with partners such as BayREN and MCE to implement a program or programs to provide reduced-cost or free energy-efficiency and zero-carbon retrofits to local small businesses and households earning less than the area median income, in support of the Contra Costa County Asthma Initiative, Contra Costa County Weatherization Program, similar County programs, other nonprofit partners, and other health equity efforts for Impacted Communities. Support the use of low-emitting materials, including paints and carpeting, in retrofits to improve indoor air quality.
- In partnership with MCE and BayREN, continue to support voluntary home and business energy efficiency retrofits, including all-electric measures.
- Facilitate participation by homes and businesses in demand response programs.
- Continue to conduct energy and water tracking activities, audits, and upgrades of County facilities, including conversion of feasible County facilities to all-electric space and water heating.
- Advocate for modifications to the federal Weatherization Assistance Program that expand eligible measures to include whole building clean energy improvements, such as wall insulation, duct sealing, electric panel upgrades, electric heat pumps, and related measures. Advocate for an increase in the income eligibility limits for the Weatherization Assistance Program.
- Implement requirements for cool roofs and light-colored, nonreflective permeable paving materials as part of retrofit, repair, and replacement activities, using recycled materials or other materials with low embedded carbon as feasible and as established by the Building Standards Code.

5.17.2.4 ENVIRONMENTAL IMPACTS

Impact 5.17-2: Water supply and delivery systems are adequate to meet project requirements. [Threshold U-3]

Proposed General Plan

Both EBMUD and CCWD, who are the largest water purveyors in the county, project population increases within the county that exceed the horizon-year projection of the proposed General Plan. In the EBMUD 2020 UWMP, a population increase of 79,000 is projected within the county's service area between 2020 and 2040, and the CCWD 2020 UWMP projects a population increase of 236,110 within its service area between 2020

and 2045. These numbers are much greater than the projected horizon-year population increase of 65,600 from the proposed General Plan.

CCWD states in the 2020 UWMP that they have sufficient supplies to meet water demands as both a wholesale and retail water provider for normal, single-dry, and multiple-dry years through 2045. CCWD prepares an Annual Water Supply and Demand Assessment to identify potential shortages and recommend response actions, as appropriate. The District evaluates weather data, CVP allocation estimates, and demand projections to determine what demand management measures should be implemented. The 2020 UWMP also includes a Water Shortage Contingency Plan that would be implemented in the event of a drought and/or CVP water supply reductions.

CCWD is in the process of updating the 2015 Contra Costa Water District Treated Water Master Plan to evaluate its existing water distribution system as well as its pumping and storage capacity to address future needs. The updated report will also recommend and prioritize capital improvement programs to ensure that the system will meet future water demands. CCWD is evaluating an Industrial Recycled Water Project to deliver up to 3,400 AFY to major industrial customers. CCWD is also investigating long-term water transfer options to meet multiple-dry year shortfalls. And CCWD continues to implement its water conservation and rebate programs.

The EBMUD 2020 UWMP shows that water supplies will exceed the demand through 2050 for both normal and single dry years. However, in the third year of a drought, the demand would exceed the supply. Under these conditions, various measures would be implemented to ensure that all of EBMUD's customers have a reliable water supply. EBMUD prepares a preliminary Water Supply Availability and Deficiency report by March 1 of each year, evaluating the adequacy of that year's water supply. These reports inform decisions by EBMUD regarding whether to declare a water shortage emergency and implement a drought management plan, institute mandatory water use restrictions, and/or obtain supplemental water supplies. EBMUD has a comprehensive Drought Management Plan that is implemented under extended drought conditions.

In addition, EBMUD is working on implementing a number of programs and projects to improve the reliability of its water supply, including:

- Bayside Groundwater Project
- Groundwater banking and exchange program with eastern San Joaquin County
- Water transfer program with Placer County Water Agency, Yuba County Water Agency, and Sycamore Mutual Water Company
- Expansion of surface water storage facilities
- Bay Area Regional Desalination Project
- Bay Area Regional Reliability Project
- Expansion of its recycling water network and supplies

The other cities and water purveyors within the county also have 2020 UWMPs and water master plans that describe the upgrades and expansions of their water distribution and treatment systems to address future increases in population and climate change impacts. Each UWMP also contains a water shortage contingency plan to address potential shortages in future water supplies and implement demand reduction strategies.

In addition, the water purveyors in the UWMPs have assumed increases in their service populations that are higher than the projected horizon-year increase from the proposed General Plan. The projected growth for the proposed General Plan will be distributed throughout the county and within various service areas of the 14 water purveyors. Because the horizon-year growth projection for the proposed General Plan is less than the projected growth in the service areas of the water purveyors, no new water treatment facilities or water distribution systems beyond what is described in the UWMPs would be necessary. Also, compliance with the County's requirements for new construction and water-efficient landscaping, combined with implementation of the proposed General Plan policies and actions listed, would further reduce potential impacts, resulting in less than significant impacts with respect to the need for new and/or expanded water facilities.

Proposed CAP

The proposed CAP provides estimates of GHG emissions in the water and wastewater sectors and accounts for the increase in emissions with implementation of the proposed General Plan as both residential and employment populations increase. It also provides reduction strategies to minimize this increase in GHG emissions through water conservation, water-efficient retrofits, water-wise landscaping, and graywater and recycled water programs. The strategies and actions in the proposed CAP include measures to reduce indoor and outdoor water use, ensure sustainable and diverse water supplies, and implement water use audits at County facilities. Implementation of the proposed CAP would further reduce water demand as compared to the analysis provided. Therefore, the proposed CAP would not require or result in the construction of new water facilities or expansion of existing facilities, the construction of which would cause significant environmental effects, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.17-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.17-2 would be less than significant.

Impact 5.17-3: The proposed project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. [Thresholds U-4]

Proposed General Plan

As shown in Table 3-2 in Chapter 3, *Project Description*, the proposed General Plan would result in 7,100 new single-family residences and 16,100 new multi-family residences, as well as 1.2 million square feet of commercial and office space and 5.0 million square feet of industrial space. The projected increase in population is much less than the projected population increases in the EBMUD and CCWD 2020 UWMPs.

The increase in water demand with implementation of the proposed General Plan is provided in Table 5.17-5. The water demand for the single-family and multi-family residential units was based on an indoor water demand of 55 gallons per capita per day (gpcd), which is the current requirement in the California Water Code for water purveyors to meet by 2023. It was assumed that there would be 2.83 people per household and that outdoor water use would be 33 percent of the total water demand for single-family homes and 14 percent of the total water demand for multi-family homes. This results in a total water demand of 223 gpd/du for single-family residences and 181 gpd/du for multi-family residences. For the commercial/office and industrial land use categories, the water demand factors were taken from CCWD's 2015 Treated Water Master Plan.

Table 5.17-5 Net Increase in Water Demand with Proposed General Plan

Land Use	Number of Dwelling Units	Water Demand Factor (gpd/du)[1]	Total Water Demand (gpd)	Total Water Demand (AFY)
Single-Family Residential	7,100	223	1,583,300	1,774
Multi-Family Residential	16,100	181	2,914,100	3,264
	Non-Residential Square Feet	**Non-Residential Acres**	**Water Demand Factor (AF/ac/yr)[2]**	**Total Water Demand (AFY)**
Commercial/Office	1,200,000	27.5	2.48	68
Industrial	5,000,000	115	0.10	11.5
TOTAL				**5,117.5**

Sources: PlaceWorks 2023, EBMUD 2020 UWMP, 2015 CCWD Treated Water Master Plan Update

[1] Water demand factors based on future indoor water demand of 55 gpcd, as per the California Water Code, assuming 2.83 people per household, and assuming outdoor water demand is 33% of the total water demand for single-family residences and 14% of the total water demand for multifamily residences, as per the EBMUD 2020 UWMP.

[2] Water demand factor for commercial and industrial uses from the 2015 CCWD Treated Water Master Plan.

The projected water demand increase with implementation of the proposed General Plan is estimated to be 5,118 AFY. In comparing the 2045 water supply to water demand from the various UWMPs, as shown in Table 5.17-4, there is a surplus of available water of 22,218 AFY. Therefore, the water purveyors would be able to accommodate the projected increase in water demand with implementation of the proposed General Plan. In addition, the projected growth would occur gradually between 2020 and 2045. Also, the growth within the county would be dispersed among the various water purveyors' service areas and therefore impacts to each water purveyor's water supplies would be minor.

Additionally, future development pursuant to the proposed General Plan would be required to implement the water-efficient requirements specified in the CALGreen and California Plumbing Codes and the MWELO requirements for water-efficient landscaping. Future projects that meet the criteria under California Water Code

Section 10912 would be required to prepare a WSA that demonstrates that project water demands would not exceed water supplies. In addition, residential, commercial, and industrial water usage can be expected to decrease in the future as a result of the implementation of water conservation practices. In the case of a water shortage, each water purveyor would implement their Water Shortage Contingency Plan, as described in the 2020 UWMPs. Also, the proposed General Plan policies and actions presented in Section 5.17.2.3 would further reduce future water demands.

In summary, future development associated with the proposed General Plan would not result in a shortage of water supplies. In addition, compliance with the County's Code requirements for new construction and adherence to the proposed General Plan policies and actions will reduce future water demands, and impacts associated with water supply would be less than significant.

Proposed CAP

As discussed in Impact 5.15-2, the proposed CAP provides strategies to minimize increases in GHG emissions by implementing water conservation, water-efficient retrofits, water-wise landscaping, and graywater and recycled water programs. The strategies and actions also include measures to reduce indoor and outdoor water use, ensure sustainable and diverse water supplies, and implement water use audits at County facilities. Implementation of the proposed CAP would further reduce water demand as compared to the analysis provided. Therefore, the proposed CAP would not adversely affect water supplies and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.17-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.17-3 would be less than significant.

5.17.2.5 CUMULATIVE IMPACTS

The area considered for cumulative impacts is all of Contra Costa County, including all the water purveyors and water treatment facilities that serve residents and businesses throughout the county. Future projects within the county would result in increases in water demand. However, the analysis provided in Impact 5.17-3 and summarized in Table 5.17-5 indicates that there are sufficient water supplies within the county's service area to serve all of its residents and businesses through 2045 with the projected growth under the proposed General Plan.

Projects that meet the SB 610 criteria, such as residential projects with more than 500 dwelling units, would be required to prepare WSAs. All new development under the proposed General Plan would be required to conserve water and implement water efficiency measures, as per the CALGreen Building Code and the MWELO irrigation requirements. Water supply deficits in dry years would be met by implementing the Water Shortage Contingency Plans of the water purveyors and other water conservation efforts. Existing regulations

would result in a reduction in per capita water use over time, which would ensure that cumulative impacts with respect to water service would be less than cumulatively considerable.

5.17.2.6 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.17.2.7 MITIGATION MEASURES

No mitigation measures are required.

5.17.2.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

5.17.3 Storm Drainage Systems

5.17.3.1 ENVIRONMENTAL SETTING

Regulatory Background

The regulatory framework for stormwater is described in detail in Section 5.10, *Hydrology and Water Quality*, of this Draft EIR. The regulatory requirements that pertain solely to storm drain systems are repeated here.

Federal

National Pollutant Discharge Elimination System

Under the National Pollutant Discharge Elimination System (NPDES) program, all facilities that discharge pollutants into waters of the United States are required to obtain an NPDES permit. Requirements for stormwater discharges are also regulated under this program. As previously described, the county is within the jurisdiction of two RWQCBs. The western half of the county is under the jurisdiction of the San Francisco Bay RWQCB (Region 2) and is subject to the waste discharge requirements of the recently revised Municipal Separate Storm Sewer System (MS4) Permit (Order No. R2-2022-0018), which became effective on July 1, 2022. Although the eastern half of the county is within the boundaries of the Central Valley RWQCB (Region 5), an agreement between Region 2 and Region 5 was enacted for consistency in permit compliance and the eastern portion of Contra Costa County is also under the jurisdiction of the San Francisco Bay RWQCB's MS4 permit (Central Valley RWQCB 2023).

Under Provision C.3 of the MS4 Permit, the permittees use their planning authorities to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address stormwater runoff pollutant discharges and prevent increases in runoff flows. This goal is accomplished primarily through the implementation of low impact development techniques.

State

State Water Resources Control Board General Construction Permit

Construction activities that disturb one or more acres of land must comply with the requirements of the SWRCB Construction General Permit (Order No. 2022-0057-DWQ), which was adopted in September 2022 and is effective as of September 1, 2023. Under the terms of the permit, applicants must file permit registration documents (PRD) with the SWRCB prior to the start of construction. The PRDs include a notice of intent, risk assessment, site map, Storm Water Pollution Prevention Plan (SWPPP), annual fee, and a signed certification statement. The PRDs are submitted electronically to the SWRCB via the Stormwater Multiple Application and Report Tracking System website.

Applicants must also demonstrate conformance with applicable BMPs and prepare a SWPPP containing a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection, and discharge points, general topography both before and after construction, and drainage patterns across the project site. The SWPPP must list BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Additionally, the SWPPP must contain a weekly visual monitoring program and BMP inspections prior to, during, and after qualifying precipitation events. Water quality monitoring is also required with the schedule based on the risk level of the project site.

State Water Resources Control Board's Trash Amendments

On April 7, 2014, the SWQCB adopted an amendment to the Water Quality Control Plan for Ocean Waters of California to control trash. In addition, the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California added the section, Part 1: Trash Provisions. Together, they are collectively referred to as "the Trash Amendments." The purpose of the Trash Amendments is to provide statewide consistency for the RWQCBs in their regulatory approach to protect aquatic life, protect public health beneficial uses, and reduce environmental issues associated with trash in State waters, while focusing limited resources on high trash-generating areas (SWRCB 2015).

The Trash Amendments apply to all Phase I and II permittees under the NPDES MS4 permits. Compliance with the Trash Amendments requires municipalities to install certified trash treatment control systems on all catch basins no later than December 2, 2030 (SWRCB 2023).

Local

Contra Costa County Clean Water Program

The Contra Costa Clean Water Program (CCCWP) is a consortium of Contra Costa County, 17 cities, two towns and the Contra Costa County Flood Control and Water Conservation District. These are all agencies named as permittees in the San Francisco Bay RWQCB's MS4 permit. The CCCWP offices are n the County's Public Works Division and the CCCWP assists permittees by conducting some MS4-mandated activities on a countywide level, participating in funding for regional and statewide stormwater-related programs, and assisting in the preparation of annual reports to the RWQCB. The CCCWP also publishes the Stormwater C.3 Guidebook, which was revised in December 2022 for consistency with the latest MS4 permit. The Stormwater

C.3 Guidebook provides the requirements for new development and redevelopment projects that create or replace more than 2,500 square feet of impervious surface to implement site design measures, source control measures, and stormwater treatment measures, depending on the size and regulatory status of the project. The CCCWP website also provides an updated Stormwater Control Plan (SCP) template that is consistent with the Stormwater C.3 Guidebook, 8th Edition (CCCWP 2023).

Contra Costa County Flood Control and Conservation District

The mission of the Contra Costa County Flood Control and Water Conservation District (FCD) is to reduce flood risk, promote stormwater quality, and restore and enhance natural resources for the communities throughout the county (FCD 2023a). The FCD carries out its responsibility by planning and constructing the major storm drainage facilities in Flood Control Zones (entire watershed areas) and in Drainage Areas (sub-watershed areas). The FCD uses Drainage Areas as the primary method of planning and implementing flood-control facilities. Funding of Drainage Area projects is primarily through development fees. Most of the major storm drain facilities within the county are owned by the FCD. The FCD website provides documents and guidance for determining design storm events, stormwater runoff amounts and volumes, and storm drain capacity evaluation for new development and development projects (FCD 2023b).

The Hydrology Section of the FCD collects, analyzes, and reports on rainfall and storm runoff data from a system of rain gauges and several stream flow meters. The Current Development Section reviews environmental reports and comments on the impacts of the proposed project to regional drainage and FCD facilities.

Contra Costa County Dewatering Permits

For new development in areas with shallow groundwater, construction dewatering may be required. Temporary dewatering wells are regulated under Section 414-4.801 of the Contra Costa County Well Ordinance. All dewatering wells shall be constructed and abandoned by a licensed C-57 water well contractor. Prior to construction of a dewatering well, a permit shall be obtained from Contra Costa County Environmental Health in accordance with the Contra Costa County Well Ordinance. The application, along with a fee submittal, must contain a dewatering well schematic, plot map showing setback distances from sources of contamination, the discharge location for the collected groundwater, and how long the wells will be active. Uncontaminated groundwater may be discharged to the sanitary sewer system subject to water quality testing, sewer capacity calculations, and requirements of the municipalities within the county.

Contra Costa County Design Standards

The construction of storm drain systems within the county shall conform to the County's General Drainage Design Standards for storm drain details and inlet design; the General Drainage – Flood Control Channels for rock slope protection and concrete "V" ditches; and the General Landscaping – Flood Control Channels for landscaping design and limits on creek and channel embankments (Contra Costa County Public Works 2023).

Contra Costa County Ordinance Code

Division 74 Building Code

Chapter 74-6, *Permits, Drainage and Streets,* provides drainage facility requirements and requires a drainage plan to be prepared for any building, structure, or improvement that requires a building permit and results in an impervious surface of 1,000 feet or more; involves grading or removal of vegetation of more than 10,000 square feet; is subject to local ponding; is in a special flood hazard area; or involves land disturbance or structure placement within 100 feet of the top bank of any watercourse.

Division 716 - Grading

Article 716-8.6, *Drainage*, under Title 7, *Building Regulations***,** describes the general requirements for storm drain structures, systems, and facilities. All drainage facilities shall be designed to carry surface water to the nearest street, storm drain, or natural watercourse, as approved by the County Building Official. The article also contains criteria for site drainage, terrace drainage, overflow protection, and maintenance of the drainage facilities.

Division 914 - Drainage

Division 914, *Drainage,* under Title 9, *Subdivisions*, provides the requirements for drainage facilities that are in subdivisions. Section 914-2.010 establishes the required design capacities for major drainage facilities (four square miles or greater), secondary drainage facilities (between one and four square miles), and minor drainage facilities (less than one square mile). Chapter 914.4 pertains to natural watercourses, Chapter 014-6 provides design criteria for open channels and ditches, and Chapter 914-8 describes design criteria for closed conduits, piping, and storm drain inlets.

Division 1014 - Stormwater Management and Discharge Control

Division 1014, *Stormwater Management and Discharge Control,* provides the conditions and requirements for compliance with the County's MS4 permit issued by the San Francisco Bay RWQCB. The goal of this ordinance is to eliminate illicit discharges to the stormwater system, minimize increases in non-point source pollution, reduce stormwater runoff rates and volumes through stormwater management controls for new development, and promote no adverse impact policies as developed by the Federal Emergency Management Agency (FEMA).

Contra Costa County Drainage Area Fee Ordinance

This ordinance is not codified in the Ordinance Code but is enacted by the County Board of Supervisors as the governing body of the FCD. It requires payment of Drainage Area fees before filing the final map for new subdivisions or prior to the issuance of a building permit on an existing lot. Fees are paid directly to the FCD or via cities per fee collection agreements. Fees are based on the cost of the proposed Drainage Area improvements and the expected increase in impervious surfaces created by the project. The purpose of the Drainage Area fees is to generate funds for the construction of storm drain infrastructure in a manner equitable to the land use's impact and to address current and future needs of the residents and businesses in the county. Developers can construct portions of the planned infrastructure as credit to their fee obligation as per the Drainage Area Credit and Reimbursement Policy.

Existing Conditions

The storm drain infrastructure and flood control facilities within the county are managed by the FCD. The FCD covers all of Contra Costa County, including its cities, and manages approximately 79 miles of channels, creeks, and other drainages and 30 detention basins and dams. Many municipalities within Contra Costa County also maintain their own storm drain systems and have developed storm drain master plans and green infrastructure plans. Detailed information regarding levees and flood control facilities is provided in Section 5.10, *Hydrology and Water Quality*.

The FCD was formed in 1951 and offers regional flood protection, primarily funded through property taxes and developer fees. There are several divisions within the FCD that are involved in various aspects of stormwater and floodplain management (FCD 2023c):

- Watershed Planning & Engineering
  - Identify and plan for long range flood protection solutions
  - Design and build regional drainage systems that encompass the county and cities
  - Establish and update developer fees for regional drainage systems
  - Collaborate with federal, State, and local partners on large flood control projects
- Watershed Program (unincorporated county)
  - Design and manage programs to reduce stormwater pollution from sources such as sediment, trash, pesticides, and hydrocarbons
  - Promote pollution prevention awareness
  - Support local non-profit creek groups
  - Promote community pride in the county's creeks
- Current Development
  - Review development applications and coordinate regional drainage systems in the county and cities
  - Manage developer-financed drainage systems
  - Issue drainage permits for work on Flood Control District property and County drainage systems
  - Respond to drainage complaints in the unincorporated county
- Maintenance
  - Maintain and repair Flood Control District channels, creeks, and detention basins
- Hydrology
  - Collect and analyze rainfall and stream flow data
  - Predict flood flows using computerized programs
  - Review flood flow studies

- Floodplain Management (unincorporated county; FCD provides technical support to the County Floodplain Manager)
  - Ensure new development in flood prone areas meets FEMA standards
  - Participate in federal programs to reduce flood insurance premiums
  - Promote the creation and preservation of natural floodways

The county is divided into Flood Control Zones and smaller Drainage Areas. There are approximately 13 Flood Control Zones. The Flood Control Zones involve large, regional drainage infrastructure, which is typically built in partnership with federal or state agencies that provide partial funding, such as the US Army Corps of Engineers. Every resident within a Flood Control Zone pays a small portion of their annual property tax for the FCD to construct new projects and maintain existing infrastructure.

On a smaller scale, Contra Costa County is also divided into Drainage Areas. Within each drainage area, the County imposes a Drainage Area fee on new development to fund that development's share of improvements required to address drainage demands within the Drainage Area. This is a type of development impact fee. There are currently about 53 Drainage Areas for which fees are collected in the county, although the exact number may vary from year to year (FCD 2023d). Figure 5.17-3, *Regional Drainage Infrastructure*, shows the Flood Control Zones and Drainage Areas for Contra Costa County.

The FCD has prepared a 2021 Flood Control Capital Improvement Plan (CIP) with a total of 29 projects and an investment of over $56 million over the next seven years (FCD 2023d). The proposed projects include seismic assessments of reservoirs, levee rehabilitation, sediment removal from channels and creeks, sediment basin desilting, drainage plan updates, and storm drain infrastructure improvements.

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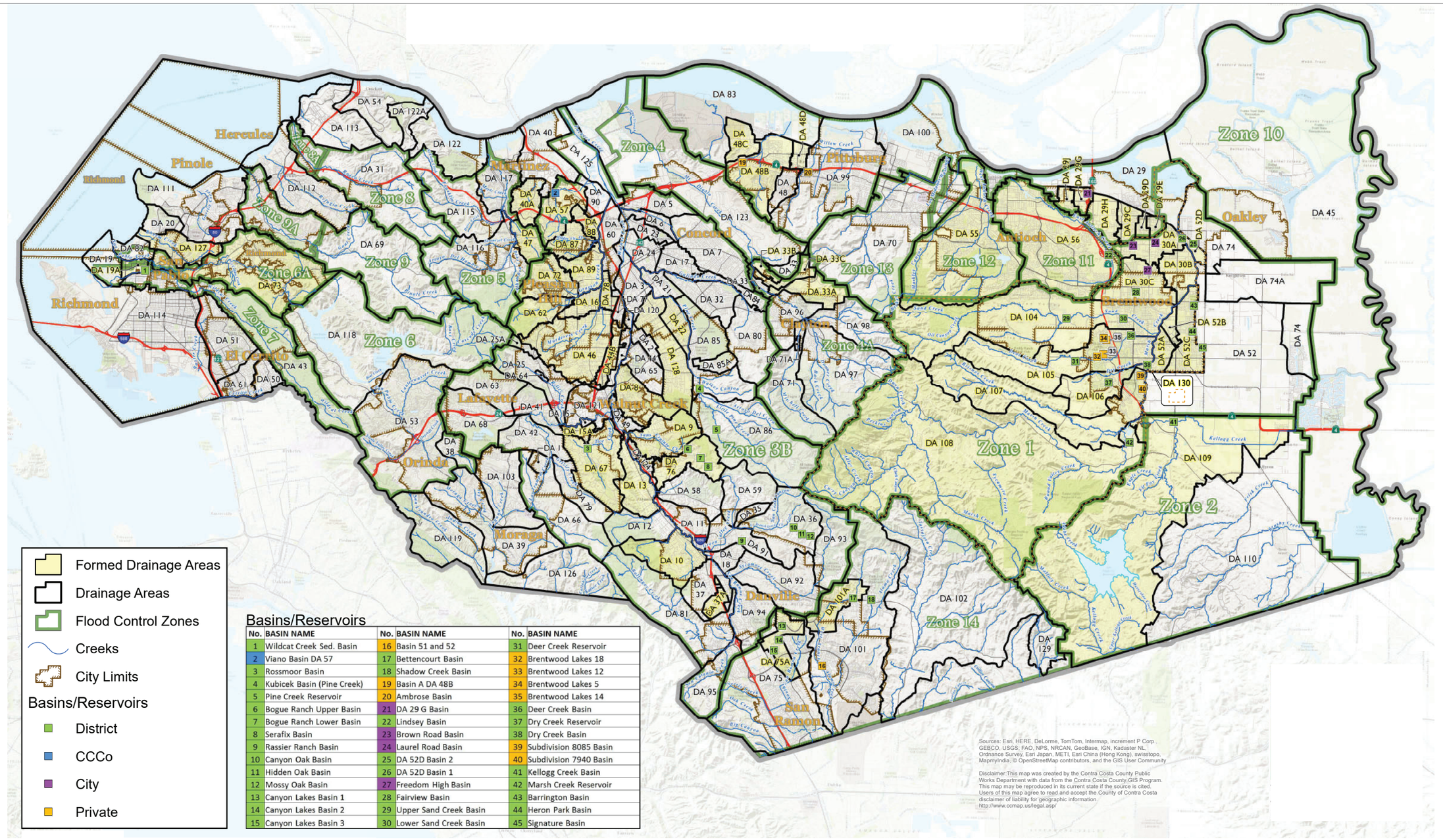

Basins/Reservoirs

No.	BASIN NAME	No.	BASIN NAME	No.	BASIN NAME
1	Wildcat Creek Sed. Basin	16	Basin 51 and 52	31	Deer Creek Reservoir
2	Viano Basin DA 57	17	Bettencourt Basin	32	Brentwood Lakes 18
3	Rossmoor Basin	18	Shadow Creek Basin	33	Brentwood Lakes 12
4	Kubicek Basin (Pine Creek)	19	Basin A DA 48B	34	Brentwood Lakes 5
5	Pine Creek Reservoir	20	Ambrose Basin	35	Brentwood Lakes 14
6	Bogue Ranch Upper Basin	21	DA 29 G Basin	36	Deer Creek Basin
7	Bogue Ranch Lower Basin	22	Lindsey Basin	37	Dry Creek Reservoir
8	Serafix Basin	23	Brown Road Basin	38	Dry Creek Basin
9	Rassier Ranch Basin	24	Laurel Road Basin	39	Subdivision 8085 Basin
10	Canyon Oak Basin	25	DA 52D Basin 2	40	Subdivision 7940 Basin
11	Hidden Oak Basin	26	DA 52D Basin 1	41	Kellogg Creek Basin
12	Mossy Oak Basin	27	Freedom High Basin	42	Marsh Creek Reservoir
13	Canyon Lakes Basin 1	28	Fairview Basin	43	Barrington Basin
14	Canyon Lakes Basin 2	29	Upper Sand Creek Basin	44	Heron Park Basin
15	Canyon Lakes Basin 3	30	Lower Sand Creek Basin	45	Signature Basin

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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Source: Contra Costa County, 2015.

0 3.5
Scale (Miles)

Figure 5.17-3
Regional Drainage Infrastructure

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5.17.3.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

U-5 Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

5.17.3.3 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies, and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to storm drainage systems. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Public Facilities and Services Element

- **PFS-P5.1:** Support public and private efforts to improve protection against flooding, subsidence, and inundation, especially projects that achieve 200-year flood protection or better, factoring in anticipated sea-level rise, in areas of the county covered by the Central Valley Flood Protection Plan.
- ***PFS-P5.2:*** *Partner with responsible parties, public and private, to ensure ongoing funding exists for maintenance and rehabilitation of flood management facilities and structures (e.g., levees, pump stations, canals, channels, and dams), particularly those that do not meet adopted State or federal flood-protection standards.*
- **PFS-P5.3:** Allow for future height increases to private levees protecting inland areas from tidal flooding and sea-level rise by requiring rights-of-way and setbacks to be sufficiently wide on the levee's upland side and prohibiting new structures from being constructed on top of or immediately adjacent to the levee.
- **PFS-P5.4**: Support material stockpiling and equipment staging for emergency levee repair, especially in the western Delta.
- **PFS-P5.5:** Encourage new development to participate in programs that ensure ongoing maintenance of natural watercourses to maintain their flood carrying capacity and habitat values.
- **PFS-P5.6**: *When developing new or revised regional drainage and flood management plans, including plans to protect against sea-level rise, incorporate adequate setbacks and alternative drainage system improvements that provide aesthetic, recreational, and environmental benefits. Improvements should avoid structural modifications to watercourses and preserve riparian habitat and floodplains, and convert engineered drainage systems to more natural systems, when and where possible. In areas at risk of temporary or permanent inundation from sea-level rise, ensure that improvements can continue to provide adequate protection for the projected level of inundation by 2100 or the expected operational life of the project, whichever is later.*
- **PFS-P5.7**: *Incorporate green infrastructure into new and retrofitted flood-control and streetscaping projects, including replacing existing asphalt and other hardscapes with green infrastructure, as feasible.*

- **PFS-P5.8:** Encourage developers of properties along transit corridors and in commercial areas to combine their private stormwater treatment facilities with green infrastructure on the adjoining street frontage.
- **PFS-P5.9:** Encourage public participation in design processes for major flood control and sea-level-rise resiliency projects to ensure that these facilities are context-sensitive and provide multiple public benefits whenever possible.
- ***PFS-A5.1:*** *Identify existing developed areas where drainage maintenance issues exist and coordinate with each affected community to consider creating a benefit assessment district or similar local funding mechanism to pay for improvement and maintenance needs.*
- **PFS-A5.2:** Coordinate with responsible parties, public and private, to develop a flood management plan for the levee systems protecting the unincorporated county that:
  (a) Identifies the entities responsible for operation and maintenance of the levees.
  (b) Determines the anticipated flood levels in the adjacent waterways and the level of protection offered by the existing levees along the waterways.
  (c) Establishes a long-term plan to upgrade the system as necessary to provide at least a 100-year level of flood protection, and 200-year level of flood protection where required.
  (d) Considers the worst-case situations of high tides coupled with sea-level rise and storm-driven waves.
  (e) Protects beneficial uses of San Francisco Bay and the Delta and their water.
  (f) Prioritizes designs that foster riparian habitat while containing floodwaters, such as by using more natural materials, landforms, and vegetation, rather than concrete channels and other conventional flood-control infrastructure.
  (g) Encourages multipurpose flood-management projects that, where feasible, incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of waterways.
  (h) Takes a holistic approach to flood-risk management so that new infrastructure does not simply transfer flooding impacts from one property or location to another.
  (i) Considers flood and tidal impacts to existing brownfields, especially adjacent to shorelines.
  (j) Includes provisions for updates to reflect future State or federally mandated levels of flood protection.
- ***PFS-A5.3:*** *Develop watershed management plans incorporating best management practices that slow, spread, and sink water runoff to flatten the hydrograph (i.e., water flow over time) where erosion is a concern, while also enhancing wildlife habitat and recreation opportunities where feasible.*
- **PFS-A5.4:** Establish programs for development projects alongside natural watercourses that ensure regular maintenance of the waterway, including debris removal, erosion control, and conservation and restoration of native species.
- **PFS-A5.5**: Coordinate with the Contra Costa County Mosquito and Vector Control District to identify and remedy areas with ongoing drainage problems to reduce disease risk from stagnant water.

Proposed CAP Strategies and Actions

The proposed CAP provides strategies to minimize increases in GHG emissions and has applicable actions related to water conservation and solid waste management strategies. However, there are no specific strategies or actions pertaining to stormwater infrastructure in the proposed CAP.

5.17.3.4 ENVIRONMENTAL IMPACTS

Impact 5.17-4: Existing and/or proposed storm drainage systems are adequate to serve the drainage requirements of the proposed project. [Threshold U-5]

Proposed General Plan

New development, redevelopment, and changes in land uses under the proposed General Plan would result in an increase in impervious surfaces, which in turn could result in an increase in stormwater runoff, higher peak discharges to drainage channels, and the potential to cause nuisance flooding in areas without adequate drainage facilities. However, municipalities within the county have storm drain master plans, green infrastructure plans, and capital improvement programs that account for future development and expansion of the storm drain system, as needed. Also, the FCD has detailed Flood Control Zone and Drainage Area maps that are used to evaluate future development plans within each zone or area and determine if the existing storm drainage infrastructure is adequate to accommodate the proposed project. The schedule and costs for the construction of new drainage projects and maintenance of existing storm drain infrastructure is described in the CIP and is funded by property taxes and development impact fees in each Flood Control Zone or Drainage Area.

In addition, all future development that involves the disturbance of one acre or more of land would be subject to NPDES construction permit requirements, including preparation of a SWPPP, which includes BMPs to limit the discharge of sediment and non-stormwater discharges from the project site. Also, all regulated projects that create or replace 5,000 square feet or more of impervious surface would be required to implement site design, source control, and stormwater treatment and runoff measures using specific numeric sizing criteria based on the volume and flow rate of stormwater that is generated. Each project undergoes review by County personnel to ensure that the regulatory requirements for temporary on-site stormwater runoff retention have been met. New projects are also subject to storm drainage impact fees, which are used to fund new storm drain infrastructure within the county.

With the implementation of these provisions for future development, there would not be significant increases in stormwater runoff that would exceed the existing and planned future capacity of the storm drain infrastructure beyond what is already accounted for in the CIPs of the municipalities within the county and the FCD. The construction of new stormwater facilities through the CIP and storm drain impact fees, implementation of BMPs and on-site stormwater control measures, and preparation of the required documents and review by the County would serve to minimize any potential impacts associated with stormwater.

Also, as described previously, the Public Facilities and Services Element of the proposed General Plan contains policies and actions that consider impacts to storm drain infrastructure and would minimize potential adverse impacts on stormwater discharge. Compliance with and implementation of these proposed General Plan

policies and actions that ensure adequate infrastructure, combined with the regulatory provisions in the MS4 permit that limit runoff from new development, would further ensure that the implementation of the proposed General Plan would not result in significant increases in runoff and would therefore not contribute to the construction of new storm drain facilities or expansion of existing facilities that would cause significant environmental impacts. In addition, the County would continue to repair, rehabilitate, and upgrade the storm drain system through implementation of the CIP program funded through the property taxes and developer impact fees. Therefore, impacts with respect to stormwater infrastructure would be less than significant.

Proposed CAP

The proposed CAP is a strategic plan focused on GHG emissions reduction, including through strategies and actions that reduce emissions in the water and wastewater sectors. However, there are no sections in the proposed CAP that specifically address stormwater other than strategies to increase park space, tree plantings, and vegetation, which would reduce the volume of stormwater runoff. Therefore, implementation of the proposed CAP, would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which would cause significant environmental effects and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.17-4 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.17-4 would be less than significant.

5.17.3.5 CUMULATIVE IMPACTS

The analysis of cumulative storm drain impacts considers future development within the watersheds that encompass all of Contra Costa County. Cumulative projects could result in an incremental increase in impervious surfaces that could increase stormwater runoff and impact existing storm drain facilities. However, all cumulative projects would be required to comply with City and County ordinances and the MS4 permit, while projects within the unincorporated county would also be subject to proposed General Plan policies actions, which would minimize stormwater runoff.

Development within the county would require conformance with State and County policies that would reduce hydrology and infrastructure construction impacts to less than significant levels. Any new development in the unincorporated county would be subject to proposed General Plan policies and actions and County ordinances, design guidelines, and other applicable County requirements that reduce impacts related to hydrology and stormwater drainage facilities. More specifically, potential changes related to stormwater flows, drainage, impervious surfaces, and flooding would be minimized by the implementation of stormwater control measures, retention, infiltration, and low-impact-development measures and review by the FCD to integrate measures to reduce potential stormwater drainage and flooding impacts.

The water quality regulations implemented by the SWRCB and the San Francisco Bay RWQCB take a basin-wide approach and consider water quality impairment in a regional context. For example, the NPDES Construction Permit ties receiving water limitations and basin plan objectives to terms and conditions of the permit, and the MS4 Permit also applies to Contra Costa County to manage stormwater systems and be collectively protective of water quality. For these reasons, impacts from future development within the county related to stormwater infrastructure construction are not cumulatively considerable.

In combination with past, present, and reasonably foreseeable projects, projected development and redevelopment associated with the proposed General Plan would not result in a cumulatively considerable impact to stormwater infrastructure.

5.17.3.6 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.17.3.7 MITIGATION MEASURES

No mitigation measures are required.

5.17.3.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

5.17.4 Solid Waste

5.17.4.1 ENVIRONMENTAL SETTING

Regulatory Background

Federal

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 addresses the large volumes of municipal and industrial solid waste generated nationwide. The RCRA gives the USEPA the authority to control hazardous waste from "cradle to grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also sets forth a framework for the management of nonhazardous solid wastes.

The 1984 Hazardous and Solid Waste Amendments focus on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Most of the compliance monitoring responsibility is delegated to the states and local authorities (USEPA 2023).

State

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (Public Resources Code Sections 42900–42927), also known as AB 939, established an integrated waste management system that focused on source reduction, recycling, composting, and land disposal of waste. AB 939 required all California cities and counties to reduce the volume of waste deposited in landfills by 50 percent by the year 2000. Compliance with AB 939 is measured in part by comparing solid waste disposal rates for a jurisdiction with target disposal rates. Actual rates at or below target rates are consistent with AB 939. AB 939 also requires California counties to show 15 years of disposal capacity for all jurisdictions within the county or show a plan to transform or divert its waste.

The California Integrated Waste Management Act also requires each California city and county to prepare, adopt, and submit to the California Department of Resources Recycling and Recovery (CalRecycle) a Source Reduction and Recycling Element (SRRE) that demonstrates how the jurisdiction will meet the act's mandated diversion goals. Each jurisdiction's SRRE must include specific components, as defined in Public Resources Code Sections 41003 and 41303, and include a program for management of solid waste that is consistent with the following hierarchy: (1) source reduction, (2) recycling and composting, and (3) environmentally safe transformation and land disposal. Each jurisdiction must also prepare and submit a Household Hazardous Waste Element and a Non-disposal Facility Element, which describes transfer stations and diversion facilities. Counties must also submit a Countywide Siting Element that describes areas that may be used for developing new disposal facilities and strategies to determine how excess solid waste will be handled if the landfills within the jurisdiction do not have the capacity for a 15-year disposal period (CalRecycle 2023a).

Mandatory Commercial Recycling Act (AB 341)

AB 341 (Chapter 476) increased the statewide waste diversion goal to 75 percent by 2020, and mandates recycling for businesses producing four or more cubic yards of solid waste per week or multi-family residential dwellings of five or more units. AB 341 is designed to reduce GHG emissions in the state by 5 million metric tons of carbon dioxide equivalents. In Contra Costa County, composting and recycling services are provided by Republic Services.

Mandatory Organics Recycling Act (AB 1826)

AB 1826, which was enacted in 2014, mandates organic waste recycling for businesses and multi-family dwellings with five or more units. Starting January 1, 2020, all generators of 2 cubic yards or more of garbage, recycling, and compost combined per week must recycle organic waste. Organic waste includes food scraps, food-soiled paper waste, yard trimmings, and landscape materials. Organic waste can be recycled through composting, mulching, and anaerobic digestion which produces renewable energy and fuel. In addition to recycling food scraps, donating surplus food to local food banks can be part of the AB 1826 compliance effort. Multi-family dwellings do not need to have food-waste recycling on-site but must recycle yard and landscape materials. Republic Services offers these services to businesses and residences within the county to comply with the requirements of AB 1826.

California Short-Lived Climate Pollutants Act (Senate Bill 1383)

SB 1383 focuses on the elimination of methane gas created by organic materials in landfills and set targets to achieve a 50 percent reduction in the statewide disposal of organic waste by 2020 and a 75 percent reduction by 2025. Organic waste makes up half of what Californians send to landfills. SB 1383 requires all businesses and residents to divert organic materials (including food waste, yard waste, and soiled paper products) from the landfill. The regulation took effect on January 1, 2022, and will require that organics collection service be provided to all residents and businesses. Also, an edible food recovery program must be established by 2025 with the goal of recovering edible food for human consumption (CalRecycle 2023b).

California Single Use Foodware Act (AB 1276)

AB 1276 was enacted in 2021 and requires all retail food facilities and food delivery services to provide single-use foodware items on request only. This law was established to reduce the amount of waste generated by single-use items and to encourage consumers to choose reusables. Single-use items include utensils, condiment cups and packages, straws, and stirrers, including those made from bioplastics, compostable plastic, bamboo, and paper. As of June 1, 2022, all cities and counties must authorize an enforcement agency to issue violations for infractions.

California Solid Waste Reuse and Recycling Access Act of 1991

The California Solid Waste Reuse and Recycling Access Act requires development projects to set aside areas for collecting and loading recyclable materials. The Act required CalRecycle to develop a model ordinance for adoption by any local agency relating to adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model, or an ordinance of their own, governing adequate areas in development projects for collection and loading of recyclable materials.

CALGreen Building Code

The latest 2022 CALGreen Code became effective on January 1, 2023. Section 5.408, *Construction Waste Reduction Disposal and Recycling*, mandates that, in the absence of a more stringent local ordinance, a minimum of 65 percent of non-hazardous construction and demolition debris must be recycled or salvaged. The Code requires applicants to prepare and submit a Construction Waste Management Plan, which is submitted to the County's Department of Conservation and Development for approval in the unincorporated areas of the county. A Supplemental Land Clearing Debris and Universal Waste Report is also required for non-residential projects (CCCD, 2023a).

Local

Contra Costa County Solid Waste and Recycling

The Solid Waste and Recycling Section within the Department of Conservation and Development oversees the collection of garbage, recycling, and organics in portions of the unincorporated county and implements programs to reduce solid waste disposal and promote reuse and recycling in accordance with the Integrated Waste Management Act and other applicable State laws (CCCD 2023b). The programs provided by the Solid Waste and Recycling Section include composting and gardening workshops, environmental action programs for schools, and resources to establish recycling market development zones. The County, in conjunction with

the City of Richmond, also established a North Richmond Waste & Recovery Mitigation Fee to help defray annual costs associated with the collection and disposal of illegally dumped waste within North Richmond and the surrounding area.

Contra Costa County Environmental Health

Contra Costa County Environmental Health is certified by the California Integrated Waste Management Board as the Local Enforcement Agency (LEA) for solid waste in Contra Costa County (Contra Costa County Environmental Health 2023b). The LEA is responsible for ensuring that all solid waste disposal facilities and medical waste generators within the county comply with applicable local, State, and federal codes and regulations. This includes inspections and monitoring of transfer stations, composting facilities, and landfills, both active and closed.

Contra Costa County Ordinance Code

Division 418 - Refuse

Under Division 418, *Refuse*, of Title 4, *Health and Safety*, there are various chapters that apply to solid waste and refuse. Chapter 418-2, *Solid Waste Collection and Transportation*, provides the protocol and permits required to collect and transport solid waste within the county. Chapter 418-4, *Disposal Sites*, is also known as the Refuse Disposal Site Ordinance and provides the permits, procedures, fees, and inspection requirements for establishing and maintaining a refuse disposal site in the county. Chapter 418-5, *Franchises for Solid Waste Facilities*, addresses the requirements and agreements for the franchises that manage and operate solid waste disposal facilities and/or transfer stations. Chapter 418-6, *Mandatory Subscription*, states that every resident or business within the county must subscribe to a waste collection and disposal service. Chapter 418-7, *Franchises for Solid Waste Collection, Disposal, and/or Recycling Service*, specifies the requirements and agreement contracts between public agencies and the solid waste collection/recycling franchises.

Chapter 418-10, *Recycling Requirements for Landfill Disposal,* requires local agencies to comply with the Integrated Waste Management Act by developing and implementing recycling and source reduction programs, and emphasize programs for resource recovery of plastic waste. A local agency's recycling program shall be reviewed and recertified by the Board at least once every five years. Chapter 418-12, *Food Establishment Litter*, requires the owner or operator of a food establishment to be responsible for cleaning up litter, trash, or garbage originating from the food establishment within 400 feet of the boundaries of the premises. Chapter 418-16, *Safe Drug Disposal,* requires producers of pharmaceutical drugs to implement a safe drug disposal stewardship plan that provides free accessible disposal options for residents of the county, which could include drop off kiosks, mail back services, and/or take back events.

Chapter 418-18, *Environmentally Friendly Food Packaging*, prohibits polystyrene food service ware to be provided to any person by a retail food establishment or food vendor as of May 2020. The lease or rental of any County facility shall require the use of environmentally friendly food service ware, which is defined as single-use disposable containers or other products made from recyclable materials. Chapter 418-20, *Organic Waste Disposal Reduction*, regulates the handling of organic waste that is not within the jurisdictional boundaries of sanitary districts, community service districts, and public utility districts for the purpose of implementing the SB 1383 regulations. Organic waste generators must subscribe to an organic waste collection service or self-haul organic

waste to a high diversion organic waste processing facility. Commercial edible food generators must have a contract or written agreement with at least one food recovery organization or food recovery service and keep records of the amount of edible food collected and transported each month.

Chapter 74-4.006 – Amendments to the 2022 California Green Building Standards Code

The latest 2022 CALGreen Code is amended in Chapter 74-4.006, *Amendments to the 2022 California Green Building Standards Code*. The mandatory provisions of the CALGreen Code require that at least 65 percent by weight of construction and demolition debris be recycled, reused, or otherwise diverted from landfill disposal. Chapter 74-4.006 states that this mandatory requirement also applies to existing residential projects that increase the building area by 5,000 square feet or more, alter the existing structures by 5,000 square feet or more, or require a demolition permit. Exceptions apply to excavated soil and land-clearing debris. A construction waste management plan must be submitted to the County prior to issuance of building permits. Also, a final report containing supporting documentation of the quantity of each material type diverted or disposed must be submitted to the County prior to the final inspection.

Existing Conditions

Solid Waste Collection

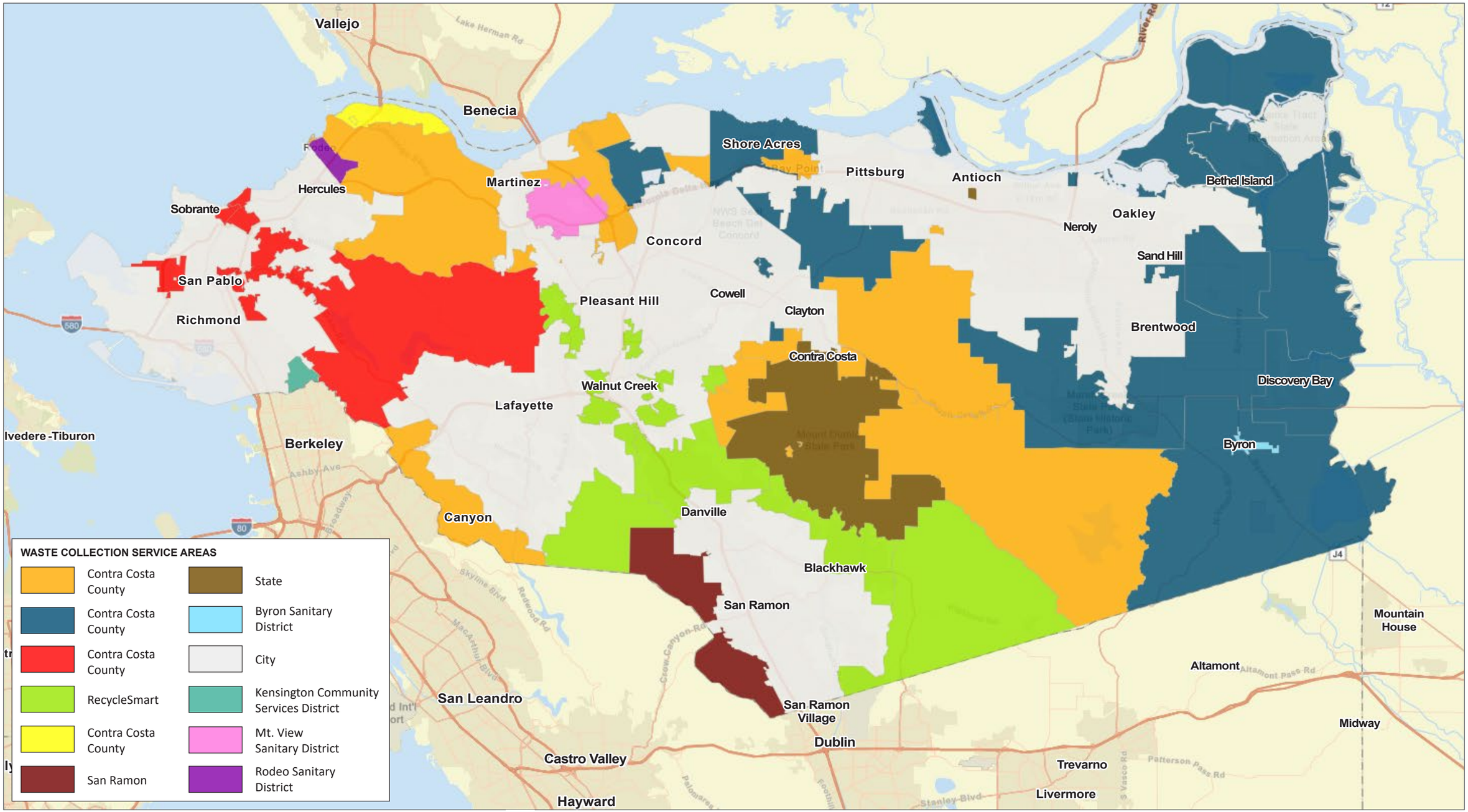
In Contra Costa County, franchises approved by the County are mainly responsible for solid waste collection and disposal, and County government is responsible for planning, administration, and facility approval. The County, Joint Powers Authorities (JPAs), and certain special districts enter into franchise agreements with private waste haulers to provide collection services. The County oversees solid waste management for about half of the unincorporated population, which is currently serviced by several franchise agreements.

Republic Services currently provides curbside trash collection, recycling, and organic waste collection for most of Contra Costa County. Republic Services of West Contra Costa County operates under the JPA of RecycleMore/West Contra Costa Integrated Waste Management Authority. Members of the JPA are El Cerrito, Richmond, San Pablo, Pinole, Hercules, and unincorporated areas in western Contra Costa County. Republic Services RecycleSmart provides services to central Contra Costa County, including the cities of Alamo, Blackhawk, Diablo, Danville, Lafayette, Moraga, Orinda, and Walnut Creek, under the auspices of the Central Contra Costa County Solid Waste Authority. Republic Services of Unincorporated Contra Costa County serves the areas of Alhambra Valley, Bay Point, Canyon, Clyde, Morgan Territory, Pacheco, and unincorporated Concord and Pleasant Hill.

The eastern portion of Contra Costa County is primarily served by Mount Diablo Resource Recovery, which serves Bay Point, Bethel Island, Brentwood, Knightsen, Concord, Discovery Bay, Marsh Creek, Oakley, Pittsburg, and other unincorporated areas. San Ramon and the surrounding area is served by Alameda County Industries of San Ramon. A map of the waste collection service areas is provided as Figure 5.17-4, *Waste Collection Service Areas*.

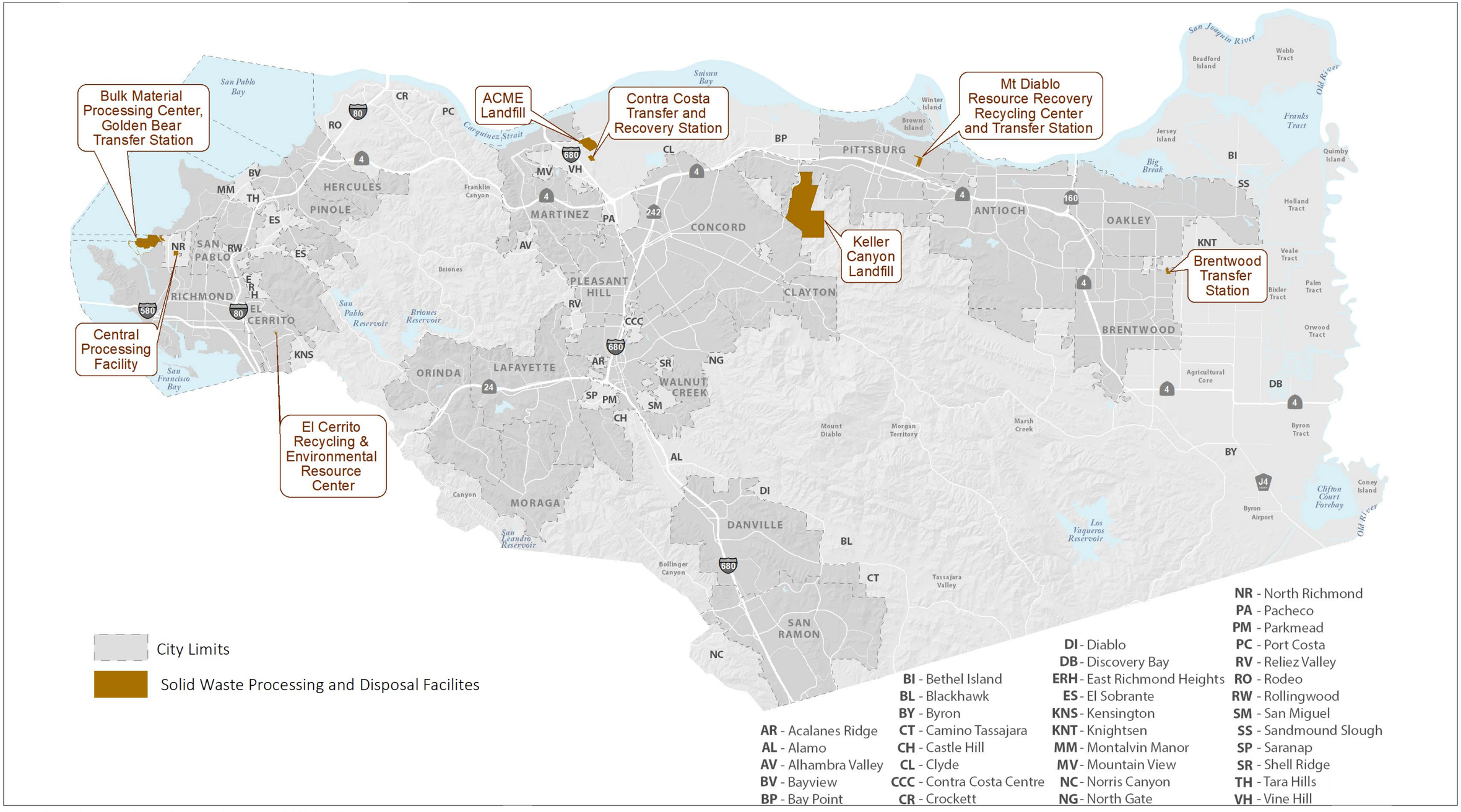
Landfills and Transfer Stations

There are six transfer stations and two landfills in Contra Costa County, as shown on Figure 5.17-5, *Solid Waste Processing and Disposal Facilities*. There also are ten composting facilities, three land application facilities, and one inert debris (construction and demolition material) crushing and grinding operation within the county. A list of the various facilities is provided in Table 5.17-6, *Active Solid Waste Facilities in Contra Costa County*.



Source: Contra Costa County, 2022.

Figure 5.17-4
Waste Collection Service Areas



Source: Contra Costa Local Agency Formation Commission (LAFCo), 2023.

Figure 5.17-5
Solid Waste Processing and Disposal Facilities

Curbside waste and recycling materials collected by garbage trucks are typically delivered to one of the six transfer stations within the county where the waste is temporarily stored, sorted, and/or processed. Workers at these transfer stations separate items that aren't accepted at local landfills, such as batteries and other hazardous items, and recyclables and green waste from the municipal solid waste. The remaining solid waste that is bound for the landfill is then transferred into larger vehicles and delivered to the appropriate landfill. The transfer stations also serve as a drop-off center for local residents to take bulk items or recyclables.

Table 5.17-6 Active Solid Waste Facilities in Contra Costa County

SWIS Number	Site Name	Category
07-AA-0062	Byron Crushing & Grinding Services	Composting
07-AC-0044	CCW Wood Chipping / Grinding	Composting
07-AA-0072	Pacific Wood Recycling	Composting
07-AA-0064	Bryon Crushing & Grinding Services	Inert Debris Processing
07-AA-0068	Brentwood Transfer Station	Transfer/Processing
07-AA-0044	West CC Sanitary Landfill Composting Facility	Composting
07-AA-0061	Green Waste Recycle Yard – Chipping and Grinding Op.	Composting
07-AA-0067	EcoMulch	Composting
07-AA-0059	Fahy Tree Service – Chipping and Grinding Operation	Composting
07-AA-0027	Contra Costa Transfer Station and Recovery	Transfer/Processing
07-AA-0037	Byron Hot Springs Landspreading	Land Application
07-AC-0042	US Steel-Posco Industries Waste Mgmt Unit II	Disposal - private
07-AA-0038	Souza Ranch Landspreading Facility	Land Application
07-AA-0054	Airport Ranch Sludge Spreading	Land Application
07-AA-0069	Expert Tree Services	Composting
07-AA-0002	Acme Landfill	Disposal
07-AA-0032	Keller Canyon Landfill	Disposal
07-AC-0043	Recycling Center & Transfer Station	Transfer/Processing
07-AA-0034	Central Processing Facility	Transfer/Processing
07-AA-0056	Golden Bear Waste Recycling Center	Transfer/Processing
07-AA-0066	Oliveira Enterprises, Inc.	Composting
07-AA-0063	El Cerrito Recycling Center	Transfer/Processing
07-AA-0070	Atlas Tree Service, Inc.	Composting

Source: CalRecycle 2023

In 2019, solid waste generated within Contra Costa County, including various municipalities and waste management agencies, was delivered to 25 landfills in the Bay Area for a total disposal rate of 794,519 tons (CalRecycle 2023c). However, 85 percent of the solid waste was delivered to Keller Canyon Landfill. Less than two percent of the total waste tonnage was shipped to Acme Landfill.

The Keller Canyon Landfill is at 901 Bailey Road in unincorporated Contra Costa County near Pittsburg and Bay Point. It is owned and operated by Republic Services and has been in operation since 1992. The landfill is permitted to receive up to 3,500 tons of waste per day, has a remaining capacity of approximately 63 million cubic yards, and is estimated to close by 2050 (CalRecycle 2023d). The landfill has a remaining capacity of more than 15 years as required by AB 939. Detailed information regarding Keller Canyon Landfill is provided in Table 5.17-7, *Keller Canyon Landfill*.

Table 5.17-7 Keller Canyon Landfill

Landfill Location and Name	Maximum Permitted Throughput, tons/day	Average Disposal, tons/day	Residual Disposal Capacity, tons/day	Remaining Capacity, cubic yards	Estimated Closing Year
Keller Canyon Landfill 901 Bailey Road Bay Point, CA 94565	3,500	2,591	909	63,408,410	2050

Source: CalRecycle, 2023.

Table 5.17-7 shows that an average of 2,591 tons/day was accepted by Keller Canyon Landfill in 2022, with the majority of the solid waste originating in Contra Costa County. With a permitted capacity of 3,500 tons/day, the residual disposal capacity is currently 909 tons/day. However, the landfill has recently applied for a modification of its permit to increase the current maximum daily tonnage limit to 4,900 tons/day.

Solid Waste Diversion and Recycling

Compliance with AB 939 is measured by comparing the CalRecycle target disposal rates for residents and employees to actual disposal rates. There are different target disposal rates for the various cities and JPAs within the county. However, the CalRecycle target disposal rates for unincorporated Contra Costa County are 3.9 pounds per day (ppd) for residents and 20.1 ppd for employees. The actual disposal rates in 2021 were 2.2 ppd for residents and 11.7 ppd for employees (CalRecycle, 2023e). Therefore, the solid waste diversion goals for the county have been met.

Illegal Dumping

Another issue related to solid waste in Contra Costa County is illegal dumping, which has immediate and long-term adverse effects on health and safety, community assets, community pride, economic development, and natural habitats. Illegal dumping hot spots are widespread throughout the county, occurring on rural roads and agricultural land, in suburban neighborhoods, and in urban environments, affecting many communities regardless of socio-economic status. In 2018, the County formed an interdepartmental team and began implementing strategies to combat illegal dumping as part of the Contra Costa County Illegal Dumping Initiative. Strategies are grouped into four categories: educate, prevent, clean up, and enforce. The efforts include a public outreach campaign to educate residents about dumping, street signs placed near dumping zones with information on how to report dumping activity, removal of abandoned recreation vehicles, and dedicated law enforcement to investigate dumping crimes.

5.17.4.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

U-6 Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

U-7 Not comply with federal, State, and local management and reduction statutes and regulations related to solid waste.

5.17.4.1 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies, and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to solid waste disposal systems. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Public Facilities and Services Element

- ***PFS-P7.1**: Coordinate with private solid waste collection and disposal companies, cities, and other appropriate agencies to plan solid waste management facilities that are safe, effective, and efficient.*
- **PFS-P7.2**: *Coordinate with other jurisdictions to ensure that solid waste management, including solid waste resource recovery (e.g., reduce, reuse, recycle, compost, and waste-to-energy), is carried out in accordance with the Countywide Integrated Waste Management Plan and meets strict environmental standards.*
- **PFS-P7.3**: Strive to provide equivalent solid waste collection services and rates across each unincorporated community under County franchise control.
- ***PFS-P7.4:** Ensure that new development complies with the requirements of the Countywide Integrated Waste Management Plan.*
- **PFS-P7.5**: *Require new residential and commercial uses to provide adequate space for trash, recycling, and organics collection, as well as edible food recovery when applicable.*
- **PFS-P7.6**: Encourage new technologies for organics processing consistent with SB 1383, the Short-Lived Climate Pollutants Reduction Strategy of 2016.
- **PFS-P7.7**: Support expansion of recycling programs and efforts to locate convenient, accessible recycling centers in Impacted Communities.
- **PFS-P7.8**: Consistently use multiprong approach (i.e., educate, prevent, clean up, enforce) to combat illegal dumping.
- **PFS-P7.9**: Prohibit new landfills in ecologically sensitive areas, and require that new landfills be located, designed, and operated to avoid adverse impacts to surrounding land uses, including by limiting the area of landfill activities; limiting hours of operation; providing safe and appropriate transportation routes; maintaining site security; identifying associated off-site feeder transfer stations; grading to blend the landfill disturbance area with surrounding topography; covering refuse daily; and mitigating noise, odor, litter, and visual impacts.
- **PFS-P7.10:** Require that new landfills provide the following:
  - (a) An appropriate leachate collection and recovery system.
  - (b) An approved erosion-control and drainage plan
  - (c) Geotechnical studies, including stability analysis, to determine the most appropriate engineering design.

(d) A habitat enhancement plan that provides for at least a 3:1 replacement for lost significant habitat.

- **PFS-P7.11**: Require new landfills to be designed and operated so that upon decommissioning they can be repurposed for other uses, such as renewable energy facilities, recycling and organics recovery operations, outdoor recreation facilities, and open space.
- **PFS-P7.12**: Require that new and expanded landfill operations significantly reduce GHG emissions to meet or exceed to the extent feasible State targets, and work toward carbon-neutral landfills.
- ***PFS-P7.13**: Extend the life of landfills by continually striving to:*
  (a) Reduce the amount of solid waste generated.
  (b) Reuse and recycle as much solid waste as possible.
  (c) Utilize the energy and nutrient value of soil waste (i.e., waste to energy and composting).
  (d) Properly dispose of remaining soil waste.
- **PFS-P7.14:** Discourage direct public access to landfills and instead direct the public to transfer stations. Base the need for new or expanded transfer stations on economics, the need to mitigate traffic impacts, and the need to inspect refuse for hazardous materials and recyclables.
- **PFS-P7.15**: *Ensure transfer stations provide adequate capacity to accommodate recovery of recyclables and organic materials and encourage organics processing.*
- **PFS-P7.16:** *Include a condition of approval in land use permits for solid waste facilities requiring review for compliance with permit conditions every three to five years.*
- **PFS-A7.1**: Study the potential benefits of combining the County's solid waste collection franchise agreements, or adjusting the boundaries of franchise service areas, to improve efficiency and consistency.
- **PFS-A7.2**: Streamline the permitting process for composting, organics processing, and repair/reuse facilities.
- **PFS-A7.3:** Partner with community organizations and solid waste franchise collection haulers to maximize participation in community clean-up days and residential on-call garbage pick-ups in Impacted Communities. Encourage community participation by holding these events in conjunction with other community events whenever possible.
- **PFS-A7.4:** Work with other counties, cities, and community members to establish public/private partnerships to combat illegal dumping.
- **PFS-A7.5:** Install signage and increase education, monitoring, enforcement, and rapid cleanup to discourage illegal dumping, especially in Impacted Communities and rural areas.
- **PFS-A7.6**: Use the County's legislative platform process and partner with other public agencies throughout the state to propose and support legislation to combat illegal dumping.

Proposed CAP Strategies and Actions

The following proposed CAP strategies and actions are related to solid waste collection, disposal, recycling, and reuse.

Strategy NW-1: Increase composting of organic waste.

Strategy NW-1 Actions:

- Ensure, through franchise agreements and other relationships with waste haulers, a source-separated organics collection service for all residential and commercial customers in County-controlled collection franchise areas.
- Require that new and expanded landfill operations significantly reduce GHG emissions to meet or exceed State targets to the extent feasible, and work toward carbon-neutral landfills. (PFS-7.12)
- Work with wastewater providers to explore the use of organic waste as feedstock for anaerobic digesters to produce biogas that can generate electricity or fuel.
- Require local restaurants, grocery stores, and other edible food generators that handle large quantities of food to partner with food rescue organizations to divert edible food that would be otherwise disposed in landfills for distribution to those in need, in accordance with SB 1383.
- Collaborate with edible food recovery programs and the Community Wellness & Prevention Program to decrease food waste and address hunger.
- Procure compost or other products made from recovered organic waste in accordance with the County's Recovered Organic Waste Product and Recycled Paper Procurement Policy.

Strategy NW-2: Reduce waste from County operations.

Strategy NW-2 Actions:

- Establish a source-separated organics collection service at all County-owned facilities that includes recovering food waste (scraps) and food-soiled paper.
- Implement three-stream recycling (trash, recycling, and organic waste) at all County-owned facilities.
- Establish requirements for source-separated organics collection and three-stream recycling as conditions in lease agreements for County offices.
- Conduct waste audits of County facilities, including assessing the volume and composition of all waste streams, to identify challenges with waste activities and develop educational or operational changes to address issues and reduce waste generation.
- Obtain material for capital projects from local and low-carbon sources to the greatest extent feasible, including allocating additional funds to allow for such materials, and integrate appropriate standards into the County's Environmentally Preferable Purchasing (EPP) policy.
- Continue to reduce paper use in County operations. Procure recycled paper and janitorial supplies in accordance with the Recovered Organic Waste Product and Recycled Paper Procurement Policy.
- Continue engagement with TRUE zero-waste certification for County projects.

- Enact Bay-friendly landscaping practices at County facilities. Develop County policies and practices for Bay-friendly landscaping.
- Explore opportunities to reuse wood from County tree maintenance activities as an alternative to chipping.
- Encourage medical facilities and medical waste recycling companies to upgrade facilities to increase the amount of medical waste recycled or reprocessed.
- Explore the feasibility of transitioning to reusable products in the health sector, where appropriate, and procuring products certified as green or low carbon.

Strategy NW-3: Increase community-wide recycling and waste minimization programs.

Strategy NW-3 Actions:

- Create a source-reduction program in partnership with regional agencies to promote rethinking, refusing, reducing, reusing, and regenerating of materials.
- Improve educational efforts to promote better waste sorting among community members.
- Work with waste haulers to expand the types of materials accepted by recycling programs as economic conditions allow.
- Work with waste haulers to continue availability of curbside pickup recycling services.
- Evaluate the feasibility of banning single-use plastics or establishing additional restrictions beyond those created by SB 54.
- Encourage the use of reusable items over disposable materials.
- Promote the Contra Costa County Recycling Market Development Zone low-interest loan program to incentivize the development of businesses that use recycled materials.

5.17.4.2 ENVIRONMENTAL IMPACTS

Impact 5.17-5: Existing and/or proposed facilities would be able to accommodate project-generated solid waste. [Threshold U-6]

Proposed General Plan

With implementation of the proposed General Plan, the population is anticipated to increase by 65,600 residents and approximately 9,400 jobs are projected to be generated. As shown in Table 5.17-8, *Increase in Solid Waste Generation Rates,* this projected growth would result in an increase in solid waste of approximately 127 tons/day or 46,355 tons/year. These numbers are conservative because with continued recycling and waste reduction programs implemented by the County, cities, and JPAs, the waste generation rates would be reduced over time.

Table 5.17-8 Increase in Solid Waste Generation Rates

Category	Increase in Residents or Jobs	Solid Waste Generation Rate (ppd)	Increase in Solid Waste (tons/day)	Increase in Solid Waste (tons/year)
Residents	65,600	2.2	72	26,280
Jobs	9,400	11.7	55	20,075
Total			**127**	**46,355**

Sources: CalRecycle, 2023; PlaceWorks, 2023.

Conservatively assuming that all of the solid waste generated in the county is transported to Keller Canyon Landfill, an increase of 127 tons/day with the implementation of the proposed General Plan would be about 14 percent of the current residual capacity of the landfill. In addition, the landfill is in the process of increasing its permitted daily disposal capacity to 4,900 tons/day. Even without the increase in capacity, the solid waste generated from the proposed General Plan would be easily accommodated by this landfill. This estimate also assumes that all of the generated waste is landfilled, whereas the majority of the waste generated in the county is diverted from landfill disposal by recycling and composting. The results in Table 5.17-8 show that the proposed General Plan would not generate solid waste in excess of the capacity of the landfills that serve the county.

In addition, all new development pursuant to the proposed General Plan would require compliance with Division 4.4 of the 2022 CALGreen Building Code, which requires that at least 65 percent of nonhazardous construction and demolition waste from residential and nonresidential construction operations be recycled and/or salvaged for reuse. New development and redevelopment would also need to comply with the requirements of AB 341 that mandate recycling for commercial and multifamily residential land uses. Therefore, solid waste facilities would be able to accommodate project-generated solid waste, and impacts would be less than significant. Also, the Public Services and Facilities Element of the proposed General Plan contains policies and actions that are intended to reduce solid waste generation and increase recycling efforts, which in turn would minimize potential impacts on the solid waste infrastructure and landfill capacities.

With continued compliance with the applicable regulations, leading to increased recycling and waste diversion, and adherence to the proposed General Plan policies and actions, anticipated rates of solid waste disposal would be less than significant with respect to permitted landfill capacity. In addition, the County, as well as the cities and JPAs within the county boundaries, are well below the CalRecycle target disposal rates and meet the regulatory requirements of AB 939. Therefore, implementation of the proposed General Plan would not generate solid waste in excess of the capacity of the landfills, or otherwise impair the attainment of solid waste reduction goals, and the impact is less than significant.

Proposed CAP

The proposed CAP focuses on GHG emissions reduction, including by reducing waste generation, increasing composting, and expanding community waste minimization programs. This also includes reducing the amount of packaging used in food service and retail projects. Additional strategies to achieve waste reduction goals and increase recycling and organic waste collections are provided in the proposed CAP. Therefore, implementation of the proposed CAP would not generate solid waste in excess of State or local standards, or in excess of the

capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.17-5 would be less than significant.

Mitigation Measures

No mitigation measures required.

Level of Significance After Mitigation: Impact 5.17-5 would be less than significant.

Impact 5.17-6: The proposed project would comply with federal, State, and local statutes and regulations related to solid waste. [Threshold U-7]

Proposed General Plan

All of the solid waste collection and transport franchises within the county comply with all State requirements to reduce the volume of solid waste through recycling and organic waste diversion. Unincorporated Contra Costa County's per capita disposal rates of 2.2 ppd per resident and 11.7 ppd per employee are well below CalRecycle targets of 3.9 ppd for residents and 20.1 ppd for employees. In addition, all potential future development pursuant to the proposed General Plan would comply with Division 4.4, *Material Conservation and Resource Efficiency,* of the CALGreen Building Code, which requires that at least 65 percent of nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

Potential future development would also comply with AB 341, which mandates recycling for commercial and multi-family residential land uses as well as schools and school districts. Additionally, potential future businesses pursuant to the proposed General Plan that generate organic waste in amounts over a certain threshold would be mandated to recycle organic matter in accordance with AB 1826. Therefore, the County and its solid waste collection providers would comply with all applicable federal, State, and local solid waste regulations, and impacts would be less than significant.

Proposed CAP

As described under Impact Discussion 5.17-5, the proposed CAP provides many strategies to achieve waste reduction goals and increase recycling and organic waste collection. Therefore, the proposed project would comply with federal, State, and local statutes and regulations related to solid waste, and implementation of the proposed CAP would have less than significant impacts.

Level of Significance Before Mitigation: Impact 5.17-6 would be less than significant.

Mitigation Measures

No mitigation measures required.

Level of Significance After Mitigation: Impact 5.17-6 would be less than significant.

5.17.4.3 CUMULATIVE IMPACTS

The cumulative setting for solid waste includes all existing, planned, proposed, approved, and reasonably foreseeable development in all of Contra Costa County, including the EIR Study Area and incorporated parts of the county. Implementation of the proposed General Plan is estimated to result in an increase of 65,600 residents and 9,400 jobs. As evaluated in Impact 5.17-5, this would result in an increase in solid waste generation of approximately 127 tons/day. This is well within the permitted residual capacity of Keller Canyon Landfill. In addition, some of the waste generated by residents and businesses in the county could be transported to 25 other landfills within the Bay Area. And this estimate does not consider the reduction in landfilled waste in the future as recycling and organic waste diversion rates increase.

In addition, new development within Contra Costa County would comply with Division 4.4 of the 2022 CALGreen Building Code, which requires that at least 65 percent of nonhazardous construction and demolition waste from residential and nonresidential construction operations be recycled and/or salvaged for reuse. This would also reduce the volume of solid waste transported to the landfills. The trend of increasing diversion rates is expected to increase in the future. Also, Keller Canyon Landfill, which receives most of the solid waste generated in Contra Costa County, is in the process of expanding its daily permitted disposal rate by 40 percent from 3,500 tons/day to 4,900 tons/day. Continued compliance with the applicable regulations and an increase in recycling and landfill diversion rates would ensure that solid waste cumulative impacts would be less than significant.

5.17.4.4 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.17.4.5 MITIGATION MEASURES

No mitigation measures are required.

5.17.4.6 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

5.17.5 Energy Infrastructure

Impacts associated with electricity and natural gas infrastructure are addressed in Section 5.6, *Energy,* of this Draft EIR. Therefore, this section only discusses telecommunications infrastructure and associated potential impacts with implementation of the proposed project.

5.17.5.1 ENVIRONMENTAL SETTING

Regulatory Background

Federal

Federal Telecommunications Act of 1996

The Federal Telecommunications Act of 1996 was enacted to promote competition and reduce regulation in order to secure lower prices and higher quality of services for American consumers and encourage the rapid deployment of new telecommunications technologies. It removed barriers for entry into the market, deregulated cable television service, allowed local telephone companies to provide cable television service, required v-chips in new televisions to allow parents to block access to objectionable programming, and increased the number of television stations a single company may own.

Federal Communications Commission

The Federal Communications Commission (FCC) regulates interstate and international communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia, and US territories. The FCC is an independent US government agency overseen by Congress and is the primary authority for communications law, regulation, and technological innovation. The FCC's rules and regulations are found in Title 47 of the Code of Federal Regulations (CFR).

State

Digital Infrastructure and Video Competition Act of 2006

The Digital Infrastructure and Video Competition Act of 2006 created a new State franchise process that was designed to speed up new infrastructure investment and promote competition for broadband and video services in California. The Act designated the California Public Utilities Commission (CPUC) to issue the State video franchises and facilitate market entry for new companies to compete against existing cable and satellite video companies. The new competition is expected to drive down prices for video services and provide very fast internet services to customers. Cities and counties have the jurisdiction to enforce video customer service rules.

California Public Utilities Commission

The CPUC regulates telecommunication utilities and services, protects customers, and assures all Californians have access to safe and reliable utility infrastructure and services. Recently, the CPUC expanded the California Lifeline Program to provide discounts on both home phone and cell phone services to low-income households. In addition, the CPUC approved a pilot program that leverages the federal Affordable Connectivity Program to offer both wireline broadband services and wireless broadband services to low-income Californians (CPUC 2023).

Local

Contra Costa County Ordinance Code

Division 58 – Cable Systems

Division 58, *Cable Systems*, under Title 5, *General Welfare and Business Regulations,* promotes competition in the cable industry, facilitates the development of cable infrastructure, minimizes aesthetic impacts and damage to public property, provides for the payment of reasonable compensation for the commercial use of public property, and establishes customer service standards. The Board of Supervisors may grant one or more non-exclusive revocable franchises to establish, construct, operate, and maintain cable systems within the county. All applicants for a new franchise must submit an application, along with preliminary engineering plans, specifications, a network map of the facilities, and an application fee. The cable operator must also make available one or more dedicated channels for purposes of public, educational, and governmental access.

Division 59 – Video Services

Division 58, *Video Services,* is adopted pursuant to the authority granted in the Digital Infrastructure and Video Competition Act of 2006. The provisions of the Code establish a fee to support public, educational, and governmental channel facilities for franchises that provide video services within the county.

Chapter 88-24 – Wireless Telecommunication Facilities

Chapter 88-24, *Wireless Telecommunication Facilities*, under Division 88, *Special Land Uses*, establishes criteria for the location and design of wireless telecommunication facilities in the county, consistent with State and federal requirements. The purpose of the Code is to 1) enable wireless telecommunication service providers to serve the current and future needs of the county's residents, businesses, and local governments; 2) avoid adverse visual and aesthetic impacts of wireless telecommunication facilities by regulating the location and design of the facilities; 3) and encourage the collocation of wireless telecommunication facilities whenever feasible. Article 88-24.4 provides the criteria for facility location, design, and operation of the telecommunication facilities and Article 88-24.6 outlines the permit and fee requirements.

Chapter 96-10 – Underground Utilities

Chapter 96-10, *Underground Utilities*, is found under Division 96*, Improvements*, and requires all utility distribution facilities, including but not limited to electric, communication and cable television lines within any residential or commercial subdivision to be placed underground, except for equipment appurtenant to underground utilities, such as surface-mounted transformers or metal poles supporting streetlights.

Existing Conditions

Telecommunications services include wireless internet, cell phone and land line telephone, cable television, and satellite television. There are numerous telecommunication and internet providers that serve the county. Telephone and television providers include AT&T, Verizon, T-Mobile, Xfinity, Dish, DirectTV, and others. Internet providers include AT&T, Astound Broadband, CalDSL, HugesNet, Sprint, T-Mobile, Verizon, Viasat,

and others. Multiple choices give Contra Costa County residents and businesses a variety of options when choosing telecommunication providers.

The wireless networks consist of fiber-optic cables that connect major internet hubs over long distances. The networks can be expanded by using small cell facilities, which are small antennae placed on existing utility poles or streetlights along with small pole-mounted radios and other accessory equipment. In this manner, the fiber-optic network can be easily expanded to meet the demand for wireless services. The current infrastructure is sufficient to serve existing and future customers in the county. The County will continue to require franchises to underground utility service connections for new development and underground existing overhead lines, when justifiable.

5.17.5.2 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

U-8 Require or result in the relocation or construction of new or expanded telecommunications facilities, the construction of which could cause significant environmental effects.

5.17.5.3 PROGRAMS, PLANS, AND POLICIES

Proposed General Plan Goals, Policies, and Actions

The following goals, policies, and actions from the proposed General Plan are applicable to telecommunications systems. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Public Facilities and Services Element

- **PFS-P1.4:** Encourage, and whenever possible require, co-location and undergrounding of new utility infrastructure, such as transmission and distribution lines, fiber-optic cables, and pipelines, in existing rights-of-way to minimize visual, operational, and environmental impacts on the community.
- **PFS-A2.6**: Pursue public-private partnerships that will improve access to reliable, fast internet and make digital resources available in Impacted Communities at affordable prices.
- **PFS-P3.1:** Coordinate LAFCO, infrastructure and service providers, and cities to ensure infrastructure and services are reliable and provided in a cost-effective and equitable manner.

Proposed CAP Strategies and Actions

There are no specific strategies or actions regarding telecommunication systems in the proposed CAP. However, there are numerous strategies and actions related to the use of alternative energy sources, such as solar and wind, and the electrification of new housing and commercial buildings with the goal of reducing energy use and converting to low-carbon or carbon-neutral fuels. Details are provided in Section 5.6, *Energy*, of this Draft EIR.

5.17.5.4 ENVIRONMENTAL IMPACTS

Impact 5.17-7: Existing telecommunication facilities are adequate to meet project requirements. [Threshold U-8]

Proposed General Plan

As discussed in Section 5.17.5.1, *Environmental Setting*, there are multiple telecommunication providers in Contra Costa County, including internet services, wireless services, cable television, and satellite television. All new franchises and existing franchises that are up for renewal will be required to follow the regulations and procedures specified by the CPUC and the Contra Costa County Ordinance Code for cable systems, video systems, and wireless telecommunications systems. Also, the Contra Costa County Ordinance Code requires the undergrounding of communication and cable television lines within any residential or commercial subdivision to minimize potential aesthetic and visual impacts.

Each telecommunication provider also prepares long-range plans to accommodate projected growth in their service areas. Future expansion or construction projects would be required to comply with the requirements of the FCC, CPUC, and Contra Costa County Ordinance Code prior to approvals. Therefore, with adherence to the policies of the proposed General Plan and the federal, State, and local regulatory requirements, the proposed General Plan is not expected to require or result in new or expanded telecommunication facilities beyond those already planned, and the impact is less than significant.

Proposed CAP

Because the proposed CAP focuses on the reduction of GHG emissions and telecommunication systems are not associated with these emissions, there are no specific provisions in the proposed CAP regarding telecommunication facilities. However, the implementation of the proposed CAP would not have an adverse impact on telecommunications systems and therefore the impact is less than significant.

Level of Significance Before Mitigation: Impact 5.17-7 would be less than significant.

Mitigation Measures

No mitigation measures required.

Level of Significance After Mitigation: Impact 5.17-7 would be less than significant.

5.17.5.5 CUMULATIVE IMPACTS

The area considered for cumulative impacts is the service areas of the telecommunications providers within all of Contra Costa County. The telecommunication providers that serve the county have the capability to serve future increases in population within their service areas without significant changes to the existing infrastructure. In addition, the proposed General Plan includes policies and actions that would ensure compliance with federal, State, and local regulations and ordinances, thereby avoiding the need for new or expanded facilities beyond what is already planned for future growth. Therefore, the proposed project would

not result in a cumulatively considerable impact to telecommunication facilities and cumulative impacts would be less than significant.

5.17.5.6 LEVEL OF SIGNIFICANCE BEFORE MITIGATION

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.17.5.7 MITIGATION MEASURES

No mitigation measures are required.

5.17.5.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts would be less than significant.

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5.18 WILDFIRE

This section describes the regulatory framework and existing conditions of the Environmental Impact Report (EIR) Study Area and evaluates the potential wildfire impacts from adopting and implementing the proposed project. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts related to implementation of the proposed project. The California Environmental Quality Act (CEQA) Guidelines Appendix G threshold related to wildfire in Hazards and Hazardous Materials (Threshold H-7) is discussed and analyzed in this section.

5.18.1 Environmental Setting

5.18.1.1 REGULATORY BACKGROUND

Federal

National Cohesive Wildfire Management Strategy

The National Park Service, Bureau of Land Management, Bureau of Reclamation, and Department of Defense own and manage land within the EIR Study Area. In the Federal Land Assistance, Management, and Enhancement Act of 2009 (FLAME Act), Congress mandated the development of a National Cohesive Wildland Fire Management Strategy for all lands within the United States. Wildfire management on these lands is guided by the National Cohesive Wildland Fire Management Strategy, which has three primary goals (US Department of Interior and US Department of Agriculture 2014):

1. Resilient landscapes
2. Fire adapted communities
3. Safe and effective wildfire response

The three goals enable the land managers to manage vegetation and fuels; protect homes, communities, and other values at risk; manage human-caused ignitions; and effectively and efficiently response to wildfires. California is part of the Western Regional Strategy Committee, chartered to support and facilitate the implementation of the National Cohesive Wildland Fire Strategy.

National Fire Protection Association Standards

National Fire Protection Association (NFPA) codes, standards, recommended practices, and guides are developed through a consensus standards development process approved by the American National Standards Institute. NFPA standards are recommended (advisory) guidelines for fire protection that are referenced in the California Fire Code, which is adopted by Contra Costa County every three years. Specific standards applicable wildland fire hazards include, but are not limited to:

- **NFPA 1141,** Fire Protection Infrastructure for Land Development in Wildlands
- **NFPA 1142,** Water Supplies for Suburban and Rural Fire Fighting
- **NFPA 1143,** Wildland Fire Management

- **NFPA 1144,** Reducing Structure Ignition Hazards from Wildland Fire
- **NFPA 1710,** Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations

State

California Department of Forestry and Fire Protection

The California Department of Forestry and Fire Protection (CAL FIRE) is dedicated to the fire protection and stewardship of over 31 million acres of California's wildlands. CAL FIRE provides fire assessment and firefighting services for lands within State Responsibility Areas (SRA), conducts educational and training programs, provides fire planning guidance and mapping, and reviews general plan safety elements to ensure compliance with State fire safety requirements.

The Board of Forestry and Fire Protection is a government-appointed approval body within CAL FIRE. It is responsible for developing the general forest policy of the State, for determining the guidance policies of CAL FIRE and for representing the State's interest in federal forestland in California. The Board of Forestry and Fire Protection also promulgates regulations and approves general plan safety elements that are adopted by local governments for compliance with State statutes.

The California Office of the State Fire Marshal supports the mission of CAL FIRE by focusing on fire prevention. These responsibilities include regulating buildings in which people live, congregate, or are confined; controlling substances and products which may, in and of themselves, or by their misuse, cause injuries, death and destruction by fire; providing statewide direction for fire prevention within wildland areas; regulating hazardous liquid pipelines; developing and renewing regulations and building standards; and providing training and education in fire protection methods and responsibilities. These are accomplished through major programs including engineering, education, enforcement, and support from the Board of Forestry and Fire Protection. For jurisdictions within SRAs or Very High Fire Hazard Severity Zones (FHSZ), the Land Use Planning Program division of the Office of State Fire Marshal reviews safety elements during the update process to ensure consistency with California Government Code, Section 65302(g)(3).

Together, the Board of Forestry and Fire Protection, Office of State Fire Marshal, and CAL FIRE protect and enhance the forest resources of all wildland areas of California that are not under federal jurisdiction.

Fire Hazard Severity Zones and Responsibility Areas

CAL FIRE designates FHSZs as authorized under California Government Code Sections 51175 et seq. CAL FIRE considers many factors when designating fire severity zones, including fire history, existing and potential vegetation fuel, flame length, blowing embers, terrain, and weather patterns for the area. CAL FIRE designates FHSZs within three types of areas depending on what level of government is financially responsible for fire protection:

- LRA – Local Responsibility Area: incorporated communities are financially responsible for wildfire protection. There is one severity zone in the LRA, which is the Very High FHSZ.

- SRA – State Responsibility Area: CAL FIRE and contracted counties are financially responsible for wildfire protection. There are three hazard zones in SRAs: moderate, high, and very high.
- FRA – Federal Responsibility Area: federal agencies such as the U.S. Forest Service, National Park Service, Bureau of Land Management, U.S. Department of Defense, U.S. Fish and Wildlife Service, and Department of the Interior are responsible for wildfire protection.

In 2022, the Office of the State Fire Marshal began the process of adopting updated FHSZ maps. On January 31, 2024, the State adopted the updated FHSZ maps for SRAs, and they will become effective on April 1, 2024. The previously approved FHSZ maps, which were adopted in November 2007, were used in this analysis because they were the best available information at the time of preparation. The newly-approved FHSZ maps will be included in the General Plan prior to adoption.[1]

2018 Strategic Fire Plan for California

CAL FIRE produced the 2018 *Strategic Fire Plan for California*, which contains goals, objectives, and policies to prepare for and mitigate the effects of fire on California's natural and built environments (California State Board of Forestry and Fire Protection 2018). The 2018 *Strategic Fire Plan for California* focuses on fire prevention and suppression activities to protect lives, property, and ecosystems, in addition to providing natural resource management to maintain State forests as a resilient carbon sink to meet California's climate change goals. A key component of the 2018 *Strategic Fire Plan for California* is the collaboration between communities to ensure fire suppression and natural resource management is successful (California State Board of Forestry and Fire Protection 2018).

2021 California's Wildfire and Forest Resilience Action Plan

The Governor's Forest Management Task Force developed the *California's Wildfire and Forest Resilience Action Plan*, which is a framework for establishing healthy and resilience forests that can withstand and adapt to wildfire, drought, and climate change. This Plan accelerates efforts to restore the health and resilience of California's forests, grasslands, and natural places; improves the fire safety of communities; and sustains the economic vitality of rural forested areas. CAL FIRE, in partnership with the U.S. Forest Service, intends to scale-up forest thinning and prescribed fire; integrate climate adaptation into the statewide network of regional forest and community fire resilience plans; improve the electricity grid resilience, and promote sustainable land use.

State Responsibility Area and Very High Fire Hazard Severity Zone Fire Safe Regulations

California Code of Regulations Title 14, Division 1.5, Chapter 7, Subchapter 2, *SRA/VHFHSZ Fire Safe Regulations,* establishes minimum wildfire protection standards for construction and development within the SRA and Very High FHSZ and requires CAL FIRE to review development proposals and enact recommendations that serve as conditions of approval in these zones. These standards include basic emergency access and perimeter wildfire protection measures; signing and building numbering; private water supply

[1] Please see the Office of the State Fire Marshal's webpage to view the updated FHSZ SRA maps: https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/

resources for emergency fire use; and vegetation modification. These regulations apply to all residential, commercial, and industrial buildings within the SRA; the siting of new mobile homes; all tentative and parcel maps; and applications for building permits approved before 1991 where these standards were not proposed. The Fire Safe Regulations also include a minimum setback of 30 feet for all buildings from property lines and/or the center of a road. Section 1273.08, *Dead-End Roads,* of these standards provide regulations for the maximum lengths of single access roadways requiring the following:

- Parcels zoned for less than one acre: 800 feet
- Parcels zoned for 1 acre to 4.99 acres: 1,320 feet
- Parcels zoned for 5 acres to 19.99 acres: 2,640 feet
- Parcels zoned for 20 acres or larger: 5,280 feet

Fire Safe Regulations, Section 1299.03, *Fire Hazard Reduction Around Buildings and Structure Requirements*, provides defensible space requirements for areas within 30 feet of a structure (Zone 1) and between 30 and 100 feet from a structure (Zone 2). In Zone 1, all dead and dying plants are required to be removed and any flammable vegetation that could catch fire must be removed. In Zone 2, horizontal and vertical spacing among shrubs and trees must be created and maintained.

Public Resources Code Section 4291

Public Resources Code Section 4291, *Mountainous, Forest-, Brush- and Grass-Covered Lands*, is intended for any person who owns, lease, controls, operates, or maintains a building or structure in a mountainous area, forest-covered lands, shrub-covered lands, grass-covered lands, or land that is covered with flammable material, regardless of whether the property is within an SRA or Very High FHSZ. This section requires defensible space to be maintained within 100 feet from each side of a structure. An ember-resistant zone is also required within five feet of a structure and more intense fuel reduction between five and 30 feet of a structure.

California Building Standards Code

The California Buildings Standards Code (California Code of Regulations Title 24) provides 12 different codes for construction and buildings in California. This Code is updated every three years, with the most recent version effective January 1, 2023. Contra Costa County regularly adopts the most recent version of the California Building Standards Code, with modifications, into the Contra Costa County Ordinance Code, Title 7, *Building Regulations*.

Building Standards

The California Building Code (CBC), Part 2 of 24 California Code of Regulations, identifies building design standards, including those for fire safety. It is effective statewide, but a local jurisdiction may adopt more restrictive standards based on local conditions under specific amendment rules prescribed by the State Building Standards Commission. Residential buildings are plan checked by local city and county building officials for compliance with the CBC and any applicable local edits. Typical fire safety requirements of the CBC include the installation of sprinklers in buildings and other facilities; the establishment of fire-resistance standards for

fire doors, building materials, and particular types of construction in high FHSZs; requirements for smoke-detection systems; exiting requirements; and the clearance of debris.

Materials and Methods for Exterior Wildfire Exposure

Chapter 7A of the CBC, *Materials and Methods for Exterior Wildfire Exposure*, prescribes building materials and construction methods for new buildings in a FHSZ or Wildland Interface Fire Area. Chapter 7A contains requirements for roofing; attic ventilation; exterior walls; exterior windows and glazing; exterior doors; decking; protection of underfloor, appendages, and floor projections; and ancillary structures. Other requirements include vegetation management compliance, as prescribed in California Fire Code Section 4906 and Public Resources Code 4291.

California Fire Code

The California Fire Code incorporates, by adoption, the International Fire Code of the International Code Council, with California amendments. This is the official Fire Code for the State and all political subdivisions. It is found in California Code of Regulations Title 24, Part 9; like the CBC, the California Fire Code is effective statewide, but a local jurisdiction may adopt more restrictive standards based on local conditions. The California Fire Code is a model code that regulates minimum fire safety regulations for new and existing buildings; facilities; storage; processes, including emergency planning and preparedness; fire service features; fire protection systems; hazardous materials; fire flow requirements; and fire hydrant locations and distribution. Typical fire safety requirements include installation of sprinklers in all buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

Wildland-Urban Interface Areas

Chapter 49 of the California Fire Code, *Requirements for Wildland Urban Interface Fire Areas*, applies to any geographical area identified as a FHSZ by CAL FIRE. This section defines FHSZs and connects to the SRA Fire Safe Regulation requirements for defensible space, as well as parallels requirements for wildfire protection in building construction and hazardous vegetation fuel management in other sections of the California Code of Regulations and the Public Resources Code.

Fire Risk Reduction Community

A Fire Risk Reduction Community is a Board of Forestry and Fire Protection designation for local agencies in the SRA or Very High FHSZ that meet the Board-defined best practices for local fire planning. The requirements for this designation are found in California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 1, Article 3, *Fire Risk Reduction Community List*. Two non-city or -county agencies in Contra Costa County, East Bay Municipal Utilities District (EBMUD) and East Bay Regional Park District (EBRPD), are on the Fire Risk Reduction Community List. Non-city or -county agencies must meet at least two of the following criteria to obtain this designation:

- Identify wildfire as a high-priority hazard in a local, tribal or multi-jurisdictional hazard mitigation plan updated within the last five years, or as a low- or medium-priority hazard with the inclusion of one or more mitigation actions.
- Adopt a community wildfire protection plan, critical infrastructure protection plan, evacuation plan, integrated resource management plan including a fire management plan, or similar plan addressing fire protection within the local agency's jurisdiction within the last five years.
- Sponsor, coordinate, or actively engage with a community disaster preparedness council or group, including but not limited to a Firewise USA community or a fire safe council, with events or meetings at least quarterly.
- Adopt a plan within the last five years or implement an ongoing program to conduct a hazardous fuels reduction project or projects, including but not limited to California Vegetation Treatment Program (CalVTP) projects, forest management and fuels reduction plans (FMRFP), program timberland environmental impact reports (PTEIR), prescribed or cultural burns, and community fuels reduction workdays.
- Adopt a plan within the last five years or implement an ongoing program to conduct public outreach and education about water conservation, wildfire prevention, vegetation management and fuels reduction, home hardening, evacuation preparedness, defensible space, Traditional Ecological Knowledge (TEK) pertaining to fire, fire risk reduction, or similar topics.
- Adopt a special benefit assessment or tax measure or fee that addresses wildfire risk reduction.

Both EBMUD and EBRPD have adopted Local Hazard Mitigation Plans (LHMP) with wildfire as a high priority, and a Community Wildfire Protection Plan (CWPP) has been developed and adopted for Contra Costa County, which both districts serve.

California Public Utilities Commission

In 2007, wildfires in southern California were ignited by overhead utility power lines and aerial communication facilities near power lines. In response, the California Public Utilities Commission (CPUC) began considering and adopting regulations to protect the public from fire hazards posed by overhead power lines and nearby aerial communication facilities. The CPUC published a fire threat map—under Rulemaking 15-05-006, following procedures in Decision 17-01-009, revised by Decision 17-06-024—that adopted a work plan for the development of a utility high fire-threat district where enhanced fire safety regulations in Decision 17-12-024 apply (CPUC 2022a). The fire regulations require electrical utilities to (CPUC 2022b):

- Prioritize the correction of safety hazards.
- Correct nonimmediate fire risks in "Tier 2" (elevated fire threat) areas in the CPUC high fire-threat district within 12 months, and in "Tier 3" (extreme fire threat) areas within 6 months.
- Maintain increased clearances between vegetation and power lines in the high fire-threat district.
- Maintain stricter wire-to-wire clearances for new and reconstructed facilities in Tier 3 areas.
- Conduct annual inspections of overhead distribution facilities in rural areas of Tier 2 and Tier 3 areas.
- Prepare a fire prevention plan annually if overhead facilities exist in the high fire-threat district.

California Government Code

California Government Code Section 65302(g) and Section 65302.15 require that safety elements be reviewed and revised as needed with the revision of a housing element or LHMP, but no less than every eight years, to ensure the goals, policies, actions, mapping, and background content are consistent with State regulations and reflect the best available information for wildfire risks, climate adaptation and resiliency, and emergency evacuation routes for certain residential areas. Communities with LHMP updates after January 1, 2022, must also ensure their safety elements or LHMPs include an assessment of evacuation routes and their capacity, safety, and viability as well as evacuation locations under a range of emergency scenarios.

For wildfire and evacuation purposes, a safety element must:

- Identify wildfire hazards with the latest fire severity zone maps from the Board of Forestry and Fire Protection, U.S. Geological Survey, and other sources.
- Consider guidance given by the Office of Planning and Research's Fire Hazard Planning document.
- Demonstrate that the jurisdiction or contract agency and associated codes satisfactorily address adequate water supply, egress requirements, vegetation management, street signage, land use policies, and other criteria to protect from wildfires.
- Establish in the safety element (and other elements that must be consistent with it) a set of comprehensive goals, policies, and feasible implementation measures for protection of the community from unreasonable risks of wildfire.
- Identify evacuation-constrained residential parcels in hazard-prone areas.

Governor's Office of Planning and Research Fire Hazard Planning Technical Advisory

The Governor's Office of Planning and Research published the Fire Hazard Technical Advisory in 2015 and revised it in 2022 as a planning guide for addressing fire hazards, reducing risk, and increasing resilience across California's diverse communities and landscapes. The Fire Hazard Technical Advisory provides a range of goals, policies, and programs for fire hazard prevention and mitigation, disaster preparedness, and emergency response and recovery. The 2022 update includes specific land use strategies to reduce fire risk to buildings, infrastructure, and communities.

Local

Contra Costa County Ordinance Code

The Contra Costa County Ordinance Code includes various directives to minimize adverse impacts associated with wildfires in the county. The County Ordinance Code is organized by Title, Division, and Chapter. Most provisions related to wildfire and evacuation are included in Title 7, *Building Regulations*. Title 7 includes the adoption of the California Building Code and California Fire Code, which have specific provisions for reducing wildfire hazards in existing and new developments. The 2022 versions of these Codes were adopted, with modifications, into Title 7 of the Contra Costa County Ordinance Code.

Contra Costa County Hazard Mitigation Plan

The purpose of hazard mitigation planning is to reduce the loss of life and property by minimizing the impact of disasters. The Contra Costa County LHMP, most recently updated in 2018 in accordance with the Federal Disaster Mitigation Act of 2000 (DMA 2000), provides an assessment of natural hazards in the county and a set of short-term mitigation actions to reduce or eliminate the long-term risk to people and property from these hazards. In the context of a LHMP, mitigation is an action that reduces or eliminates long-term risk to people and property from hazards, including wildfire.

Mitigation actions for the unincorporated county related to wildfire in Volume II, Chapter 1 of the LHMP include supporting the retrofit or relocation of structures in high hazard areas; maintaining and developing the existing countywide Community Warning System (CWS) by identifying and implementing new technology as it becomes available; enhancing and improving County Ordinance Code language and enforcement; and better informing residents of comprehensive mitigation strategies for all hazards of concern.

The LHMP must be reviewed and approved by FEMA every 5 years to maintain eligibility for disaster relief funding. As part of this process, the California Governor's Office of Emergency Services reviews all LHMPs in accordance with DMA 2000 regulations and coordinates with local jurisdictions to ensure compliance with the Federal Emergency Management Agency's Local Mitigation Plan Review Guide.

Contra Costa County Community Wildfire Protection Plan

The Contra Costa County CWPP, developed by the Diablo Fire Safe Council in conjunction with the Contra Costa County Fire Chiefs Association, Hills Emergency Forum, and Stakeholder Committee Members, identifies and prioritizes fuel reduction opportunities throughout the county, addresses structural ignitability, and promotes collaboration with stakeholders. The Contra Costa County CWPP has been developed based on the priority goals and objectives identified by the Healthy Forest Restoration Act and by local collaborators. The priority actions of the Plan include collaborative partnerships for public communications, evacuation planning and communication, hazardous fuel load management balanced with biological resource protection, defensible space programs, and home hardening. The strategies in the Plan are implemented in cooperation with the fire districts and the Diablo Fire Safe Council in Contra Costa County.

Contra Costa County Emergency Operations Plan

The Contra Costa County Emergency Operations Plan (EOP), adopted in June 2015, provides planned response actions for emergency events throughout the county. The EOP establishes the emergency management organization required to respond to significant emergencies and disasters, identifies the roles and responsibilities required to protect Contra Costa County community members, and establishes the operational concepts for different emergencies, the Emergency Operations Center, and recovery processes. The EOP includes Supplemental Elements that provide direction for specific emergency processes such as warning, integrating people with disabilities and others with access and functional needs, public information, population protection, and training and exercises.

5.18.1.2 EXISTING CONDITIONS

Contra Costa County contains a variety of land use patterns, but approximately 65 percent is preserved for agriculture, open space, wetlands, parks, and other non-urban uses through the existing General Plan land use map. Development that could occur under the proposed project would be in a variety of communities with a variety of settings, including unincorporated pockets in dense urban areas like North Richmond as well as rural agricultural towns like Byron. As a result, the wildfire and evacuation setting will differ by community.

Wildfire Background

The term "wildfire" refers to fires that usually result from the ignition of dry grass, brush, or timber. Historically, wildfires commonly occurred in areas that are characterized by steep or heavily vegetated areas, which make suppression of the fire difficult. More recently, wildfires have been encroaching into more urban areas within the wildland-urban interface (WUI), threatening homes, businesses, and essential infrastructure. While wildfires play an important role in the ecology of many natural habitats, as urban development moves into areas susceptible to wildfire hazards, risks to human safety and property increase.

Types of Wildfires

There are three basic types of wildfires (Natural Resources Canada 2018):

- **Crown fires** burn trees to their tops and are the most intense and dangerous wildland fires.
- **Surface fires** burn surface litter and duff and are known for being the easiest fires to extinguish and to cause the least damage. Brush and small trees enable surface fires to reach treetops, and so are referred to as *ladder fuels*.
- **Underground fires** occur underground in deep accumulations of dead vegetation. These fires move very slowly and can be difficult to extinguish due to limited access.

Wildfires burn in many types of vegetation—forest, woodland, scrub, chaparral, and grassland. Many species of native California plants are adapted to fire and habitats such as chaparral shrubs and conifer forests can recover from fire. For example, some species of chaparral plants, such as ceanothus, require intense heat for germination and therefore have flammable resins on leaves and roots that can quickly sprout up in burned areas (National Park Service 2018). Between 2010 and 2017, wildfires in California burned a total of about 265,000 acres of forest land, 207,000 acres of scrub vegetation, 99,000 acres of grassland, 18,000 acres of desert vegetation, and 14,000 acres of other vegetation types (State Board of Forestry and Fire Protection 2018). Wildfires have been observed to be more frequent and growing in intensity the past several years, with 4,304,379 acres burning in 2020, 2,568,948 acres 2021, 15,291 acres in 2022, and 6,709 acres to date in 2023 (CAL FIRE 2022).

Wildfire Causes

Although the term *wildfire* suggests natural origins, a 2017 study that evaluated 1.5 million wildfires in the United States between 1992 and 2012 found that humans were responsible for igniting 84 percent of wildfires, accounting for 44 percent of acreage burned (Bach 2017). The three most common types of human-caused

wildfires are debris burning (e.g., burning logging slash, farm fields, and trash); arson; and equipment use (Pacific Biodiversity Institute 2007). Power lines can also ignite wildfires through downed lines, vegetation contact, conductors that collide, and equipment failures (Texas Wildfire Mitigation Project). CAL FIRE determined that between 2017 and 2021, 1,344 fires and 639,437 acres have been burned due to electrical power and distribution lines (CAL FIRE 2018 and 2021). Lightning is the most common cause of nature-induced wildfire (Bach 2017).

An analysis of U.S. Forest Service wildfire data from 1986 to 1996 determined that 95 percent of human-caused wildfires and 90 percent of all wildfires were within 0.5 miles of a road, and that about 61 percent of all wildfires and 55 percent of human-caused wildfires occurred within approximately 650 feet (200 meters) of a road. The study concluded that the increase in human-caused ignition greatly outweighs the benefits of increased access for firefighters (Pacific Biodiversity Institute 2007).

There are three primary methods of wildfire spread:

- **Embers.** Embers are the most prolific cause of home ignition, at a rate of two out of every three homes destroyed. Embers are glowing or burning pieces of vegetation or construction debris that are lofted during a wildfire and can move up to a mile ahead of a wildfire, especially during high winds. These small embers or sparks may fall on the vegetation near a home (e.g., on dry leaves, needles, or twigs on the roof) and subsequently ignite the home. Embers can travel several miles during high wind events, such as the Diablo Winds, placing a potential risk to all structures without fire-resistant landscaping and construction within a mile of the fire (CAL FIRE 2019).
- **Direct Flame Contact.** Direct flame contact refers to the transfer of heat by direct flame exposure. Direct contact will heat the building materials of the home, and if the time and intensity of exposure is severe enough, windows will break, and materials will ignite.
- **Radiant Heat.** A house can catch fire from the heat that is transferred to it from nearby burning objects, even in the absence of direct flames or embers. By creating defensible space around homes, the risk from radiant heat is significantly reduced.

Secondary Effects of Wildfires

After a high intensity wildfire is suppressed, the burn scar is typically bare of its vegetative cover, which had supported the hillsides and steeper slopes. As a result, rainstorms increase the possibility of severe landslides and debris flows in these areas. The intense heat from the fire can also cause a chemical reaction in the soil that makes it less porous, causing water to run off during precipitation events, which can lead to flooding downstream.

In addition to damaging natural environments, wildfires can injure and cause fatalities of residents and firefighters, as well as damage or destroy structures and personal property. Wildfires also deplete water reserves, down power lines, disrupt communication services, and block evacuation routes, which can isolate communities. Wildfires can also indirectly cause flooding if flood control facilities become inadequate to handle increases in storm runoff, sediment, and debris that are likely to be generated from burn scars. Regionally, smoke from

wildfires can create poor air quality that can last for days or weeks depending on the scale of the wildfire and wind patterns.

Wildfire in Contra Costa County

The geography, weather patterns, and vegetation in the East Bay area provide ideal conditions for recurring wildfires. As recent wildfire activity revealed, several areas of Contra Costa County face some level of threat from wildland fire. As shown in Figure 5.18-1, *Fire Hazard Severity Zones,* FHSZs are in western Contra Costa County along the mountain range from Norris Canyon to Crockett, and central and eastern Contra Costa County from Mount Diablo to Byron and the Alameda County border to Bay Point. CAL FIRE and local jurisdictions have designated these FHSZs as moderate, high, and very high. Western Contra Costa County has zones designated primarily as high and very high. Central and eastern Contra Costa County have zones designated very high and high near Mount Diablo, and then transitioning to moderate going east towards Byron and south towards Alameda County.

The EIR Study Area contains 163,524 acres of land mapped within CALFIRE's high or very high FHSZs (CALFIRE 2021). According to the County's LHMP, 16,557 acres of land within a FHSZ is developed with residential uses, which houses approximately 7 percent of the population in the county (Contra Costa 2018). An additional 2,176 acres of undeveloped land in the county designated for residential uses is within a FHSZ (Contra Costa 2018). Developed and undeveloped properties within these portions of the county are vulnerable to wildfire risks due to their proximity to forested lands and land adapted to periodic wildfire events. These areas also face increased barriers for emergency access and response because a majority of this land is on hilly terrain. New and existing development would need to effectively manage vegetative fuel loads and maintain adequate fuel modification zones to reduce wildfire potential and spread.

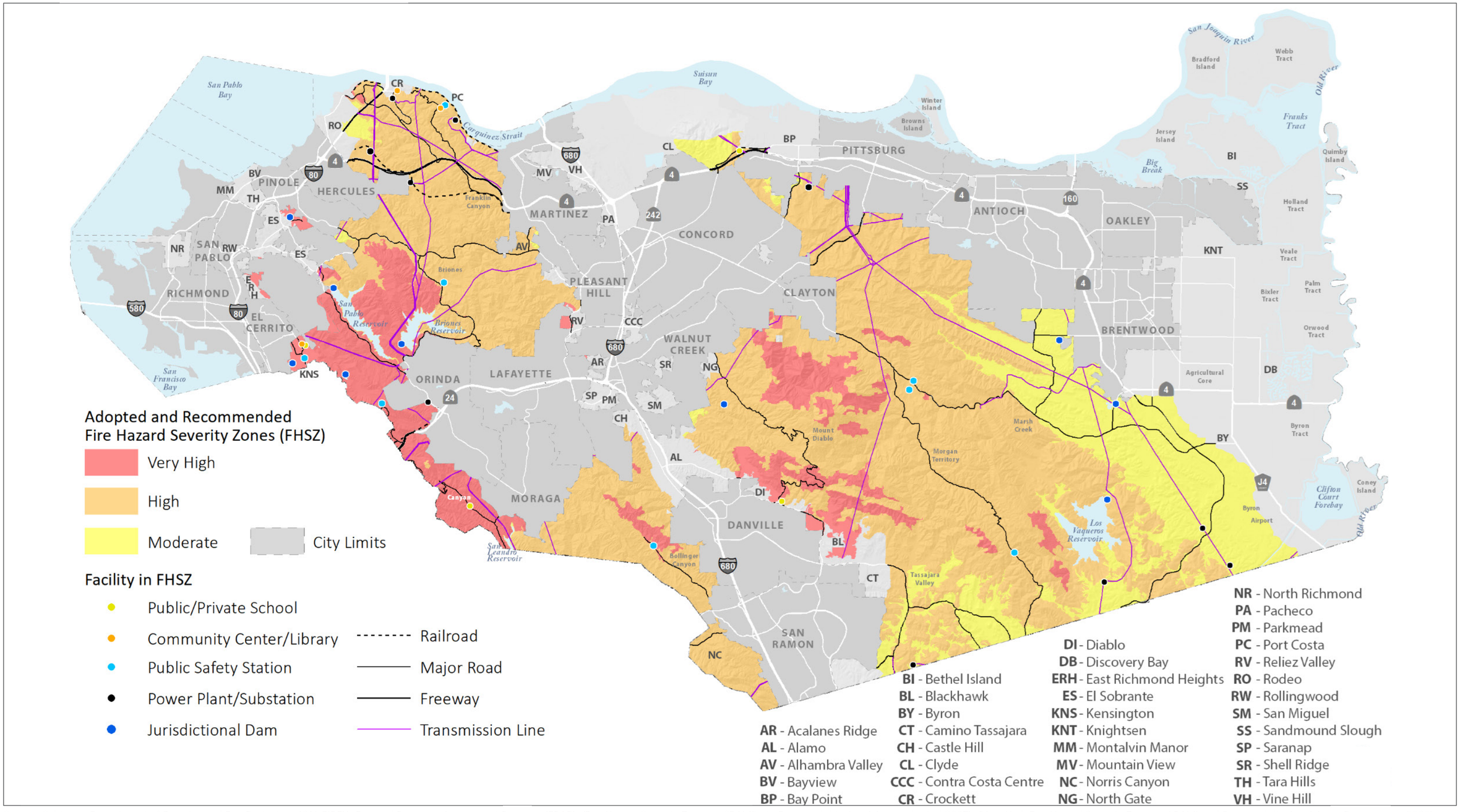
Figure 5.18-2, *Wildland-Urban Interface Areas,* shows the WUI areas in the EIR Study Area. WUI areas occur when urban development is intermixed with wildland vegetation, or when pockets of wildland vegetation occur inside developed areas. The WUI is subdivided into the intermix zone (i.e., where houses and wildland vegetation directly mingle), the interface zone (i.e., housing adjacent to wildland vegetation, but not mingled with it), and the influence zone (i.e., areas of wildfire-susceptible vegetation surrounding the others). The interface and intermix zones are the areas of highest risk for wildfires affecting developed areas. Unlike wildfire in wildland areas, fires that occur within WUI areas are more likely to damage or destroy buildings and infrastructure that support populations, the economy, and key services within the county. Some of the WUI areas in the EIR Study Area have few access roads, which poses challenges for evacuation and for emergency responders to fight fires and help residents in these areas.

Wildfire History

CAL FIRE maintains a list of historic fires throughout the state. According to CAL FIRE, Contra Costa County has experienced several medium to large wildfires in throughout the county and in the WUI. Table 5.18-1, *Historic Wildfire Perimeters in Contra Costa County 2010-2021,* lists historic wildfire incidents greater than 100 acres that have occurred within the county from 2010 to 2021. Figure 5.18-3, *Historic Wildfire Perimeters,* shows the historic wildfire perimeters for all fires that have burned in Contra Costa County between 1880 and 2022.

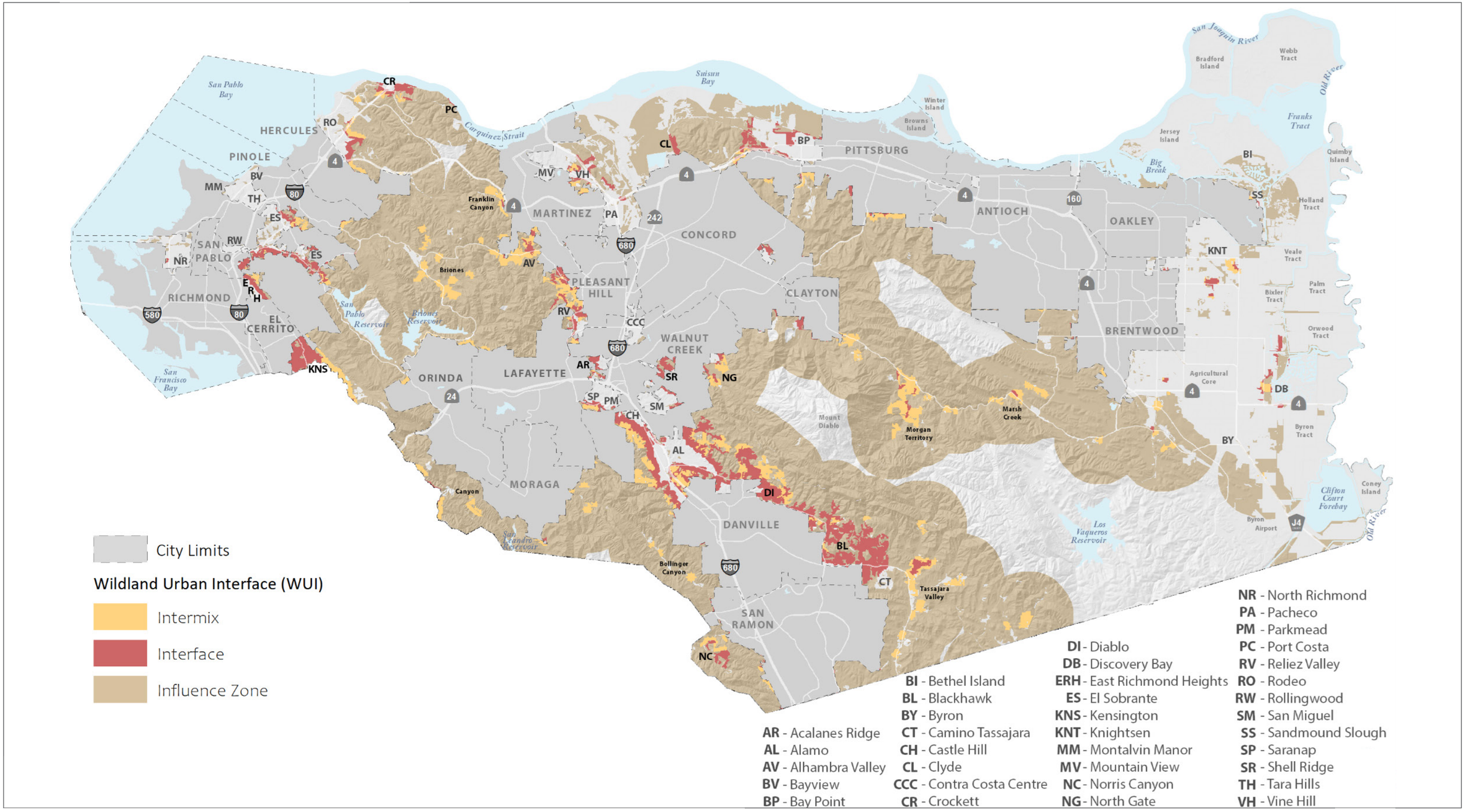
5. Environmental Analysis
WILDFIRE

The Santa Clara Unit (SCU) Complex Fire, which started on August 18, 2020, is by far the largest fire to burn in Contra Costa County in recent years. The fire burned approximately 396,824 acres across Santa Clara, Alameda, Contra Costa, San Joaquin, Stanislaus, and Merced Counties and lasted 44 days. It consisted of three zones: the Deer Zone in Contra Costa County; the Canyon Zone in Alameda, Santa Clara, and parts of Stanislaus Counties; and the Calaveras zone in parts of Stanislaus, San Joaquin, and Merced Counties. The SCU Complex Fire was one of several fire complexes burning during August and September 2020 in California. The fire destroyed 222 structures, damaged 26 structures, and injured 6 people; no fatalities were recorded. As of the summer of 2022, this fire was the fourth largest wildfire in California's modern history.



Source: California Department of Forestry and Fire Protection (CAL FIRE)'s Fire and Resource Assessment Program (FRAP), 'Fire Hazard Severity Zones in SRA' (State Responsibility Area) (map adopted 2007); 'Very High Fire Hazard Severity Zones in LRA' (Local Responsibilty Area) (map Recommend 2009).

Figure 5.18-1
Fire Hazard Severity Zones

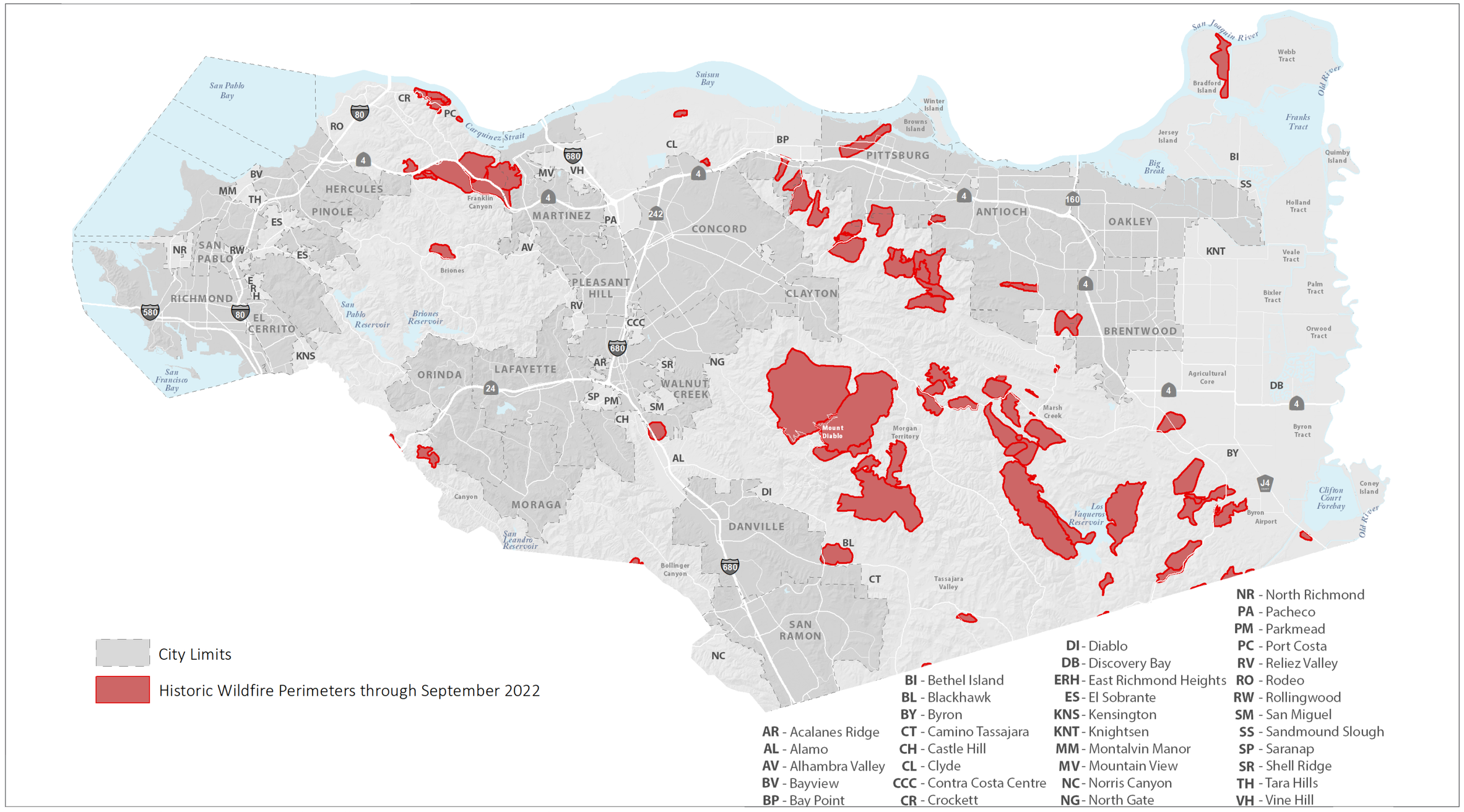


Source: California Department of Forestry and Fire Protection (CAL FIRE)'s Fire and Resource Assessment Program (FRAP).

0 3.5
Scale (Miles)

Figure 5.18-2
Wildland-Urban Interface Areas

WILDFIRE



Source: California Department of Forestry and Fire Protection (CAL FIRE)'s Fire and Resource Assessment Program (FRAP).

0 3.5
Scale (Miles)

Figure 5.18-3
Historic Wildfire Parameters

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Table 5.18-1 Historic Wildfire Perimeters in Contra Costa County 2010-2021

Date	Fire Name	Size (Acres)
June 11, 2010	Vista Fire	186
July 2, 2010	Bradford Fire	510
August 24-26, 2010	Curry Fire	375
December 1-2, 2011	Collier Fire	198
July 1, 2013	Kirker Fire	492
July 1, 2013	Concord Fire	274
September 8-14, 2013	Morgan Fire	3,111
June 24-25, 2015	Loma Fire	533
July 30, 2015	Vasco Fire	195
July 25-August 3, 2018	Marsh Fire	247
August 1-8, 2019	Marsh 3 Fire	340
August 1-8, 2019	Marsh 5 Fire	227
August 1-8, 2019	Marsh 6 Fire	174
August 15-September 10, 2020	Santa Clara Unit Complex Fire	396,824
July 11, 2021	Diablo Fire	128

Source: Contra Costa 2018; California Fire, Incident Database

Wildfire frequency can be assessed through review of the percent of a given area that has been historically burned in wildfire events. Table 5.18-2, *Record of Fire Affecting Contra Costa County,* includes a summary of CAL FIRE records of fires over the 130 years from 1878 to 2015. Approximately 13 percent of the mapped FHSZs in the county have burned during that time period.

Table 5.18-2 Record of Fire Affecting Contra Costa County

Fire Hazard Severity Zone (FHSZ)	Total Area in Zone (Acres)	Area Burned, 1878 – 2015	
		Acres	Percentage of Total
Moderate FHSZ	44,309	3,016	6.8
High FHSZ	130,589	17,847	13.7
Very High FHSZ	42,225	6,459	15.3
Total	**217,123**	**27,322**	**12.6**

Source: Contra Costa 2018.

Factors Influencing Wildfire

Several factors influence wildfire conditions and facilitate the spread of wildfires, including topography, fuels, weather conditions, and climate change. Human actions are also the leading cause of wildfires in California, increasing the risk of wildfire devastating natural lands and communities. This section describes these five factors in the context of Contra Costa County.

Weather

The climate in Contra Costa County is generally referred to as "Mediterranean" with hot, dry summers and cool, wet winters. Warm summers and cold winters with rainfall are common throughout the county, with snowfall rarely occurring at the higher elevations around Mount Diablo. Rainfall throughout the county occurs during the winter months due to storm fronts that move in from the Pacific Ocean. Precipitation ranges from an annual average of 23 inches near Richmond, 13 inches near Antioch, and 24 inches near the slopes of Mount

Diablo (Contra Costa 2018). Because the summer months are generally hot and dry, the risk of wildfires has historically been greatest in summer and fall. Relative humidity is also an important fire-related weather factor. As humidity levels drop, the dry air causes vegetation moisture levels to decrease, thereby increasing the likelihood that plant material will readily ignite and burn; the risk of wildfire increases when lightning strikes occur during dry periods.

Wind is a primary weather factor of wildfire behavior. Diablo Winds, which are warm easterly winds that flow over the Diablo Mountain range, have had reported speeds of up to 100 miles per hour in the East Bay Hills. As wind speeds increase, the rate of fire spread, intensity, and ember spread potential also increases. Gusty and erratic wind conditions can cause a wildfire to spread irregularly, making it difficult to predict its path and effectively deploy fire suppression forces. Winds from the northeast in the summer and fall compound the severity of fire conditions, as well as lower relative humidity, creating red flag conditions. Northeast winds are especially dangerous because they are accompanied by low humidity, which can dry out trees and other fuel that may also be weakened by the winds. This can increase wildfire conditions in the area. Wind shifts can also occur suddenly due to temperature changes and interactions with steep slopes or hillsides, causing fires to spread unpredictably. Fall has historically been one of the most dangerous times for wildfire risk, as periods of very high temperatures, low humidity, and strong wind increases cause red flag warnings and extreme fire danger.

Fuel

Many portions of Contra Costa County are covered by natural vegetation, which provides fuels such as grass, brush, and woodlands for wildfires. Each type of vegetation contributes to fire hazard severity to varying degrees. The qualities of vegetation which directly influence fire risk include fuel type and size, loading, arrangement, chemical composition, and dead and live fuel moisture, which contributes to the flammability characteristics of the vegetation (Contra Costa 2018).

The lower elevations of Contra Costa County are covered in grass and brush fuel types, which react quickly to changes in weather such as low humidity or high wind speeds. Fires in these areas can spread quickly in gusty wind conditions. Higher elevations on hillside and mountainsides are dominated by brush and woodland vegetation, which is likely to burn in later summer fires due to low fuel moisture. These fires can be difficult to control, especially on steep slopes and during high wind events.

Topography

Steep terrain or slope play a key role in the rate and direction in which wildfires spread since fires will normally burn much faster uphill. When the gradient of a slope doubles, the rate of spread of a fire will also likely double. Contra Costa County varies in topography from steep, rugged topography along the Diablo Mountain Range to low-lying inland valleys in central Contra Costa County and shorelines along the San Francisco Bay and Sacramento-San Joaquin Delta.

Human Actions

Most wildfires are ignited by human action, the result of direct acts of arson, carelessness, or accidents. Many fires originate in populated areas along roads and around homes and are often the result of the careless disposal of cigarettes, mowing of dead grass, electricity equipment malfunction, use of equipment, or burning of debris. Recreation areas with increased human activity that are in high or very high fire hazard areas also increase the potential for wildfires to occur.

Climate Change

Climate change is likely to increase annual average temperatures countywide from a historical 71.1 degrees Fahrenheit (°F), to 75.8 °F by 2050 and 79 °F by 2100 (Cal-Adapt 2022a). This will likely create warmer temperatures earlier and later in the year. Precipitation levels are projected to increase slightly over the course of the century, changing from a historical annual average of 19 inches per year, to an annual average of 21 inches by 2050 and an annual average of 23.2 inches by 2099 (Cal-Adapt 2022a). Variations in precipitation patterns will also lead to an increase in frequency and intensity of heavy precipitation events, as well as prolonged periods of drought. The combination of extreme heat and droughts can cause soils and vegetation to dry out, creating more fuel for wildfires. These factors are expected to increase wildfire conditions, creating a risk of more frequent and intense wildfires. Because wildfires burn trees and other vegetation that help stabilize a hillside and absorb water, more areas burned by fire may also lead to an increase in landslides and floods. Historically, an average of 2,890 acres burned annually in the county (Cal-Adapt 2022b). Figure 5.18-3 shows historic wildfire perimeters in the county. Wildfires are projected to increase to an annual average in the county of 2,920 acres burned annually by 2050 and decrease to an annual average of 2,696 acres burned annually by 2100 (Cal-Adapt 2022b).

Fire Protection Resources

Fire protection services within the EIR Study Area are provided by six fire protection districts, as shown on Figure 5.15-1, *Fire Protection District Boundaries in Contra Costa County,* in Section 5.15, *Public Services and Recreation*, including the following:

- Contra Costa County Fire Protection District
- San Ramon Valley Fire Protection District
- Moraga-Orinda Fire Protection District
- Kensington Fire Protection District
- Crockett-Carquinez Fire Protection District
- Rodeo-Hercules Fire Protection District

Each fire protection district has also signed the Contra Costa County Fire Chief's Mutual Aid Plan to receive aid and provide fire protection services when an emergency strains the capabilities of just one agency. Section 5.15, *Public Services and Recreation*, of this Draft EIR provides additional details about fire protection resources and services in Contra Costa County.

Evacuation and Access

Evacuation routes are designated roadways that allow for many people to quickly leave an area due to a potential or imminent disaster. These routes should have a sufficient capacity to accommodate the needs of the community, be safely and easily accessible, and allow people to travel far enough away to be safe from any emergency conditions.

Primary evacuation routes throughout Contra Costa County include interstates and state routes that traverse the county, as shown in Figure 5.9-4, *Evacuation Routes,* in Section 5.9, *Hazards and Hazardous Materials*, of this Draft EIR. These include, but are not limited to, Interstate (I-0 80, I-580, I-680, State Route (SR-) 24, SR-4, SR-242, and SR-160. During emergencies, the Contra Costa Sheriff's Office and the fire protection districts coordinate the use of Zone Haven, an internet-based evacuation mapping application that uses zones to provide evacuation warnings and orders. This system is used in both the cities and unincorporated areas of the county. This application allows for quick and transparent evacuation decision-making that speeds up the evacuation notification process.

5.18.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if in or near SRAs or lands classified as Very High FHSZs and the project would:

W-1 Substantially impair an adopted emergency response plan or emergency evacuation plan.

W-2 Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

W-3 Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

W-4 Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

H-7 Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

5.18.3 Programs, Plans, and Policies

5.18.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to wildfire hazards. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Public Facilities and Services Element

- **Policy PFS-P6.1**: Require new development to support effective law enforcement and fire protection by providing a safe and accessible public realm for all.
- **Policy PFS-P6.3**: During the discretionary review process for projects with potential to increase demand on fire protection services, consult with the applicable fire district to identify any upgrades to fire protection facilities, infrastructure, and equipment needed to reduce fire risk and improve emergency response.

Health and Safety Element

- ***Policy HS-P4.3****: Discourage new below-market-rate housing in High and Very High Fire Hazard Severity Zones, the Wildland-Urban Interface, and Alquist-Priolo Fault Zones. If below-market-rate housing must be constructed within these zones, require it to be hardened or make use of nature-based solutions to ensure it remains habitable to the greatest extent possible.*

- ***Policy HS-P4.6****: In hazard-prone areas, such as slopes exceeding 15 percent, mapped floodplains, High and Very High Fire Hazard Severity Zones, and Alquist-Priolo Earthquake Fault Zones, allow for decreased residential density, including below the minimum density requirement for the applicable land use designation, as the severity of risk increases.*

- **Goal HS-7:** Minimized injury, loss of life, and damage to property from wildfire hazards.
  - ***Policy HS-P7.1****: Deny applications for new residential subdivisions in Very High Fire Hazard Severity Zones and discourage residential subdivisions in High Fire Hazard Severity Zones.*
  - ***Policy HS-P7.2****: Require any construction of buildings or infrastructure within a High or Very High Fire Hazard Severity Zone in the LRA or SRA or in the WUI, as shown on Figures HS-10 and HS-11, to incorporate fire-safe design features that meet the State Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulation for road ingress and egress, fire equipment access, and adequate water supply.*
  - ***Policy HS-P7.3****: Require new development within a Very High Fire Hazard Severity Zone in the LRA or SRA (as shown on Figure HS-10) or in the WUI (as shown on Figure HS-11), and on a residential parcel with evacuation constraints (as shown on Figure HS-21), to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with evacuation plans during the construction period. Work with the appropriate fire protection district to review and approve the traffic control plan prior to issuance of building permits.*
  - ***Policy HS-P7.4****: Require subdivisions in the High Fire Hazard Severity Zone in the LRA or SRA and projects requiring a land use permit in the High or Very High Fire Hazard Severity Zone in the LRA or SRA, as shown in Figure HS-10, to complete a site-specific fire protection plan. Work with the appropriate fire protection district to review and revise the fire protection plans. The fire protection plan shall include measures for fire-resistant construction materials and modifying fuel loading, as well as a plan to maintain that protection over time. The fire protection plan shall include:*
    - *a) A risk analysis*
    - *b) Fire response capabilities*
    - *c) Defensible space requirements*
    - *d) Fire safety requirements for infrastructure*
    - *e) Building ignition resistance*

f) Mitigation measures and design for non-conforming fuel modification

g) Wildfire education

h) Maintenance and limitations

i) A plan for emergency preparedness, response, and evacuation

- **Policy HS-P7.5**: Work with property owners within mapped High or Very High Fire Hazard Severity Zones in the LRA or SRA or in the WUI areas to establish and maintain fire breaks and defensible space, vegetation clearance, emergency access roads, water supply and fire flow, signage, and firefighting infrastructure that meets current adopted State, County, or community fire safety standards.
- **Policy HS-P7.6**: Promote installation of smoke detectors at the time of sale or lease agreement, and maintenance of smoke detectors in existing residences and commercial facilities that were constructed prior to the requirement for their installation.
- **Policy HS-P7.7**: Work with water service providers and fire protection districts to safeguard the long-term integrity of water supplies to meet firefighting needs and ensure that new and existing developments in high fire risk areas have suitable water delivery infrastructure.
- ***Policy HS-P7.8****: Construct critical facilities, such as Office of Emergency Services facilities and other uses on the County's designated critical facilities list, with fire-resistant materials, defensible space, and fire-resistant landscaping that allows them to maintain structural integrity and ensure functional operation to the greatest extent feasible. Avoid locating these facilities in high fire risk areas to the extent possible.*
- **Policy HS-P7.9**: Coordinate with energy service providers to underground power lines, especially in the WUI and High and Very High Fire Hazard Severity Zones.
- **Policy HS-P7.10**: Work with energy service providers to ensure an adequate power supply to vulnerable populations during planned power shutoffs.
- **Policy HS-P7.11**: Facilitate post-fire recovery by supporting efforts to stabilize slopes, control erosion, and replant with native species.
- **Action HS-A7.1**: Collaborate with local fire safe councils, CAL FIRE Santa Clara Unit, and other fire protection agencies to update and implement the Community Wildfire Protection Plan for Contra Costa County.
- **Action HS-A7.2**: Support local fire protection agencies with efforts to seek funding for development and implementation of a continuous vegetation management program in fire hazard severity zones and WUI areas.
- **Action HS-A7.3**: Update countywide fire hazard severity zone and WUI mapping as new data becomes available from the California Board of Forestry and Fire Protection.
- **Action HS-A7.4**: Following a large fire, evaluate the feasibility and resilience of redevelopment, and consider changes to building or development standards to improve resilience.
- **Action HS-A7.5:** Collaborate with local and regional fire safe councils, CAL FIRE Santa Clara Unit, and other fire protection agencies to develop a fire safe education program to provide information about State fuel modification, defensible space, access, water, signage, and other fire safe regulations.

- **Action HS-A7.6:** Pursue grants and other funding mechanisms to retrofit ventilation systems at County buildings to provide refuge for residents during periods of unhealthy air quality caused by excessive wildfire smoke.

- **Goal HS-12**: Communities and local economies that continue to function during all hazards and have coordinated and effective response and recovery procedures.
  - **Policy HS-P12.1**: Continue implementing the *Contra Costa County Local Hazard Mitigation Plan*, which was adopted by the Board of Supervisors and certified by FEMA and is incorporated into this Health and Safety Element.
  - **Policy HS-P12.2**: Locate facilities and uses on the County's designated critical facilities list outside of identified hazard areas whenever possible, accounting for how climate change may increase frequency and intensity of hazards. If critical facilities must be in hazard areas, ensure these facilities and their access routes are protected from the hazard risks inherent to each location.
  - **Policy HS-P12.3:** Coordinate with cities, school districts, recreation and park districts, and community-based organizations to ensure adequate emergency shelters, community resilience centers, and alternate care sites are available when natural disasters and other highly hazardous conditions, such as industrial accidents, occur.
  - **Action HS-A12.1**: Update the *Contra Costa County Local Hazard Mitigation Plan* as necessary to remain compliant with State and federal laws and reflect changing climate conditions.
  - **Action HS-A12.2**: Incorporate the assessments and projections for future emergency service needs from the most recent Municipal Services Reviews into updates of the *Contra Costa County Local Hazard Mitigation Plan*.
  - **Action HS-A12.3**: At least once every eight years, evaluate the effectiveness of and update the public safety, preparedness, and hazard mitigation policies in this Health and Safety Element, with consideration given to changing climate conditions.
  - **Action HS-A12.5**: Identify and map existing community facilities, such as libraries, gymnasiums, community centers, and auditoriums, that can serve as community resilience centers and support people with access and functional needs during hazard events. Work with the owners of these facilities to identify and implement upgrades, prioritizing facilities in Impacted Communities.
  - ***Action HS-A12.8****: Install backup power and water resources at critical County facilities, emergency shelters, community resilience centers, and cooling centers.*
  - **Action HS-A12.12**: Continue providing CERT training programs and encourage the Contra Costa CERT Coalition to provide updated training on hazards and related risks identified in the Contra Costa County Vulnerability Assessment or the best-available climate science data.
  - ***Policy HS-P13.1****: Except for infill sites, require new development in High and Very High Fire Hazard Severity Zones, the WUI, and 100-year or 200-year floodplains to have access to at least two emergency evacuation routes, and encourage the same for existing development.*
  - **Policy HS-P13.2:** Coordinate with transit agencies and community service and faith-based organizations to assist with evacuation efforts and ensure that evacuation services are made available

to vulnerable people, including those with limited English proficiency or limited access to transportation, communication, and other lifeline resources and services.

- **Action HS-A13.1:** Partner with cities and public protection agencies to delineate evacuation routes, identifying their capacity, safety, and viability under different hazard scenarios, as well as emergency vehicle routes for disaster response, and where possible, alternate routes where congestion or road failure might reasonably be expected to occur. Update as new information and technologies become available.
- ***Action HS-A13.2:*** *At least once every five years, update maps identifying neighborhoods with only one emergency evacuation route.*
- ***Action HS-A13.3:*** *Coordinate with local fire districts to develop and maintain minimum roadway, ingress, and egress standards for evacuation of residential areas in Very High Fire Hazard Severity Zones.*
- **Action HS-A13.4:** Develop an evacuation education program to help inform community members about the Contra Costa County Community Warning System and recommended approaches to evacuation.

5.18.3.2 PROPOSED CAP UPDATE STRATEGIES AND ACTIONS

The following strategies and actions in the proposed Climate Action Plan (CAP) are applicable to wildfire hazards.

Strategy NI-2: Protect against and adapt to increases in the frequency and intensity of wildfire events:

Strategy NI-2 Actions:

- Prohibit new residential subdivisions in Very High Fire Hazard Severity Zones and discourage residential subdivisions in High Fire Hazard Severity Zones. (HS-P7.1)
- Require any construction of buildings or infrastructure within a High or Very High Fire Hazard Severity Zone in the Local or State Responsibility Areas, or in the Wildland-Urban Interface, to incorporate fire-safe design features that meet the applicable State Fire Safe Regulations and Hazard Reduction Around Buildings and Structures Regulations for road ingress and egress, fire equipment access, and adequate water supply. (HS-P7.2)
- Require subdivisions in the High Fire Hazard Severity Zones in the Local or State Responsibility Areas, or projects requiring a land use permit in the High or Very High Fire Hazard Severity Zones in the Local or State Responsibility Areas, to complete a site-specific fire protection plan. Collaborate with the appropriate fire protection district to review and revise the fire protection plans. (HS-P7.3)
- Work with property owners in mapped High or Very High Fire Hazard Severity Zones or in the Wildland-Urban Interface to establish and maintain fire breaks and defensible space, vegetation clearance, and firefighting infrastructure. (HS-P7.4)
- Support undergrounding of utility lines, especially in the Wildland-Urban Interface and Fire Hazard Severity Zones. (HS-P7.8)
- Review indoor air filtration standards and consider whether filtration requirements can and should be strengthened for projects permitted by the County.

- Work with community organizations to help Impacted Communities have access to financing and other resources to reduce the fire risk on their property, prepare for wildfire events, and allow for a safe and speedy recovery.

Strategy NI-3: Establish and maintain community resilience hubs.

Strategy NI-3 Actions:

- Pursue funding to develop a resilience hub master plan that identifies existing community facilities that can serve as resilience hubs and support affected populations during hazard events. This process should start with an assessment of community needs. Such facilities should be distributed equitably throughout the county, with an emphasis on easy access for Impacted Communities. Where appropriate facilities do not exist, develop plans to create new resilience hubs.
- Pursue funding to implement the resilience hub master plan, including retrofitting selected facilities to function as resilience hubs. These retrofits should involve adding solar panels, battery backup systems, water resources, supplies to meet basic community and emergency medical needs, and other needs as identified by the resilience hub master plan.
- Create a virtual resilience hub that connects County resources to communities through virtual community networks to provide detailed, up-to-date information about preparing for natural disasters, public safety notifications and alerts, space for virtual gathering and information-sharing, and other appropriate uses. Materials shall be accessible in multiple languages.
- Coordinate resilience hub activities with planning efforts around public safety power shutoffs and wildfire smoke resiliency.

Strategy NI-6: Protect the community against additional hazards created or exacerbated by climate change.

Strategy NI-6 Actions:

- Discourage new below-market-rate housing in High and Very High Wildfire Hazard Severity zones, the Wildland-Urban Interface, and Alquist-Priolo Fault Zones. If below-market-rate housing must be constructed within these zones, require it to be hardened or make use of nature-based solutions to remain habitable to the greatest extent possible. (HS-P3.4)
- Treat susceptibility to hazards and threats to human health and life as primary considerations when reviewing all development proposals and changes to land uses.
- Partner with community-based organizations to provide information to community members about how to prepare for projected climate change hazards.
- Promote, and develop as necessary, available funding sources to create incentives for residents and businesses to prepare for natural disasters, particularly members of Impacted Communities.
- Consider projected impacts of climate change when siting, designing, and identifying the construction and maintenance costs of capital projects.
- Actively promote and expand participation in local and regional community emergency preparedness and response programs.

- Support and fund efforts to enhance ongoing community and cross-sector engagement in community-level resilience and cohesion. Support non-government organizations to actively engage in developing a network of community-level actions that enhance resiliency.

5.18.4 Environmental Impacts

Impact 5.18-1: Development under the proposed project in or near SRAs or lands classified as Very High FHSZs and a single-access roadway or in an Evacuation-Constrained Area could substantially impair an adopted emergency response plan or emergency evacuation plan. [Threshold W-1]

Proposed General Plan

Adopted emergency response plans and emergency evacuation plans include those discussed in Section 5.18.1.1, *Regulatory Background*, including the Contra Costa County EOP. The proposed project would result in a significant impact if it would substantially impair the implementation of the EOP.

Any potential development under the proposed General Plan would be required to integrate the County EOP as necessary to continue its facilitation in evacuation for the people in wildfire prone areas. Development under the proposed project would not result in substantial changes to the circulation patterns or emergency access routes in the county that would conflict with or require changes to the EOP. Additionally, future development within the SRA, WUI, or Very High FHSZs would be required to comply with the SRA and Very High FHSZ Fire Safe Regulations, the California Building Code, the California Fire Code, and the Contra Costa County Ordinance Code, which have maximum requirements for lengths of single access roads, minimum widths of roadways, and vegetation fuel management around roadways. Furthermore, to ensure emergency services in the county are not impaired by future development, all future development projects would be reviewed and approved by the applicable fire protection district prior to project approval. In addition, several proposed General Plan policies and actions promote or require enforcement of the Fire Safety Code requirements, including Policy HS-P7.4, which would require projects in High or Very FHSZs to implement a site-specific fire protection plan.

Additionally, Policy HS-P7.3, which requires new development within a Very High Fire Hazard Severity Zone in the LRA or SRA or in the WUI, and on a residential parcel with evacuation constraints, to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with evacuation plans during the construction period, would ensure that temporary roadway impairments or evacuation plan impacts are addressed within traffic control plans. With the implementation of this policy, impacts would be less than significant.

Proposed CAP

The proposed CAP is a policy document that provides strategies to reduce greenhouse gas (GHG) emissions and improve climate resiliency and adaptation. As such, all strategies and actions within the proposed CAP inherently support the implementation of emergency responder and evacuation plans, while some directly address County efforts for emergency planning. For example, Strategy NI-3 and its accompanying actions direct

the County to establish and maintain community resilience hubs with microgrids, education, training opportunities, and other community-focused resources, in line with the policies and actions included under proposed Health and Safety Element Goal HS-12. The proposed CAP also includes Strategy NI-2, which specifically addresses adaptation efforts for wildfire events and reflects the policies and actions included under Goal HS-7. The proposed CAP directly supports and directs compliance with adopted emergency response and evacuation plans, and therefore would have no impact.

Level of Significance Before Mitigation: Impact 5.18-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.18-1 would be less than significant.

Impact 5.18-2: Development under the proposed project in or near SRAs or lands classified as Very High FHSZs could exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire. [Threshold W-2]

Proposed General Plan

As discussed in Section 5.18.1.2, *Existing Conditions*, Contra Costa County is prone to Diablo Winds that are erratic in movement and have high speeds. These winds are often accompanied by low humidity and can shift suddenly due to temperature changes and interactions with steep slopes. This creates dangerous conditions by drying out vegetation and enabling wildfire to spread more quickly. Implementation of the proposed General Plan would not change or affect wind patterns in the county, but wildfires and wildfire smoke hazards could be spread by prevailing or Diablo Winds.

Section 5.18.1.1, *Regulatory Background*, describes plans, policies, regulations, and procedures that help to reduce wildfire risks. The 2018 Strategic Fire Plan for California, 2021 California Wildfire and Forest Resilience Action Plan, Fire Risk Reduction Community designation for EBRPD and EBMUD, Contra Costa County LHMP, and Contra Costa County CWPP, in addition to the proposed General Plan, are intended to reduce wildfire hazards and respond to these hazards on a statewide and regional scale. In addition, the Bay Area Air Quality Management District provides air quality alerts, advisories, and provides resources for an interactive online map to view current air quality conditions in the region. However, future development under the proposed General Plan in wildfire prone areas could exacerbate wildfire risks by adding more residents to wildfire prone areas, thereby exposing people in the county and surrounding jurisdictions to pollutant concentrations from a wildfire. A wildfire combined with Diablo Winds could expose residents in the county to the uncontrolled spread of wildfire.

Slope Impacts

As discussed in Section 5.18.1.2, the topography in the EIR Study Area varies between steeply sloped mountains to flat valleys and shorelines. Construction of future development projects may require grading and site preparation activities that could change the slope of a single parcel or site. Potential future development under the proposed General Plan could increase development density in both flat and steeper areas of the county. However, proposed Health and Safety Element Policy HS-P4.6 directs the County to allow for decreased residential density below the minimum density requirement in hazard-prone areas, including those with slopes that exceed 15 percent.

All potential future residential development within the EIR Study Area would be required to comply with the CBC, SRA and Very High FHSZ Fire Safe Regulations, and Contra Costa County Ordinance Code grading requirements, which include standards to minimize the ignition and spread of wildfire due to slopes. Furthermore, the proposed Health Safety Element includes several policies and actions that would address potentially significant impacts with regard to development within FHSZs. For example, Policy HS-P7.1 would require denial of applications for new residential subdivisions in Very High FHSZs and discourage residential subdivisions in High FHSZs. Other potential housing types including below-market-rate housing are discouraged in the WUI and FHSZ areas per Policy HS-P4.3. All development in the WUI or High and Very FHSZs must incorporate fire-safe design features that meet the State Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulation for road ingress and egress, fire equipment access, and adequate water supply, as stated in Policy HS-P7.2. Policy HS-P7.4 outlines the requirements for fire protection plans that must be implemented for subdivisions and projects requiring a land use permit in High and Very High FHSZs. The proposed Health and Safety Element includes several other policies and actions under Goal HS-7, as shown in Section 5.18.3, *Proposed General Plan Goals, Policies and Actions*, that would improve fire safety in the county.

However, due to vegetation and slope, wildfires and associated smoke could potentially travel up a slope. Therefore, even with existing and proposed regulatory requirements, potential future development under the proposed General Plan could expose people to the uncontrolled spread of wildfire or pollutant concentrations due to slope.

Vegetation Impacts

Other factors, such as vegetation, have the potential to exacerbate wildfire risks. The grassland, brush, and woodland areas throughout the county are easily ignited, especially during summer and fall when temperatures are high, relative humidity is low, and wind speeds can be high. During these conditions, woodlands and brush vegetation can dry out, particularly in areas with unirrigated vegetation, becoming extremely flammable and increasing wildfire risks. As described in Section 5.18.1.1, the Contra Costa County LHMP and CWPP contain several vegetation management and fuel reduction projects to reduce the uncontrolled spread of wildfire due to vegetation. Additionally, all potential future development within wildfire-prone areas in the EIR Study Area would be required to comply with SRA and Very High FHSZ Fire Safe Regulations, Public Resources Code Section 4291, and the California Fire Code. These regulations have specific requirements for new development to create defensible space and extensive fuel reduction within 100 feet of a structure, an ember resistant zone

within five feet of a structure, and the overall maintenance of properties to reduce the risk of uncontrolled fires or the spread of fires to other properties. However, even with existing regulatory requirements, potential future development under the proposed General Plan could expose people to the uncontrolled spread of wildfire or pollutant concentrations due to other factors such as vegetation.

With adherence to these building practices and wildfire management requirements, development associated with the proposed project would reduce the potential for exacerbating wildfire risks. However, due to the programmatic nature of this analysis, the unknown details, and potential impacts of specific future potential development projects under the proposed project, and the possibility of potential future development being in wildfire-prone areas, impacts would be potentially significant.

Proposed CAP

As previously noted, the proposed CAP would primarily result in beneficial impacts with regard to climate change-related hazards, including wildfire risk and exposure. In addition to including a suite of strategies that would reduce GHG emissions and thereby potentially reduce wildfire impacts related to increasing temperatures and changing climate patterns, the proposed CAP's Chapter 5, *Climate Adaptation Strategy*, specifically addresses and outlines strategies related to improving the resiliency of the county's population and resources and protecting future development from wildfire hazards. Many of these strategies and actions reiterate policies and actions included within the proposed Health and Safety Element, including the actions under Strategy NI-2, like prohibiting new residential subdivisions in Very High FHSZs, limiting development in High FHSZs, and requiring fire-safe designs and materials in addition to preparing, maintaining, and regularly implementing a fire protection plan for development in Very High FHSZs, the WUI, or a SRA. Therefore, the proposed CAP would have no environmental impact on wildfire exposure.

Level of Significance Before Mitigation: Impact 5.18-2 would be potentially significant.

Mitigation Measures

As discussed previously, implementation of the proposed General Plan could increase population, buildings, and infrastructure in wildfire-prone areas. The proposed General Plan contains policies that require new development and redevelopment projects to create and maintain defensible space and fire-safe vegetation around structures and roadways, and support enforcement of fire-safe standards and creation of fuel breaks. Certain types of new development would also be required to prepare Fire Protection Plans. These policies provide the best wildfire hazard reduction measures available. However, the only way to fully avoid the wildfire impact from implementation of the proposed General Plan is to disallow development in areas in Very High and High FHSZs and the WUI. Doing so could constitute a "taking" of private property based on US Supreme Court interpretation. It would also conflict with the County's responsibility to meet other obligations, including to increase the number and type of housing available in the county, as discussed in the 6th Cycle Housing Element Update EIR (SCH #2022070481). The County must promote residential development, as required by State housing law, within its adopted growth boundaries, some of which extend into fire hazard areas.

The proposed General Plan land use map and ULL focus future housing and other potential development outside of fire hazard areas. The proposed General Plan also limits future development potential across much of the rural parts of the county where hazards are greatest by increasing the minimum lot size in agricultural areas from 5 acres to at least 10 acres. In addition, as described previously, the proposed General Plan includes policies to mitigate potential wildfire hazards. However, reducing impacts to a less-than-significant level by prohibiting development in Very High and High FHSZs and the WUI could constitute a taking under the US Constitution, and is therefore considered infeasible and inconsistent with County planning goals and objectives. This approach is considered and rejected, and there are no feasible mitigation measures. Additionally, impacts related to exacerbating the risk of pollutant concentrations from wildfire and the uncontrolled spread of wildfire would be reduced, but not to a less-than-significant level.

Due to potential unknown impacts from future development under the proposed General Plan, impacts at the programmatic level would remain significant and unavoidable. This conclusion does not preclude a finding of less-than-significant impacts at the project level.

Level of Significance After Mitigation: Impact 5.18-2 would remain significant and unavoidable.

Impact 5.18-3: Development under the proposed project in or near SRAs or lands classified as Very High FHSZs could require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities), but it would not exacerbate fire risk or result in temporary or ongoing impacts to the environment. [Threshold W-3]

Proposed General Plan

Development under the proposed General Plan would result in additional infrastructure, such as roadways, transmission lines, and other utilities, in order to serve new residential development. Fuel breaks and emergency water sources would also be required to comply with State and local development regulations. These types of improvements would involve temporary construction and result in changes to the existing built environment. The installation and operation of new aboveground power transmission lines would create a higher risk of exacerbating wildfire risks compared to other infrastructure. However, the CPUC requires maintenance of vegetation around power lines, strict wire-to-wire clearances, annual inspections of aboveground power lines, and the preparation of fire prevent plans for aboveground power lines in high fire-threat districts. These measures would reduce the reduce the wildfire risks associated with the installation and maintenance of power lines.

Any residential development in the wildfire-prone parts of the EIR Study Area would also be required to comply with building and design standards in the CBC and California Fire Code, which include provisions for fire-resistant building materials, the clearance of debris, and fire safety requirements during demolition and construction activities. Public Resources Code Section 4291 also requires that vegetation around buildings or structures maintain defensible space within 100 feet of a structure and an ember resistant zone within five feet of a structure. Additionally, SRA and Very High FHSZ Fire Safe Regulations would prevent structures from being placed within 30 feet of a roadway, reducing the potential for new roadways to exacerbate wildfire risks. These measures, along with policies and actions in the proposed General Plan Health and Safety Element and

Public Facilities and Services Element for constructing homes with fire-resistant materials, landscaping with irrigated or fire-resistant materials, and requiring review by fire protection agencies for adequate water supplies, road design, and building design would minimize wildfire risks associated with the installation and maintenance of infrastructure.

Such infrastructure and maintenance activities would also be required to comply with the adopted State regulations, County Ordinance Code standards, and the proposed General Plan policies and actions to mitigate the impact of infrastructure on the environment. Therefore, impacts would be less than significant.

Proposed CAP

As noted in the discussions of Impacts 5.18-1 and 5.18-2, the proposed CAP is a policy document that among other efforts, contains strategies aimed at improving wildfire safety and resilience in the EIR Study Area. This includes an action under Strategy NI-2 that directs the County to support the undergrounding of utility lines in the WUI and FHSZs, similar to Policy HS-P7.9 in the proposed Health and Safety Element. While the proposed CAP would not directly result in new development that could exacerbate fire risk, strategies and actions included in the proposed CAP could result in the construction of physical improvements and infrastructure in the county designed to help meet the emissions targets in the CAP. However, under Policy HS-P7.8 of the proposed Health and Safety Element, construction of critical facilities in high fire risk areas would be discouraged. Additionally, all future construction associated with the proposed CAP would be subject to the applicable federal, State, and local regulations outlined in this section.

Overall, adoption of the proposed CAP would primarily result in beneficial impacts with regard to wildlife risks from proposed infrastructure. Therefore, the proposed CAP would have less than significant impacts.

Level of Significance Before Mitigation: Impact 5.18-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.18-3 would be less than significant.

Impact 5.18-4: The project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. [Threshold W-4]

Proposed General Plan

Wildfires on hillsides can create secondary hazards in the form of flooding and landslides. Wildfires on steep slopes can burn the vegetation that stabilizes the slope and create hydrophobic conditions that prevent the ground from absorbing water. This can lead to landslides, debris flows, and flooding.

As discussed in Section 5.10, *Hydrology and Water Quality*, Contra Costa County contains lands within the 100-year and 500-year floodplain. As shown in Figure 5.10-3, floodplains are primarily along creeks, canals, shorelines, and low-lying lands in the Sacramento-San Joaquin Delta. Many flood-prone areas are not, however, in High or Very High FHSZs or WUI areas.

As discussed in Section 5.7, *Geology and Soils*, landslide-prone areas are throughout the county, with many of the moderate to high landslide potential areas coinciding with High or Very High FHSZs. Many of the high landslide potential areas are on the steep slopes of the Diablo Mountain Range, creating overlapping landslide-prone areas in the steep mountain ranges. This overlap may cause areas outside of a landslide susceptible zone to be affected by runoff, post-fire slope instability, or drainages changes following a wildfire.

Potential future development under the proposed General Plan could contribute to post-fire slope instability or drainage changes upstream. However, as discussed previously, proposed Health and Safety Element Policy HS-P7.1 would require denial of applications for new residential subdivisions in Very High FHZs and Policy HS-P4.3 discourages locating below market-rate housing development inside of mapped hazard zones as identified in the Health and Safety Element; however, this does not prevent other types of residential development from being in mapped hazard zones. Additionally, all new development in the county is required to comply with State and local regulations, such as the CBC, California Fire Code, and County Ordinance Code, which have provisions to reduce downslope or downstream landslides and flooding. For example, Section 1803 of the CBC requires a geotechnical investigation that must assess existing landslide susceptibility on a project site. Contra Costa County Ordinance Code, Title 7, Article 716, *Grading*, requires a grading permit issued by a building inspector to control excavating, grading, and earthwork construction, including fills or embankments and related work, ultimately minimizing slope instability. Furthermore, as discussed in Impact Discussion 5.18-2, all potential future development within wildfire-prone areas in the EIR Study Area would be required to comply with SRA and Very High FHSZ Fire Safe Regulations, Public Resources Code Section 4291, and the California Fire Code. These regulations would ensure fire-resilient structures and properties, and therefore would reduce the potential for post-wildfire flooding or landslides downstream or downslope.

New development complying with State and local regulations would not expose people or structures to downslope landslides or downstream flooding due to post-fire hazards. Furthermore, as identified in Impact Discussions 5.18-1 and 5.18-2, development under the proposed project must also comply with the County EOP, LHMP, and CWPP. All future development, regardless of the location, is required to comply with adopted local, regional, and State plans and regulations addressing wildfire prevention, which would minimize risks of post-fire hazards. As such, compliance with these policies and regulatory requirements would ensure impacts from post-fire instability would be less than significant.

Proposed CAP

As discussed previously, the proposed CAP is a policy document that provides strategies to reduce GHG emissions and improve climate resiliency and adaptation. The intent of proposed CAP is therefore to reduce risks associated with climate change and is not expected to result in significant impacts with regard to landslide and flooding impacts associated with post-fire instability. The proposed CAP contains several strategies and actions that align with the guidance of the proposed General Plan and other applicable State and local

regulations, including Strategy NI-6, which provides actions to reduce impacts from other climate-related hazards, including drought, flooding, landslides, and severe weather. The proposed CAP would therefore result in no impact.

Level of Significance Before Mitigation: Impact 5.18-4 would result in less-than-significant impacts.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.18-4 would result in less-than-significant impacts.

Impact 5.18-5: Development in designated High or Very FHZSs could expose structures and/or residences to fire danger. [Threshold H-7]

Proposed General Plan

As shown in Figure 5.18-1, the EIR Study Area includes land mapped within High and Very FHSZs, which are concentrated in areas with high slopes. Including the Briones Hills and Diablo Range. While much of this land is outside of the County's Urban Limit Line (ULL), limiting development potential, approximately 15,913 acres of land within the ULL are classified as a High FHSZ, and approximately 2,764 acres of land within the ULL are classified as a Very High FHSZ. However, approximately 7,420 acres of this land within the ULL that is in the High FHSZ or Very High FHSZ is designated as Public and Semi-Public, Parks and Recreation, and Resource Conservation under the proposed General Plan. This land is largely owned by public agencies who intend to conserve the land. Additionally, some of this land within FHSZs has already been developed under the existing General Plan that will be replaced by the proposed General Plan.

As discussed in Impact 5.18-2, the county is subject to strong easterly winds, also known as Diablo Winds, in the fall. These winds have high speeds and can shift suddenly, and they are often accompanied by low humidity. They create dangerous conditions for starting and spreading wildfires during the drier months of the year, and they also spread wildfire smoke hazards, as can prevailing winds. Future development under the proposed General Plan could exacerbate wildfire risks by adding people to wildfire-prone areas in the EIR Study Area and exposing people to pollutant concentrations from a wildfire. A wildfire combined with Diablo Winds could expose residents in the area to the uncontrolled spread of wildfire. In addition, the topography in wildfire-prone areas of the county is steeply sloped. Construction of future development projects and activities under the proposed General Plan in these areas may require grading and site preparation activities that could change the slope of a single parcel or site. Other factors, such as vegetation, have the potential to exacerbate wildfire risks. The grassland and woodland areas of inland valleys in central Contra Costa are easily ignited, especially during late summer and fall when temperatures and winds are high and relative humidity is low. During these conditions, woodland vegetation can dry out, particularly in areas with unirrigated vegetation, becoming extremely flammable and increasing wildfire risks.

Though all urban development would occur within the ULL, outside the majority of the most wildfire-prone and inaccessible areas, the proposed General Plan land use map would continue to allow residential and commercial development in FHSZs where topography is steeper and evacuation access is limited per Figure 5.9-4. However, the proposed Health and Safety Element includes several policies and actions that would address potentially significant impacts from development within FHSZs. For example, Policy HS-P7.1 would require denial of applications for new residential subdivisions in Very High FHSZs and discourage residential subdivisions in High FHSZs. Other potential housing types including below-market-rate housing are discouraged in the WUI and FHSZ areas per Policy HS-P4.3. All development in the WUI or High and Very FHSZs must incorporate fire-safe design features that meet the State Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulation for road ingress and egress, fire equipment access, and adequate water supply, as stated in Policy HS-P7.2. Policy HS-P7.3 outlines the requirements for fire protection plans that must be implemented for subdivisions and projects requiring a land use permit in High and Very High FHSZs. The proposed Health and Safety Element includes several other policies and actions under Goal HS-7 that would improve fire safety in the county.

Additionally, the proposed General Plan land use plan would reduce the capacity for residential development on agricultural lands, including land within FHSZs and the WUI, by requiring at least a 10-acre minimum lot size, an increase from the 5-acre minimum lot size required by the existing General Plan. This change would further reduce the number of people and structures that would be exposed to wildfire under the proposed General Plan when compared to the existing General Plan.

Even with existing regulatory requirements and proposed General Plan goals, policies, actions, and land use changes, implementation of the proposed project could increase population, buildings, and infrastructure in wildfire-prone areas beyond those that exist today. The introduction of additional humans (through new development and redevelopment) and human activities (including the use of construction equipment) to fire-prone areas inherently exacerbates existing fire hazards. Though proposed General Plan goals, policies, actions, and land use changes and mandatory State wildfire hazard reduction measures reduce risks in wildfire-prone areas, they would not reduce impacts to a less-than-significant level. Due to the programmatic nature of this analysis, the unknown details and potential impacts of specific future potential development projects under the proposed project, and the potential for future development to be in wildfire-prone areas, out of an abundance of caution impacts are considered to be potentially significant.

Proposed CAP

As previously noted, the proposed CAP would primarily result in beneficial impacts with regard to climate change-related hazards. Including wildfire risk and exposure. In addition to including a suite of strategies that would reduce GHG emissions and thereby potentially reduce wildfire impacts related to increasing temperature and changing climate patterns, the proposed CAP's Chapter 5, *Climate Adaptation Strategy*, specifically addresses and outlines strategies related to improving the resiliency of the county's population and resources and protecting future development from wildfire hazards. Many of these strategies and actions reiterate and add detail to the policies and actions included within the proposed Health and Safety Element, including the actions under Strategy NI-2, like prohibiting new residential subdivisions in Very High FHSZs, limiting development in High FHSZs, and requiring fire-safe designs and materials in addition to preparing, maintaining, and regularly

implementing a fire protection plan for development in any Very High FHSZs, the WUI, or a State Responsibility Area. Therefore, the proposed CAP would have no significant impact on wildfire exposure.

Level of Significance Before Mitigation: Impact 5.9-5 would be potentially significant.

Mitigation Measures

There are no feasible mitigation measures. Existing federal, State, and local regulations, in addition to the policies, strategies, and actions in the proposed General Plan and proposed CAP cover the best available wildfire hazards reduction measures for new development and redevelopment in the county. Adherence to these regulations and policies would reduce significant impacts associated with wildfire hazard exposure to the extent possible, outside of prohibiting all development in High to Very High FHSZs and WUI areas (as discussed further in the discussion of Impact 5.18-2).

Level of Significance After Mitigation: Impact 5.18-5 would remain significant and unavoidable.

5.18.5 Cumulative Impacts

Implementation of the proposed project would result in new development within the SRA, High and Very High FHSZs, and WUI. To protect this development, the County requires that future development adhere to State and local regulations. With adherence to these building practices and wildfire management requirements, development associated with the proposed project would reduce wildfire risk to the extent possible. However, because development would be allowed to occur within these hazard areas, which would increase the exposure of people and structures to wildfire hazards, impacts would be cumulatively significant.

5.18.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, some impacts would be less than significant: Impact 5.18.1, 5.18-3, and Impact 5.18-4.

Without mitigation, these impacts would be **potentially significant**:

- **Impact 5.18-2:** Development under the proposed project in or near SRAs or lands classified as Very High FHSZs could exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire.

- **Impact 5.18-5:** Development in designated High or Very FHZSs could expose structures and/or residences to fire danger.

5.18.7 Mitigation Measures

Impacts 5.18-2 and 5.18-5

There are no feasible mitigation measures.

5.18.8 Level of Significance After Mitigation

Impacts 5.18-2 and 5.18-5

While the CBC, California Fire Code, SRA and Very High FHSZ Fire Safe Regulations, Public Resources Code, County LHMP, proposed General Plan policies and actions, and County Ordinance Code would reduce impacts, the only way to fully avoid the wildfire impacts from implementation of the proposed project is to not allow development in areas within Very High FHSZs and WUI areas. However, doing so is not feasible or practical as the County has a responsibility to provide land for new development and enacting an outright ban on new development in these areas could amount to a regulatory taking. Due to the potential unknown impacts from future development under the proposed project, impacts at the programmatic level would remain significant and unavoidable.

5.18.9 References

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5. Environmental Analysis
WILDFIRE

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6. Unavoidable Impacts, Irreversible Changes, and Growth-Inducing Impacts

As stated in California Code of Regulations (CCR) Title 14 Section 15126, Consideration and Discussion of Environmental Impacts, all phases of a project must be considered when evaluating its impact on the environment: planning, acquisition, development, and operation. The subjects listed below shall be discussed as directed in CCR Sections 15126.2, Consideration and Discussion of Significant Environmental Impacts; 15126.4, Consideration and Discussion of Mitigation Measures Proposed to Minimize Significant Effects; and 15126.6, Consideration and Discussion of Alternatives to the Proposed Project. This Draft Environmental Impact Report (EIR) must address all of the following subjects listed in CCR Title 14 Section 15126:

(a) Significant Environmental Effects of the Proposed Project. An EIR is a crucial document that outlines the significant environmental impacts of a proposed project. The lead agency should focus on changes in existing physical conditions in the affected area at the time of preparation or when the environmental analysis begins. The EIR should identify and describe the project's direct and indirect effects, considering both short-term and long-term effects. It should include specifics of the area, resources involved, physical changes, ecological systems, population distribution, human use, health and safety problems, and other aspects of the resource base. The EIR should also analyze any potential environmental effects the project might cause or risk exacerbating by bringing development and people into the affected area (CCR, Title 14, Section 15126.2(a)). These items are covered in Chapter 5, *Environmental Analysis*, of this Draft EIR, which examines the environmental setting of the proposed project, analyzes its effects and the significance of its impacts, and recommends mitigation measures to reduce or avoid impacts.

(b) Significant Environmental Effects Which Cannot be Avoided if the Proposed Project is Implemented. The EIR should describe any significant impacts, including those that can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described (CCR, Title 14, Section 15126.2(c)). These effects are discussed in Section 6.1, *Significant Unavoidable and Adverse Impacts*.

(c) Significant Irreversible Environmental Changes Which Would be Involved in the Proposed Project Should it be Implemented. Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should

be evaluated to assure that such current consumption is justified (CCR, Title 14, Section 15126.2(d)). These changes are discussed in Section 6.2, *Significant Irreversible Changes*.

(d) Growth-Inducing Impact of the Proposed Project. The EIR should discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth (e.g., a major expansion of a wastewater treatment plant might allow for more construction in service areas). It also includes projects that would increase the population such that they would tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. The EIR should also discuss the characteristics of some projects that may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment (CCR, Title 14, Section 15126.2(e)). These impacts are discussed in Section 6.3, *Growth Inducement*.

(e) Mitigation Measures Proposed to Minimize the Significant Effects. The full requirements for mitigation measures under CEQA are listed in CCR Section 15126.4. Refer to Chapter 1, *Executive Summary*, for a summary table of mitigation measures and Sections 5.1 through 5.18 for further detail regarding mitigation measures considered in this EIR.

(f) Alternatives to the Proposed Project. The full requirements for Alternatives to the Proposed Project under CEQA are listed in CCR Section 15126.6. Refer to Chapter 7, *Alternatives to the Proposed Project*, for a discussion of project alternatives.

This chapter of the Draft EIR describes the significant unavoidable environmental impacts, significant irreversible environmental changes, and growth-inducing impacts of the proposed project. The following discussion addresses these issues as they relate to the implementation of the proposed project.

6.1 SIGNIFICANT UNAVOIDABLE AND ADVERSE IMPACTS

At the end of Chapter 1, *Executive Summary*, is a table that summarizes the impacts, mitigation measures, and levels of significance before and after mitigation. Mitigation measures would reduce the level of impact, but the following impacts would remain significant, unavoidable, and adverse after mitigation measures are applied:

Agricultural and Forestry Resources

- **Impact 5.2-1:** The proposed project could convert approximately 13,816 acres of Important Farmland to nonagricultural use.
- **Impact 5.2-4**: The proposed project would result in the loss of forest land or conversion of forest land to non-forest use.

Air Quality

- **Impact 5.3-2:** Short-term construction activities associated with the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State ambient air quality standards.

- **Impact 5.3-3:** Development under the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State AAQS.

- **Impact 5.3-5**: Operational-phase emissions associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations.

Cultural and Tribal Resources

- **Impact 5.5-1:** Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.

Mineral Resources

- **Impact 5.12-1**: Implementation of the proposed project could result in the loss of availability of a known mineral resource.

Noise

- **Impact 5.13-1**: Construction activities would result in temporary noise increases in the vicinity of the proposed project.

- **Impact 5.13-2**: Project implementation would generate a substantial traffic noise increase on local roadways and could locate sensitive receptors near rail in areas that exceed established noise standards.

Transportation

- **Impact 5.16-2**: Implementation of the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).

Wildfire

- **Impact 5.18-2:** Development under the proposed project in or near SRAs or lands classified as Very High FHSZs could exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire.

- **Impact 5.18-5**: Development in designated High or Very FHZSs could expose structures and/or residences to fire danger.

6.2 SIGNIFICANT IRREVERSIBLE CHANGES

Section 15126.2(c) of the CEQA Guidelines requires an EIR to discuss the extent to which the proposed project would commit nonrenewable resources to uses that future generations would probably be unable to reverse. The three CEQA-required categories of irreversible changes are discussed herein.

6.2.1 Changes in Land Use That Commit Future Generations

As described in detail in Chapter 3, *Project Description*, of this Draft EIR, the proposed General Plan is updating its land use map to align with current land uses, focusing on mixed-use development and higher density housing within community cores, where infrastructure and services are readily available. In addition, during public outreach for the proposed project, residents of several unincorporated communities expressed a desire for new development, redevelopment, and more economic activity and accessibility. Once future development under the proposed project occurs, it would not be feasible or desirable to return the developed land to its existing (pre-project) condition. Therefore, there is potential that some of the development allowed under the proposed project would most likely lead to irreversible changes in land use.

6.2.2 Irreversible Damage from Environmental Accidents

Irreversible changes to the physical environment could occur from accidental release of hazardous materials associated with development activities allowed by the proposed General Plan; however, compliance with applicable federal, State, and local regulations and the proposed General Plan goals, policies, and actions would reduce this potential impact to a less-than-significant level. Irreversible damage therefore is not expected to result from adoption and implementation of the proposed project.

6.2.3 Large Commitment of Nonrenewable Resources

The proposed project would promote mixed-use development near transportation facilities and employment centers and implement energy and water conservation requirements related to existing and new development, thereby minimizing consumption of non-renewable resources to the extent practicable. However, development allowed by the proposed project would irretrievably commit nonrenewable resources for the construction of buildings, infrastructure, and roadway improvements. Future development under the proposed project also represents a long-term commitment to the consumption of fossil fuels such as natural gas and gasoline. Increased energy demands would be used for the construction, lighting, heating, and cooling of residences and transportation of people within, to, and from the EIR Study Area. However, as shown in Section 5.6, *Energy,* and Section 5.17, *Utilities and Service Systems*, of this Draft EIR, several regulatory measures and proposed General Plan goals, policies, and actions encourage energy and water conservation, alternative energy use, waste reduction, alternatives to automotive transportation, and green building. Future development under the proposed project would be required to comply with all applicable building and design requirements, including those outlined in Title 24 relating to energy conservation. In compliance with

CALGreen, the State's Green Building Standards Code, future development would be required to reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills, and use low pollutant-emitting materials. Therefore, while construction and operation of future development would involve the use of nonrenewable resources, compliance with applicable standards and regulations and implementation of proposed General Plan goals, policies, and actions would minimize impacts.

In addition, the proposed Climate Action Plan (CAP) Update establishes new actions the County would take to reduce GHG emissions from energy production and use in the built environment, transportation, waste, water, and wastewater sectors. Implementation of the CAP would reduce the use of nonrenewable resources and increase the use of renewable sources to the maximum extent practicable. Therefore, the proposed project would not represent a large commitment of nonrenewable resources in comparison to a business-as-usual situation.

6.3 GROWTH INDUCEMENT

Section 15126.2(e) of the CEQA Guidelines requires that an EIR discuss the ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Typical growth-inducing factors might be the extension of urban services or transportation infrastructure to a previously unserved or under-served area, or the removal of major barriers to development.

This section evaluates the proposed project's potential to create such growth inducements. As CEQA Guidelines Section 15126.2(e) requires, "[it] must not be assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment." In other words, growth inducement in and of itself does not indicate a significant impact; rather, the evaluation should consider whether the growth inducement would cause significant adverse environmental impacts.

Growth-inducing impacts fall into two general categories: direct or indirect. Direct growth-inducing impacts would occur if the project results in increased population due to the development of housing which add new residents, or commercial/industrial uses which would add new employees. Indirect, or secondary growth-inducing impacts would occur if a project removes barriers to growth, such as by adding infrastructure and public services in areas that currently lack these services.

6.3.1 Direct Impacts

The proposed project includes two plan-level documents that do not propose any specific development; however, implementation of the proposed project would induce growth by increasing the development potential in the EIR Study Area, as shown in Table 3-2, *2045 Horizon-Year Growth Projections*, in Chapter 3, *Project Description*. As shown in Table 3-2, the 2045 forecast for the EIR Study Area is approximately 65,600 total new residents, 23,200 new housing units, 1.2 million square feet of new commercial space, and 5 million square feet of industrial space. State law requires jurisdictions to promote the production of housing to meet their fair share of regional housing needs as determined by ABAG. By definition, the proposed General Plan would provide a framework for development in the unincorporated county, thereby facilitating planned

growth, as discussed in Section 5.14, *Population and Housing*. The environmental impacts of this anticipated growth under the proposed General Plan are discussed in Sections 5.1 through 5.18. In addition, the proposed General Plan and CAP would result in regional benefits by promoting growth that encourages less automobile dependence, which could have associated air quality and greenhouse gas (GHG) benefits.

6.3.2 Indirect Impacts

The proposed project could be considered growth-inducing because it includes policies and actions that encourage new growth within the EIR Study Area. Such development would occur within the Urban Limit Line, where infrastructure is already in place. Meanwhile, growth would be required to comply with the County's General Plan, zoning regulations, and standards for public services and utilities. Secondary effects associated with this growth do not represent a new significant environmental impact that has not already been addressed in the individual resource sections of this EIR. Additionally, population and employment growth would occur incrementally over approximately 20 years and would be consistent with the regional planning objectives established for the Bay Area.

7. Alternatives to the Proposed Project

7.1 INTRODUCTION

7.1.1 Purpose and Scope

The California Environmental Quality Act (CEQA) requires that an environmental impact report (EIR) include a discussion of reasonable project alternatives that would "feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any significant effects of the project, and evaluate the comparative merits of the alternatives" (CEQA Guidelines Section 15126.6[a]). As required by CEQA, this chapter identifies and evaluates potential alternatives to the proposed project.

Section 15126.6 of the CEQA Guidelines explains the foundation and legal requirements for the alternatives analysis in an EIR. Key provisions are:

- "[T]he discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." (15126.6[b])
- "The specific alternative of 'no project' shall also be evaluated along with its impact." (15126.6[e][1])
- "The no project analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." (15126.6[e][2])
- "The range of alternatives required in an EIR is governed by a 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project." (15126.6[f])
- "Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries…, and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent)." (15126.6[f][1]).
- "Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR." (15126.6[f][2][A])
- "An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative." (15126.6[f][3])

7. Alternatives to the Proposed Project

For each development alternative, this analysis:

- Describes the alternative
- Analyzes the impact of the alternative as compared to the proposed project
- Identifies the impacts of the project that would be avoided or lessened by the alternative
- Assesses whether the alternative would meet most of the basic project objectives
- Evaluates the comparative merits of the alternative and the project

According to Section 15126.6(d) of the CEQA Guidelines, "[i]f an alternative would cause…significant effects in addition those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed."

7.1.2 Project Objectives

As described in Section 3.5, *Project Objectives*, of Chapter 3, *Project Description*, the following objectives have been established for the proposed project and will aid decision makers in their review of the project, the project alternatives, and associated environmental impacts.

- Extend the General Plan planning horizon to year 2045 and establish a legally adequate General Plan and Climate Action Plan (CAP) that meet State requirements through a community-based planning process.
- Through the updates to the land use map, align the map with existing uses that already exist on the ground today, while also focusing more mixed-use development and higher density housing within community cores, where infrastructure and services are available.
- Provide planning guidance at a community scale, rather than relying on a one-size-fits-all policy approach throughout the county.
- Create a modern and visionary policy document intended to address the opportunities and challenges of the 21st century, including the following:
  - **Environmental Justice.** Reduce the unique or compounded health risks in communities that experience the highest levels of pollution and negative health outcomes, such as asthma and low birth weight babies, and the greatest social and economic disadvantages, such as poverty and housing instability.
  - **Community Health.** Provide opportunities for community members to live healthy lifestyles, including by improving peoples' ability to walk or bike between destinations, providing multi-modal transportation connections, creating opportunities for social interaction, and promoting access to outdoor recreation, healthy food, and medical facilities. Reduce exposure of all community members to pollutants that can adversely affect their health.
  - **Economic Development.** Develop the county's workforce and attract and support sustainable businesses and industries that provide living-wage jobs, invest in hiring from the local workforce, and engage with communities. Promote innovation, build the tax base, and allow residents to work in the county where they live by improving the existing jobs-housing imbalance. In particular, locate jobs closer to Impacted Communities to support economic empowerment and reduced commute costs for Impacted Community members.

- **Sustainability.** Conserve resources, improve resiliency (especially to the impacts of climate change), protect the environment, reduce pollution, and enhance overall quality of life.

7.1.3 Summary of Significant Impacts Reduced to Less than Significant with Mitigation Incorporated

Air Quality

- **Impact 5.3-4**: Construction activities associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations.

Biological Resources

- **Impact 5.4-4:** Implementation of the proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Cultural Resources and Tribal Cultural Resources

- **Impact 5.5-2:** Implementation of the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines, Section 15064.5.
- **Impact 5.5-4:** Implementation of the proposed project could cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or a local register of historical resources, as defined in Public Resources Code Section 5020.1(k), or determined to be significant pursuant to the criteria set forth in Public Resources Code Section 5024.1(c).

Geology and Soils

- **Impact 5.7-5**: Development under the proposed project could directly or indirectly destroy a unique paleontological resource or unique geologic feature.

Noise

- **Impact 5.13-3**: Individual construction developments for future projects may expose sensitive uses to excessive levels of groundborne vibration.

7.1.4 Summary of Significant and Unavoidable Impacts

Agricultural and Forestry Resources

- **Impact 5.2-1**: The proposed project could convert approximately 13,816 acres of Important Farmland to nonagricultural use.
- **Impact 5.2-4**: The proposed project would result in the loss of forest land or conversion of forest land to non-forest use.

7. Alternatives to the Proposed Project

Air Quality

- **Impact 5.3-2:** Short-term construction activities associated with the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State ambient air quality standards.
- **Impact 5.3-3**: Development under the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State AAQS.
- **Impact 5.3-5**: Operational-phase emissions associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations and cumulatively contribute to elevated health risk in the Air Basin.

Cultural and Tribal Cultural Resources

- **Impact 5.5-1:** Implementation of the proposed project could cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines, Section 15064.5.

Mineral Resources

- **Impact 5.12-1:** Implementation of the proposed project could result in the loss of availability of a known mineral resource.

Noise

- **Impact 5.13-1:** Construction activities would result in temporary noise increases in the vicinity of the proposed project.
- **Impact 5.13-2**: Project implementation would generate a substantial traffic noise increase on local roadways and could locate sensitive receptors near rail in areas that exceed established noise standards.

Transportation

- **Impact 5.16-2:** Implementation of the proposed project would conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).

Wildfire

- **Impact 5.18-2:** Development under the proposed project in or near SRAs or lands classified as Very High FHSZs could exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire.
- **Impact 5.18-5:** Development in designated High or Very FHZSs could expose structures and/or residences to fire danger.

7.2 ALTERNATIVES CONSIDERED AND REJECTED DURING THE SCOPING/PROJECT PLANNING PROCESS

The following is a discussion of the land use alternatives considered during the scoping and planning process and the reasons why they were not selected for detailed analysis in this EIR.

7.2.1 Alternative Development Areas

CEQA requires that the discussion of alternatives focus on alternatives to the project or its location that can avoid or substantially lessen any significant effects of the project. The key question and first step in the analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR (CEQA Guidelines Section 15126[5][B][1]). Given the nature of the proposed project (adoption of a General Plan and CAP for the entire unincorporated county), it is not possible to consider an offsite alternative. For this reason, an offsite alternative was considered infeasible pursuant to State CEQA Guidelines Section 15126.6(c) and was rejected as a feasible project alternative.

7.2.2 Reduced Density/Intensity Alternative

A reduced density/intensity alternative that would result in the development of fewer residences and commercial and industrial square footage would theoretically reduce traffic and thereby reduce community impacts such as air quality, greenhouse gas (GHG) emissions, traffic, noise, and demand for utilities and public services. However, such an alternative would not achieve or would only partially achieve the project objectives of accommodating growth in the county, including the objective to increase density within the existing community cores and provide more employment opportunities within the county. Additionally, because the proposed General Plan would implement the land use changes needed to meet the County's Regional Housing Needs Allocation (RHNA) for its 2023-2031 6th Cycle Housing Element, this alternative conflicts with the goals of the adopted Housing Element and State housing law. Moreover, the proposed General Plan provides additional housing capacity that can be used to meet future RHNAs for the County beyond the 6th Cycle. This Alternative could result in the need for the County to redesignate and rezone additional land to be able to meet future RHNAs. As a reduced development density conflicts with regional plans to increase housing, and would not meet the project objectives, this option was not evaluated in the EIR.

7.2.3 Reduction of Warehousing Uses Near Impacted Communities Alternative

This alternative would prohibit warehousing uses with heavy-duty trucks (as discussed in Section 5.3, *Air Quality*) within 1,000 feet of an Impacted Community.[1] As discussed in Section 5.3, development allowed by the proposed project could result in new sources of toxic air contaminants (TAC) or fine particulate matter ($PM_{2.5}$) near existing or planned sensitive receptors, resulting in significant and unavoidable impacts to cumulative health risk in the Bay Area. Under Mitigation Measure AQ-4, new industrial or warehousing development projects that either 1) have the potential to generate 100 or more diesel truck trips per day or have 40 or more trucks with operating diesel-powered transport refrigeration units, and 2) are within 1,000 feet of a sensitive land use or Impacted Community must submit a health risk assessment to the County for review and approval. However, since emissions associated with these facilities cannot be determined or modeled until specific development projects are proposed, the potential impacts cannot be determined.

As shown in Table 3-2, *2045 Horizon-Year Growth Projections*, in Chapter 3, *Project Description*, of this Draft EIR, the proposed project could result in development of approximately 5 million square feet of new industrial uses within the proposed General Plan's horizon year of 2045. Of these 5 million square feet, approximately 4 million square feet are within 1,000 feet of Impacted Communities. Approximately 3 million square feet of this projected square footage would result from approved and pending projects, 1.8 million square feet of which are within 1,000 feet of Impacted Communities. Therefore, while this Alternative would result in a reduction of industrial uses within proximity to Impacted Communities, reducing the associated health risk impacts, it would not prevent the development of the projects that have been approved by the County or are pending approval. As such, warehousing uses with heavy-duty trucks could still be developed within 1,000 feet of Impacted Communities.

The proposed General Plan includes policy guidance that addresses impacts from heavy-duty trucks, including Policy HS-P1.8, which requires industrial projects over 25,000 square feet to be near zero-emission (NZE) operations, including from the associated fleet, by providing ZE vehicle-capable parking for all anticipated truck traffic to prevent idling and off-site queuing, providing electrified loading docks with receptacles allowing plug-in of refrigerated trucks, using heavy-duty trucks that are model year 2014 or later and expediting a transition to ZE trucks, and using a clean fleet of delivery vehicles. In addition, Policy SC-P1.6 directs the County to pursue community benefits agreements (CBAs) for projects negatively affecting an Impacted Community. The CBAs would address the community's expressed needs, with the primary objective to mitigate project impacts to the greatest extent possible, including by exceeding the mitigation requirements of CEQA. This policy also directs the County to secure community benefits that exceed the inherent project benefits and support the community's objectives, especially as identified in the Community Profiles found in the Stronger Communities Element. Furthermore, future warehousing projects would be subject to the Bay Area Air Quality Management District's CEQA Air Quality Guidelines, which require an analysis of consistency of the proposed project with applicable Community Emission Reduction Plans (CERPs) and local Environmental Justice policies. In

[1] "Impacted Communities" refers to census tracts in the unincorporated county that are disproportionately burdened by pollution. As discussed further in Section 5.3, *Air Quality*, this designation has been applied to census tracts that score at or above the 72nd percentile for various pollution and population indicators in the California Office of Environmental Health Hazard Assessment's CalEnviroScreen program.

addition, the County established a moratorium on new or expanded warehousing uses in the North Richmond area, an Impacted Community, pursuant to Ordinance 2023-19, adopted in 2023.

Meanwhile, this Alternative would not meet an important objective of the project to locate jobs closer to Impacted Communities to support economic empowerment and reduced commute costs for Impacted Community members, while also reducing VMT. Given that a substantial amount of warehousing development would still be constructed near Impacted Communities and any proposed warehousing in this area would be subject to the health risk assessment and good neighbor policies described above, and because this Alternative would not meet a key project objective, this Alternative is rejected from further consideration.

7.3 ALTERNATIVES SELECTED FOR FURTHER ANALYSIS

Based on the criteria listed above, the following Alternatives have been determined to represent a reasonable range of alternatives which have the potential to feasibly attain most of the basic objectives of the project but may avoid or substantially lessen any of the significant effects of the project. These alternatives are analyzed in detail in this section:

- No Project/Existing Plans
- Increased Density Near Transit Priority Areas (TPAs)
- No Urban Development within High or Very High Fire Hazard Severity Zone (FHSZ)
- Increased TPA Density and No Urban FHSZ Development Combined

An EIR must identify an "environmentally superior" Alternative. If the No Project Alternative is identified as environmentally superior, the EIR is then required to identify an environmentally superior alternative from among the others evaluated. Each alternative's environmental impacts are compared to the proposed project and determined to be environmentally superior, neutral, or inferior.

7.3.1 No Project/Existing Plans Alternative

The No Project Alternative is required to discuss the existing conditions at the time the notice of preparation is published and evaluate what would reasonably be expected to occur in the foreseeable future if the proposed project is not approved (CEQA Guidelines, Section 15126.6[e]). Pursuant to CEQA, this Alternative is also based on current plans and consistent with available infrastructure and community services. Therefore, the No Project/Existing Plans (Existing General Plan and CAP) Alternative assumes that the proposed project would not be adopted, and the development intensity assumed in the existing General Plan would be followed. Additionally, all new goals, policies, strategies, and actions under the proposed General Plan and CAP would not be adopted.

The proposed project would not significantly expand the footprint of development potential beyond the capacity identified in the No Project Alternative. Most changes under the proposed project involve increased density/intensity within community cores and as such, footprint-related impacts (e.g., biological resources and cultural resources) under this Alternative would be similar to the proposed project. The proposed project would result in an increase in population and housing units, as well as employment and commercial and industrial

square footage; therefore, this Alternative would result in a reduction in intensity-related impacts. For example, this Alternative would generate fewer auto trips, traffic noise would be less, and impacts on services and utilities would be less.

Additionally, this Alternative would prevent the adoption and implementation of the new policies, strategies, and actions under the proposed General Plan and CAP that would reduce impacts associated with development in the county. For example, Policy HS-P7.1 in the proposed Health and Safety Element would prohibit approval of residential subdivisions in Very High FHSZs, which would reduce impacts associated with wildfire hazards when compared to the policy guidance under the existing General Plan. Policies and actions in the proposed Land Use and Transportation Elements, in addition to the strategies and actions provided in the proposed CAP, incorporate numerous vehicle miles traveled (VMT) and GHG-reducing measures that would likely lead to increased use of alternative modes of transportation and other types of reductions in VMT and GHGs. When compared to this Alternative, the proposed project would increase densities in community cores, resulting in further reductions in VMT. The full analysis of this alternative for each topical resource issue is shown in Table 7-1, *No Project/Existing Plans Environmental Analysis*.

Table 7-1 No Project/Existing Plans Environmental Analysis

Topic	Environmental Analysis
Aesthetics	Like the proposed project, the No Project/Existing Plans Alternative would allow for additional development in the EIR Study Area, though development would occur pursuant to the existing land use plan and General Plan goals, policies, and actions. As such, the Alternative would introduce new sources of light and glare, impact scenic resources, and alter the appearance of the unincorporated county. Development under this Alternative and the proposed project would both be subject to Urban Limit Line (ULL) restrictions, applicable provisions in the County Ordinance Code that protect scenic resources and visual quality, and California Green Building Code (CALGreen) standards for light and glare. However, development under this Alternative would not be subject to the new policies and actions in the proposed General Plan that strengthen or increase protections or aesthetic resources, as discussed in Section 5.1, *Aesthetics*. Therefore, this Alternative would result in slightly *increased* impacts with regard to aesthetics, though impacts would remain less than significant.
Agriculture and Forestry Resources	Like the proposed project, the existing land use plan allows urban development on Important Farmland and forestland in the EIR Study Area. However, when compared to the existing land use plan, the proposed land use plan has increased density and intensity of community cores which could reduce pressure to develop urban uses on important farmland or forestland outside of the urban cores. Furthermore, the proposed project would reduce the allowed density within the Agricultural Lands designation from 1 unit per 5 acres under the existing General Plan to 1 unit per 10 acres under the proposed project. These components of the proposed project could result in less development on important farmland and forestland. Therefore, this Alternative could result in slightly *increased* impacts with regard to agricultural and forestry resources.
Air Quality	Air quality impacts associated with construction would be similar to the proposed project under this Alternative since development under the existing General Plan would also be subject to the Bay Area Air Quality Management District (BAAQMD)'s *CEQA Air Quality Guidelines* for assessing and mitigating impacts in addition to complying with applicable BAAQMD rules. As described in Table 5.3-11, *Scenario 2. Criteria Air Pollutant Emissions Forecast Compared to the Future No Project Conditions,* in Section 5.3, *Air Quality*, development anticipated under the proposed project would result in an increase in operational emissions at the 2045 horizon year when compared the development anticipated under the existing General Plan at the 2045 horizon year, largely due to the increased development intensity under the proposed General Plan. As such, this Alternative would result in fewer air pollutant emissions than the proposed project.

Table 7-1 No Project/Existing Plans Environmental Analysis

Topic	Environmental Analysis
	The proposed project would also have significant health risk impacts associated with increases in manufacturing and warehousing uses in the county. This Alternative also allows these uses under the existing land use plan and would be expected to have similarly significant impacts. The proposed project would include new policies and actions that aim to address health impacts from hazardous and polluting uses on vulnerable communities. As discussed in Section 5.3, several measures in the Stronger Communities Element and Health and Safety Element increase requirements for industrial projects to reduce emissions, above existing requirements in the existing General Plan. However, the effect of these measures on future operational emissions has not been quantified. Therefore, although the proposed project would include new policies and actions that would reduce health impacts from hazardous and polluting uses, regional operational emissions under the existing General Plan would be less than the proposed project (as demonstrated in Table 5.3-11 in Section 5.3, *Air Quality*), resulting in an overall *lesser* impact on air quality, though impacts would remain significant and unavoidable.
Biological Resources	Impacts to biological resources would be similar under this Alternative when compared to the proposed project. Development under the proposed project would largely continue to occur in areas where it is currently permitted under the existing General Plan and development under both scenarios would be subject to existing federal, State, and local regulations governing the protection of biological resources. Impacts to sensitive species, jurisdictional waters, riparian habitat, and tree protection would be less than significant under this Alternative and the proposed project; however, the proposed project would introduce new requirements and protections for these resources through the policies and actions in the proposed General Plan (see Section 5.4, *Biological Resources*). Additionally, impacts to wildlife migration corridors would be significant without mitigation under the proposed project, and this Alternative could have significant impacts as well. Therefore, this Alternative would result in slightly *increased* impacts with regard to biological resources and impacts to wildlife migration corridors could be significant without mitigation.
Cultural Resources and Tribal Cultural Resources	As discussed in Section 5.5, *Cultural Resources and Tribal Cultural Resources*, there are existing prehistoric, architectural, historical, and archaeological resources in the EIR Study Area that could be adversely affected by new demolition, inappropriate building modification, or incompatible new construction. Development in the EIR Study Area would continue to occur under this Alternative, resulting in potentially significant impacts to historic and archaeological resources, similar to the proposed project. Like the proposed project, this Alternative would be subject to the same federal, State, and local regulations to reduce adverse effects to cultural resources, such as those in the Public Resources Code, California Health and Safety Code, and the California Code of Regulations. The proposed General Plan includes policies and actions that provide additional protections for these resources (see Section 5.5), including measures that were incorporated based on consultation with a local Native American tribe. However, impacts would be significant under both scenarios and impacts to historic resources would be significant and unavoidable. This Alternative would have slightly *increased* impacts on cultural and tribal cultural resources.
Energy	Energy consumption is expected to decrease between the 2020 baseline conditions analyzed in this EIR and the 2045 horizon year. This is largely due to State-level regulations that require decreasing use of fossil fuels including the CALGreen standards and SB 100 which requires utility companies to transition to 100 percent renewable sources. The proposed CAP and supporting measures in the proposed General Plan aim to increase use of renewable energy sources in order to meet stricter GHG emissions reductions targets. The strategies and actions that would meet these targets are not incorporated within the existing General Plan or CAP and therefore energy impacts under this Alternative would be *increased*.
Geology and Soils	Future development under both the proposed project and this Alternative would be subject to the same federal, State, and local regulations that address and prevent hazards associated with geology, soils, and seismicity. As such, this Alternative would have similar impacts with respect to geological hazards. Impacts to paleontological resources would also be similar since both scenarios would allow development within largely the same areas. Therefore, geological and soil impacts would be the *same* between the proposed project and this Alternative.

7. Alternatives to the Proposed Project

Table 7-1 No Project/Existing Plans Environmental Analysis

Topic	Environmental Analysis
Greenhouse Gas Emissions	Development under this Alternative would be subject to the same State regulations as the proposed project that would reduce emissions of future development, as discussed in Section 5.8, *Greenhouse Gas Emissions.* As noted in Section 5.8, without additional local GHG reduction strategies, the County would not achieve consistency with the State's GHG reduction goals. However, implementation of the proposed CAP reduction strategies reduces emissions below the identified target. Additionally, policies and actions within the proposed General Plan would further reduce mobile-source and energy emissions. This Alternative would not adopt these new strategies and measures and would keep the existing CAP and General Plan. Therefore, the proposed project would be expected to result in reduced GHG reductions when compared to this Alternative, though it is unknown whether this Alternative would exceed the State's emissions reduction targets. Impacts regarding GHG emissions would be *increased* under this Alternative.
Hazards and Hazardous Materials	Development under this Alternative would be required to comply with all federal, State, and local regulations pertaining to hazards and hazardous materials, like the proposed project. Because development would largely occur within the same areas under both scenarios, impacts would similar. However, the proposed project includes several new policies and actions that strengthen or increase protections against hazards in the EIR Study Area. For example, Policy COS-P7.3 requires new development in wildlife hazard and evacuation-constrained areas to prepare a traffic control plan to ensure that impacts to emergency evacuation are reduced to less than significant. Such requirements are not included in the existing General Plan, and therefore, this Alternative would result in *increased* impacts with respect to hazards and hazardous materials.
Hydrology and Water Quality	Like the proposed project, development under this Alternative would connect to existing drainage systems already in place and would be subject to the same existing federal, State, and local regulations relating to hydrology and water quality. Compliance with existing regulations would minimize pre- and post-construction impacts to water quality as future development occurs under both the proposed project and this Alternative. The proposed project includes new and modified goals, policies, and actions related to hydrology and water quality to further minimize impacts. These additional hydrology and water quality-related protections would not be implemented under this Alternative. In consideration of the new measures that would be implemented under the proposed General Plan, impacts to hydrology and water quality under this Alternative would be slightly *increased*.
Land Use and Planning	Development under this Alternative would be required to comply with applicable land use regulations that were adopted for the purpose of minimizing environmental impacts, like the proposed project. Among these regulations and plans are the county's Airport Land Use Compatibility Plan and the Association of Bay Area Government's Regional Transportation Plan/Sustainable Community Strategy, Plan Bay Area. However, when compared to the existing General Plan, the proposed General Plan goals, policies, and actions were developed in accordance with the updated guidance in the more recent iterations of Plan Bay Area and provide better consistency with the Plan's goals. For example, the GHG and VMT-reducing measures included throughout the proposed General Plan and CAP are better aligned with the regional plan's targets for reducing emissions and VMT. Therefore, impacts under this Alternative would be *increased* when compared to the proposed project.
Mineral Resources	Development under this Alternative would occur in largely similar locations as the proposed project, which includes development in important mineral resource zones and in areas overlying gas and oil deposits. Therefore, impacts under this Alternative would continue to be significant and unavoidable and would be *similar* to the proposed project.
Noise	Development under the proposed project would have significant and unavoidable impacts with regard to traffic and construction noise; impacts related to vibration would be mitigated to less than significant. Development under this Alternative would have similar impacts with respect to noise and vibration since development in the EIR Study Area would also increase under this Alternative, leading to similar levels of construction noise and increased traffic on roadways, contributing to increased traffic noise. However, this Alternative would result in lesser overall development in the unincorporated county when compared to the proposed project. Development under both scenarios would be subject to the applicable provisions of the County Ordinance Code governing noise impacts. However, the proposed General Plan contains new and modified goals, policies, and actions that would help to decrease noise impacts from future development (see Section 5.13, *Noise*). While this Alternative would not adopt these new measures, it would generate overall less development; therefore, it is considered to have a *similar* to impact to the proposed project.

Table 7-1 No Project/Existing Plans Environmental Analysis

Topic	Environmental Analysis
Population and Housing	The proposed project would result in a larger amount of development than the existing General Plan, resulting in increased population, jobs, and housing production. As described in Section 5.14, *Population and Housing*, while the proposed project would exceed the ABAG Plan Bay Area growth projections, this impact would not be significant since the proposed General Plan is a policy document that plans and accommodates additional growth in the EIR Study Area. Although the existing General Plan would result in less growth, it would not be consistent with the regional planning efforts coordinated through Plan Bay Area, as discussed above. Both scenarios would also have less than significant impacts with respect to displacement and would comply with anti-displacement policies in the adopted Housing Element. Since this Alternative would result in less growth but would be less consistent with the regional plan, impacts would be *similar* when compared to the proposed project.
Public Services and Recreation	This Alternative would generate less growth in the county when compared to the proposed project, resulting in comparatively less demand on public services and recreation facilities. However, development would continue to occur under this Alternative and would be subject to the same development impact fees as development under the proposed project that would be used to fund these services. Therefore, impacts under this Alternative would be *less* than the proposed project.
Transportation	Like the proposed project, this Alternative would be subject to the same federal, State, and local standards to ensure that future development does not increase hazards due to a geometric design feature or incompatible uses, and that development provides adequate emergency access. As described in Section 5.16, *Transportation*, the VMT per service population of the proposed project would exceed the threshold of 85 percent countywide total VMT per service population for the county. While the VMT for development anticipated under the existing General Plan has not been calculated, it is expected that VMT would continue to increase similar to the proposed project. The proposed project would encourage and require additional site-specific VMT-reducing measures such as physical improvements, pedestrian and bicycle facilities, and ongoing operational or incentive programs that have not been accounted for within the VMT analysis. Other land use and transportation measures in the proposed General Plan and CAP would further reduce VMT under the proposed project. Furthermore, the proposed land use plan focuses on increasing density in community cores, which would further contribute to VMT reductions. Since this Alternative would not introduce these additional measures and would not increase land use densities in community cores, impacts to transportation would be *increased* relative to the proposed project.
Utilities and Service Systems	Demand and consumption trends generally demonstrate that advances in recycling and solid waste reduction requirements, water-efficient regulations in building and landscaping, and stricter stormwater retention requirements would reduce utility and service systems demands and result in more efficient use of utilities compared to existing conditions. These trends would continue under both the proposed project and this Alternative. Much like the proposed project, the No Project Alternative would connect to existing systems already in place and would be subject to the same existing federal, State, and local regulations related to utility usage. This Alternative would result in a lesser scale of development, however, which would entail less water use and solid waste production. However, the proposed project includes new and modified goals, policies, and actions related to utilities to further minimize impacts, including policies to ensure increased coordination with water suppliers and water supply planning efforts. Therefore, balancing the lesser scale of development under this Alternative with the new and modified measures under the proposed project, impacts with respect to utilities and service systems would be *similar* under this Alternative.
Wildfire	Development under this Alternative would continue to allow development in designated wildfire hazard areas, exacerbating wildfire risks. Although the goals, policies, and actions identified in the proposed General Plan provide the best wildfire hazard reduction measures available, impacts cannot be mitigated to less than significant if development is allowed within these areas. Prohibiting new development in these portions of the EIR Study Area could be considered a regulatory taking. While this Alternative would result in a lesser scale of development, this development would not be focused in the community core areas of the EIR Study Area, like the proposed project. Additionally, it would not adopt the new and modified goals, policies, or actions of the proposed General Plan, and development would still occur in the VHFHSZ and/or the Wildland-Urban Interface

Table 7-1 No Project/Existing Plans Environmental Analysis

Topic	Environmental Analysis
	(WUI). Furthermore, it would retain a smaller minimum lot size requirement in agricultural areas than the proposed General Plan, increasing the development capacity in some wildfire hazard areas. Therefore, implementation of this Alternative would have *increased* impacts when compared to the proposed project.

While this Alternative would reduce overall intensity of development when compared to the proposed project, it would not adopt the new or modified goals, policies, and actions under the proposed General Plan and CAP and is not likely to reduce any of the identified significant impacts to a less-than-significant level. This Alternative would not meet any of the proposed project's objectives.

It must be noted that the State of California regularly enacts legislation requiring cities and counties to amend their general plans to address specific issues and include new content. A primary objective of the proposed project is to incorporate these requirements into a new General Plan. The No Project/Existing Plans Alternative is not a viable alternative because it fails in this regard.

7.3.2 Increased Density Near Transit Priority Areas

As discussed in Section 5.16, *Transportation*, the EIR Study Area includes two Transit Priority Areas (TPAs), as defined by California Public Resource Code, Section 21099, along a Bay Area Rapid Transit (BART) line. This includes one in Contra Costa Centre and one in Bay Point/Pittsburg. Senate Bill (SB) 743 (2013) (see Section 5.16) declared that aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a TPA shall not be considered significant impacts on the environment. SB 743 also provides streamlining opportunities for projects in TPAs under the assumption that development in these areas would result in less overall environmental impacts. This Alternative proposes a policy to increase the minimum allowed density of all new development and redevelopment within these two TPAs, which include all potential development sites within a half-mile of the BART stations in Contra Costa Centre and Bay Point. Under this Alternative, all projects within these boundaries would be required to achieve at least 90 percent of their sites' maximum allowed density.

As noted in Chapter 3, Section 3.7.5, *Estimate Buildout*, the planning horizon projections developed for the proposed General Plan and analyzed in the EIR assume that 75 percent of the maximum allowed density will be built in the Residential Very Low, Low, and Low-Medium Density designations. In the remaining residential designations, the EIR assumes that 80 percent of the maximum allowed density will be built. As such, this Alternative evaluates the potential impacts of requiring a higher minimum density in the TPAs that extends beyond the development potential assumed in this EIR.

As shown in Table 7-2, *Increased Density Near TPAs Alternative Comparison to Proposed Project*, this Alternative would result in 23,400 new housing units, 1.2 million square feet of new commercial space, and 5 million square feet of new industrial space, overall contributing 66,300 new residents within the unincorporated county by 2045. When compared to the proposed project's development projections, this Alternative would result in 200 additional new housing units while commercial and industrial space would remain the same. These growth estimates are based on an assumption that sites that are currently vacant or underutilized would develop.

Because many of the sites within the TPA are already developed, the growth projection is relatively modest. While more redevelopment could occur and result in higher growth, such redevelopment is speculative and not included in the estimate.

Table 7-2 Increased Density Near TPAs Alternative Comparison to Proposed Project

	Growth Under Proposed Project	Growth Under Increased Density Near TPAs Alternative	Difference between Alternative and Proposed Project
Housing Units	23,200	23,400	200
Residents[1]	65,600	66,300	700
Commercial Space (square feet)	1.2 million	1.2 million	0
Industrial Space (square feet)	5 million	5 million	0

[1] Based on an assumption of 2.83 persons per household, as reported in: State of California, Department of Finance, 2020. E-5 Population and Housing Estimates for Cities, Counties and the State.
Source: PlaceWorks 2023.

This Alternative results in similar impacts to the proposed project since the same version of the proposed General Plan goals, policies, and actions and CAP strategies and actions would also be adopted and implemented, with the exception of the policy specified in this Alternative. Additionally, this Alternative would not increase any allowable densities designated under the proposed General Plan, but instead would ensure that all development in TPAs maximizes its potential allowed density. As such, this Alternative would result in no new footprint-related impacts, including those related to biological resources, cultural and tribal resources, and geology and soils, since all potential sites for development would not change between this Alternative and the proposed project. Since this Alternative would ensure higher densities near high-quality transit, impacts related to reductions in automobile use, which include air quality, GHG, VMT, and noise impacts, would potentially decrease when compared to the proposed project. The full analysis of the environmental resource topics is provided in Table 7-3, *Increased Density Near TPAs Environmental Analysis*.

Table 7-3 Increased Density Near TPAs Environmental Analysis

Topic	Environmental Analysis
Aesthetics	This Alternative would develop the same land use plan as the proposed project, with the exception of the increased density near TPAs. Under SB 743, aesthetic impacts of infill projects within a TPA are considered less than significant. Therefore, development under this Alternative would have no additional impact to aesthetics resulting from factors associated with increased density (e.g. taller and more clustered buildings). Aesthetic impacts under this Alternative would be the same as the proposed project.
Agriculture and Forestry Resources	The above identified TPAs in the EIR Study Area do not contain agricultural or forestry resources. This Alternative would continue to have significant and unavoidable impacts on agricultural and forestry resources since development would be allowed in areas that contain these resources and no additional impacts would occur. Impacts under this Alternative would be the same as the proposed project.
Air Quality	Air quality impacts under the proposed project are considered significant and unavoidable since operational emissions would exceed both regional and localized emissions thresholds. Impacts would continue to be significant and unavoidable under this Alternative since a similar level of development would occur. However, this Alternative's increases in density could contribute to additional air quality impacts including the exposure of additional receptors to pollutants and increased emissions associated with increased population and development. The density increases under this Alternative are intended to increase access to high quality transit and urban amenities which are actions that generally decrease use of vehicles in favor of Alternative modes of transportation, resulting in less vehicle emissions. As a result, this increase in density would not be expected to increase the primary source of operational air quality emissions, vehicle emissions, and can be assumed to result in no net increase in regional operational emissions. This could

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Table 7-3 Increased Density Near TPAs Environmental Analysis

Topic	Environmental Analysis
	further result in less emissions as this Alternative could offset demand in other areas of the county. This Alternative would not affect emissions associated with industrial uses since it concerns density on residential sites, so impacts would remain the same for localized air pollutant emissions. Overall, impacts under this Alternative would be *less* than the proposed project.
Biological Resources	This Alternative would increase densities in areas that are largely devoid of biological resources. Additionally, development on the sites where these density minimums would be implemented could still be developed under the proposed project. This Alternative would therefore not result in any additional impacts to biological resources in this regard. Impacts would be the same as the proposed project.
Cultural Resources and Tribal Cultural Resources	Similar to biological resources, this Alternative would not allow development outside of areas where it not be permitted under the proposed project but would instead allow denser development on some sites. Cultural resource impacts would neither decrease nor increase with additional density so impacts would be the same as the proposed project.
Energy	Energy consumption under this Alternative could be slightly increased when compared to the proposed project since this Alternative would require density minimums on sites in TPAs, thereby potentially increasing the size and scale of development on these sites when compared to the proposed project. However, this Alternative would result in a reduction in transportation fuel use associated with reductions in VMT. Therefore, energy impacts would be slightly *decreased* under this Alternative.
Geology and Soils	The density increases proposed under this Alternative would not affect geology and soil impacts. Geologic hazards and paleontological resource impacts would be addressed through site-specific evaluation and increased density and the same impacts identified in Section 5.7 would continue to apply to development under this Alternative. Impacts would be the same as the proposed project.
Greenhouse Gas Emissions	As described above, the potential density increases under this Alternative are assumed to result in less vehicle-related emissions due to the benefits of increasing density in community cores and near transit. As a result, impacts related to GHG emissions under this Alternative would be *less* than the proposed project.
Hazards and Hazardous Materials	This Alternative would have no effect on hazards and hazardous materials beyond those identified for the proposed project. The density increases under this Alternative are not located near the county's airports or in evacuation constrained areas and development would continue to be subject to the same regulations that would mitigate impacts with respect to hazards and hazardous materials. Impacts would be the same as the proposed project.
Hydrology and Water Quality	Development under this Alternative would be allowed in the same locations as the proposed project and the increases in density would not incur a greater impact on hydrology and water quality. Impacts would be the same as the proposed project.
Land Use and Planning	This Alternative would potentially result in higher density within transit-accessible areas which would be better aligned with the goals of Plan Bay Area when compared to the proposed project. Therefore, this Alternative would have a *lesser* impact on land use and planning when compared to the proposed project.
Mineral Resources	Development under this Alternative would be allowed in the same locations as the proposed project, and the locations in which density would be increased are not within mineral resource zones. Furthermore, increasing density would have no effect on access to mineral resources. Therefore, impacts would be the same as the proposed project.
Noise	This Alternative would increase density in specific areas of the county and is expected to result in equal or less VMT impacts due to the increases in transit access. This could result in slightly lesser impacts to traffic noise. Other impacts to noise would be similar to the proposed project. Noise impacts under this Alternative would be *less* than under the proposed project, but would not be reduced to-less-than significant levels.
Population and Housing	The Alternative would result in a potential increase in population when compared to the proposed project. As described above, the analysis of the proposed project assumes that 75 to 80 percent of the maximum densities of sites included in the buildout calculations would be developed and this Alternative would require development of a minimum of 90 percent the maximum density in the TPAs. As such, this could have slightly *increased* impacts when compared to the proposed project. However, impacts would remain less significant.
Public Services and Recreation	Since this Alternative would result in an increase in population when compared to the proposed project, demand for services would increase as well resulting in *increased* impacts when compared to the proposed project. However, impacts would remain less significant.

Table 7-3 Increased Density Near TPAs Environmental Analysis

Topic	Environmental Analysis
Transportation	This Alternative is assumed to result in lesser or equal impacts to VMT when compared to the proposed project since it would increase density in community cores and in proximity to high-quality transit. It is unknown whether this would decrease impacts to less than significant for VMT but it would align with the intent of the proposed General Plan and CAP and implement the applicable policies related to VMT reductions through land use. At the programmatic level, impacts are assumed to remain significant and unavoidable, though this Alternative would result in *lesser* impacts when compared to the proposed project.
Utilities and Service Systems	This Alternative is assumed to result in an increase in population when compared to the proposed project. Impacts to water supply and solid waste are assumed to increase in turn. Like the proposed project, development under this Alternative would be required to comply with regulations that would reduce these impacts. Impacts to utilities and service systems would remain less than significant under this Alternative but would be slightly *increased*.
Wildfire	This Alternative would increase density near TPAs, but this is not land within wildfire hazard areas so impacts would remain the same as under the proposed project. This Alternative would still allow development within wildfire hazard areas so impacts would remain significant and unavoidable.

This Alternative would meet all project objectives to the same extent as the proposed project. As described, this Alternative would reduce some environmental impacts. However, this Alternative would not likely reduce any identified significant and unavoidable impacts of the proposed project to less than significant.

7.3.3 No Urban Development within High or Very High Fire Hazard Severity Zone Alternative

This Alternative would prohibit new urban development (i.e., housing, commercial, and industrial space) within High or Very High FHSZs, as designated by the Office of the State Fire Marshal and the California Department of Forestry and Fire Protection (CAL FIRE). As discussed in Section 5.18, *Wildfire*, the EIR Study Area contains 163,524 acres of land mapped within CAL FIRE's High or Very High FHSZs. Approximately 18,677 acres of this land is within the County's Urban Limit Line (ULL), although approximately 7,420 acres of this land is designated as Public and Semi-Public, Parks and Recreation, and Resource Conservation under the proposed General Plan, and largely owned by public agencies who intend to conserve the land. Nevertheless, urban development under the proposed General Plan could occur in FHSZs. These areas are subject to increased risk of wildfire hazards and as concluded in Section 5.18, impacts associated with wildfire hazard risk would be significant and unavoidable under the proposed project.

This Alternative would ensure that no urban development under the proposed General Plan would occur within High or Very High FHSZ, thereby reducing Impact 5.18-2 and Impact 5.18-5 to less than significant. However, as noted in Section 5.18, the Office of the State Fire Marshal/CAL FIRE's ongoing updates to the FHSZ maps will result in new FHSZ boundaries. These updates will be adopted within the planning horizon of the proposed project. These revisions may result in either expansion or contraction of the boundaries and as such, portions of the EIR Study Area that are not within a FHSZ at the time of publishing this EIR may be remapped and included as FHSZs and vice versa. If the County Board of Supervisors decides to adopt this Alternative, then it would be prudent for the Board to provide clear direction regarding future changes to the land use map (i.e., whether it should be amended whenever the State Fire Marshal/CAL FIRE updates the FHSZ maps) to effectively implement the Alternative.

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Other changes to project impacts associated with this Alternative would largely be associated with the reduction of available sites for urban development within the county. As shown in Table 7-4, *No Urban Development with a Fire Hazard Severity Zone Alternative Comparison to Proposed Project,* this Alternative would result in 19,500 new housing units, 1.2 million square feet of new commercial space, and 4.8 million square feet of new industrial space, overall contributing 55,200 new residents within the unincorporated county by 2045. When compared to the proposed project's development projections, this Alternative would result in 3,700 fewer new housing units, 6,400 fewer square feet of new commercial space, and 177,300 fewer new square feet of new industrial space.

Table 7-4 No Urban Development in High or Very High Fire Hazard Severity Zone Alternative Comparison to Proposed Project

	Growth Under Proposed Project	Growth Under No Urban Development in High or Very High FHSZ Alternative	Difference between Alternative and Proposed Project
Housing Units	23,200	19,500	-3,700
Residents[1]	65,600	55,200	-10,400
Commercial Space (square feet)	1.2 million	1.2 million	-6,400
Industrial Space (square feet)	5 million	4.8 million	-177,300

[1] Based on an assumption of 2.83 persons per household, as reported in: State of California, Department of Finance, 2020. E-5 Population and Housing Estimates for Cities, Counties and the State.
Source: PlaceWorks 2023.

Due to this reduction in development potential within a significant portion of the county, all potential environmental impacts would be reduced under this Alternative when compared to the proposed project, except for impacts related to land use and planning that would not change compared to the proposed project. However, because development will occur in other areas of the county, no other potentially significant impacts, with the exception of Impact 5.18-2 and Impact 5.18-5, would be reduced to less than significant. The full analysis of the environmental resource topics is provided in Table 7-5, *No Urban Development in FHSZs Environmental Analysis.*

Table 7-5 No Urban Development in FHSZs Environmental Analysis

Topic	Environmental Analysis
Aesthetics	This Alternative would result in less overall development within the EIR Study Area, resulting in fewer sources of light and glare. Prohibiting new urban development in some areas would limit the possibilities of future development obstructing views of the County's scenic resources, including ridgelines identified in Figure 5.1-1, though impacts are reduced to less than significant under the proposed project due to the proposed General Plan policies and actions protecting scenic resources in the Conservation, Open Space, and Working Land Element. Overall, this Alternative would result in *lesser* impacts to aesthetics when compared to the proposed project.
Agriculture and Forestry Resources	The areas of the EIR Study Area that would be prohibited from additional urban development under this Alternative include some land that would be potentially converted from agricultural and forestry uses under the proposed land use plan, as discussed in Section 5.2. As such, this Alternative reduces the amount of land that could be converted, resulting in *lesser* impacts to agricultural and forestry resources. However, this Alternative would not completely eliminate all areas of potential conversion; therefore, impacts would remain significant and unavoidable.
Air Quality	This Alternative would result in less overall development in the EIR Study Area. Therefore, in addition to fewer construction emissions from less development, operational air quality emissions associated with vehicle travel would also decrease under this Alternative. Health risk impacts associated with industrial development would also decrease due to the decrease in 177,300 square feet of industrial space anticipated under this Alternative. Overall, impacts to air quality would be *lesser* under this Alternative.

Table 7-5 No Urban Development in FHSZs Environmental Analysis

Topic	Environmental Analysis
Biological Resources	This Alternative would result in less overall development in the EIR Study Area, which would reduce the potential for new development to impact biological resources. This Alternative would still require mitigation to reduce impacts to less than significant since it would not prohibit all development in areas where wildlife migration corridors exist. However, impacts to biological resources would *less* when compared to the proposed project.
Cultural Resources and Tribal Cultural Resources	This Alternative would reduce potential impacts to undiscovered archaeological resources, human remains, and tribal cultural resources since less overall development would occur within the EIR Study Area, which reduces the potential number of resources that can be uncovered during development. Additionally, since known and unknown historic resources exist within FHSZs, this Alternative would limit potential impacts on historic resources in these areas. However, impacts to historic resources would not be completely eliminated. Overall, impacts to cultural and tribal cultural resources would be *less* than the proposed project.
Energy	Energy consumption under this Alternative would be decreased since overall development would decrease, reducing short-term construction energy demands and long-term operational energy demands from development and associated transportation. Impacts to energy under this Alternative would be *less* than the proposed project.
Geology and Soils	This Alternative would result in less development in the EIR Study Area, including in areas with mapped geologic hazards, resulting in fewer people exposed to these hazards. Additionally, similar to cultural resources, this Alternative would result in reduced impacts to paleontological resources. Overall, this Alternative would have lesser impacts regarding geology and soils when compared to the proposed project.
Greenhouse Gas Emissions	Because this Alternative would result in less overall development, GHG emissions from on-road transportation, building energy consumption, solid waste, off-road equipment, and water and wastewater use would also decrease. Impacts with respect to GHG emissions would be *less* than the proposed project.
Hazards and Hazardous Materials	This Alternative would prohibit additional urban development in High and Very High FHSZs, where there is sometimes limited evacuation access, thereby reducing impacts related to emergency and evacuation access. Impacts associated with hazards and hazardous materials would be similar to the proposed project since this Alternative would not limit development near airports or known active hazardous materials sites; these impacts would continue to be less than significant through compliance with existing regulations. Overall, impacts to hazards and hazardous materials would be *lesser* under this Alternative.
Hydrology and Water Quality	This Alternative would result in less overall development than the proposed project, thereby resulting in less potential impact to hydrology and water quality. Impacts with respect to flooding hazards would also be reduced since some flood hazard areas coincide with the land that would be prohibited from additional urban development under this Alternative. Overall, impacts to water quality and hydrology would be *less* than the proposed project.
Land Use and Planning	As discussed in Section 5.11, the proposed project is consistent with applicable land use plans adopted for the purpose of avoiding or mitigating an environmental impact, largely due to policy guidance that supports these plans, plus a land use map that maintains the primarily agricultural, natural resource, recreation, and public service uses in the Primary Zone of the Delta. This Alternative would maintain the proposed policy guidance and would not allow new urban uses within the Primary Zone. Therefore, impacts with respect to land use and planning would be the same under this Alternative.
Mineral Resources	This Alternative would prohibit additional urban/incompatible development in some areas of the EIR Study Area that contain mapped mineral resources. As a result, impacts to mineral resources would decrease. However, impacts would remain significant and unavoidable since this Alternative would not completely eliminate all development in mineral resource areas. Overall, impacts to mineral resources would be *less* than the proposed project.
Noise	This Alternative would result in less overall development in the EIR Study Area, thereby reducing noise and vibration impacts associated with construction and traffic. Impacts are expected to remain significant and unavoidable for construction and traffic since the scale of noise impacts cannot be determined at this level and strategies for reducing such impacts would need to be considered on a project-specific basis in order to reduce impacts to less than significant. However, impacts to noise and vibration would be *less* than the proposed project.

Table 7-5 No Urban Development in FHSZs Environmental Analysis

Topic	Environmental Analysis
Population and Housing	This Alternative would result in less growth in the EIR Study Area when compared to the proposed project. Therefore, the development anticipated under this Alternative would be closer aligned with the population, housing, and employment growth forecasts in Plan Bay Area 2040. While CEQA defines this impact as "unplanned" growth and both the proposed project and this Alternative would result in planned growth since they involve the adoption of planning documents, impacts under this Alternative would be considered *less* than the proposed project.
Public Services and Recreation	Since this Alternative would result in a decrease in population when compared to the proposed project, demand for services would decrease as well. In addition, the population would be reduced in areas that could have increased fire response needs due to increased fire hazards. Therefore, impacts under this Alternative would be *less* than the proposed project.
Transportation	This Alternative would result in less overall development within the EIR Study Area, which would reduce VMT. However, VMT impacts would not be reduced to less than significant due to the uncertainty of implementing specific VMT-reducing measures across all future development, like the proposed project. Additionally, this Alternative would prohibit additional urban development in High and Very High FHSZs, where there is sometimes limited evacuation access, thereby reducing impacts related to emergency responder access. Overall, impacts to transportation would be *decreased* when compared to the proposed project.
Utilities and Service Systems	This Alternative would result in less overall development, which would result in a commensurate reduction in utility and service systems impacts associated with less water use, less wastewater disposal, and less solid waste production. Impacts would be *less* than the proposed project.
Wildfire	This Alternative would prohibit additional urban development in High and Very High FHSZs, which would reduce impacts from significant and unavoidable to less than significant for wildfire impacts. As discussed in Section 5.18, wildfire impacts are considered significant and unavoidable if urban development is permitted in these areas. Policy guidance in the proposed General Plan would reduce impacts by prohibiting new subdivisions in Very High FHSZs, limiting subdivisions in High FHSZs, and requiring all new development within High and Very High FHSZs, WUI areas, and State Responsibility Areas (SRAs) to prepare and maintain a fire protection plan, but would continue to allow other types of development. This Alternative would ensure that fire hazard risks for new development are *reduced to less than significant*.

This Alternative is largely consistent with the intent and goals of the proposed Health and Safety Element and proposed CAP. Both proposed documents include a policy or action that would curtail new residential subdivisions within High and Very High FHSZs, as well as a policy or action that would require all new development within High and Very High FHSZs, WUI areas, and SRAs to prepare and maintain a fire protection plan. However, this Alternative would slightly reduce the number of sites available to the County to meet its 6th Cycle Housing Element RHNA. In addition, new urban development within communities with large overlaps of High and Very High FHSZ lands would be prohibited, thereby limiting opportunities for economic development in these communities.

7.3.4 Increased TPA Density and No Urban FHSZ Development Combined Alternative

This Alterative would combine the two proposed actions in the "Increased Density Near Transit Priority Areas" and "No Urban Development within a High or Very High FHSZ" Alternatives. As such, this Alternative would involve requiring residential development within the county's two TPAs to achieve at least 90 percent of the sites' maximum allowed density in addition to prohibiting new urban development within High and Very High FHSZs. This Alternative would have the benefit of increasing density near transit, thereby reducing VMT and related impacts, in addition to reducing wildfire impacts to less than significant.

As shown in Table 7-6, *Increased TPA Density and No Urban FHSZ Development Combined Alternative Comparison to Proposed Project,* this Alternative would result in 19,700 new housing units, 1.2 million square feet of new commercial space, and 4.8 million square feet of new industrial space, overall contributing 55,800 new residents within the county by 2045. When compared to the proposed project's development projections, this Alternative would result in 3,500 fewer new housing units, 6,400 fewer square feet of new commercial space, and 177,300 fewer new square feet of new industrial space.

Table 7-6 Increased TPA Density and No Urban FHSZ Development Combined Alternative Comparison to Proposed Project

	Growth Under Proposed Project	Increased TPA Density and No Urban FHSZ Development Combined Alternative	Difference between Alternative and Proposed Project
Housing Units	23,200	19,700	-3,500
Residents[1]	65,600	55,800	-9,800
Commercial Space (square feet)	1.2 million	1.2 million	-6,400
Industrial Space (square feet)	5 million	4.8 million	-177,300

[1] Based on an assumption of 2.83 persons per household, as reported in: State of California, Department of Finance, 2020. E-5 Population and Housing Estimates for Cities, Counties and the State.
Source: PlaceWorks 2023.

The full analysis of the environmental resource topics is provided in Table 7-7, *Increased TPA Density and No Urban FHSZ Development Combined Environmental Analysis.*

Table 7-7 Increased TPA Density and No Urban FHSZ Development Combined Environmental Analysis

Topic	Environmental Analysis
Aesthetics	Like the FHSZ Alternative, this Alternative would result in less overall development within the EIR Study Area, resulting in less sources of light and glare and less impacts associated with obstruction of scenic ridgelines. Like the TPA Alternative, no additional impacts would occur from increasing density in the TPAs since aesthetic impacts are considered less than significant for all development in these areas. Overall, this Alternative would result in *lesser* impacts to aesthetics when compared to the proposed project.
Agriculture and Forestry Resources	Like the FHSZ Alternative, the areas of the EIR Study Area that would be prohibited from additional urban development under this Alternative include some land that would be potentially converted from agricultural and forestry uses under the proposed land use plan. As such, this Alternative potentially reduces the amount of land converted, resulting in *lesser* impacts to agricultural and forestry resources, but would not reduce impacts to less than significant. The TPA portion of the combined Alternative would have no effect on these resources.
Air Quality	Both portions of this Alternative would result in less impacts to air quality associated with decreased vehicle use, as described in Tables 7-3 and 7-5. Impacts to air quality would be *reduced* under this Alternative.
Biological Resources	Like the FHSZ Alternative, this Alternative would reduce impacts to biological resources since it would result in less overall development. The TPA portion of the combined Alternative would have no effect on these resources. Impacts would remain less than significant with mitigation incorporated and would be *reduced* under this Alternative.
Cultural Resources and Tribal Cultural Resources	Like the FHSZ Alternative, impacts to cultural and tribal cultural resources would be reduced due to the reduced amount of development. The density increases under the TPA portion of this Alternative would have no additional impact on these resources. Impacts to historic resources would remain significant and unavoidable but would be *reduced* under this Alternative.

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Table 7-7 Increased TPA Density and No Urban FHSZ Development Combined Environmental Analysis

Topic	Environmental Analysis
Energy	Like the FHSZ Alternative, energy consumption associated with construction and operation of buildings and structures under this Alternative would be decreased since overall development would decrease. Transportation fuel consumption associated with VMT would also decrease with less development overall, as well as from increasing density in areas with access to high quality transit. Impacts to energy under this Alternative would be *less* than the proposed project.
Geology and Soils	Like the FHSZ Alternative, this Alternative would result in less overall development in the EIR Study Area, including in areas with mapped geologic hazards, resulting in fewer people exposed to these hazards. Additionally, similar to cultural resources, this Alternative would result in less impacts to paleontological resources. The density increases under the TPA portion of this Alternative would have no additional impact on these resources. Overall, this Alternative would have *lesser* impacts regarding geology and soils when compared to the proposed project.
Greenhouse Gas Emissions	Like the FHSZ Alternative, this Alternative would result in a decrease in GHG emissions associated with on-road transportation, building energy consumption, solid waste, off-road equipment, and water and wastewater due to the reduced amount of development overall. Additionally, the density increases under the TPA portion of this Alternative would further reduce GHG emissions. Impacts with respect to GHG emissions would be *less* than the proposed project.
Hazards and Hazardous Materials	Like the FHSZ Alternative, this Alternative would prohibit additional urban development in High and Very High FHSZs, where there is sometimes limited evacuation access, thereby reducing impacts related to emergency and evacuation access. Impacts associated with hazardous materials would be similar to the proposed project since this Alternative would not limit development near airports or known active hazardous materials sites; these impacts would continue to be less than significant through compliance with existing regulations. The density increases under the TPA portion of this Alternative are not located near the county's airports or in evacuation constrained areas and development would continue to be subject to the same regulations that would mitigate impacts with respect to hazards and hazardous materials. Overall, impacts to hazards and hazardous materials would be *lesser* under this Alternative.
Hydrology and Water Quality	Like the FHSZ Alternative, this Alternative would result in less overall development than the proposed project, thereby resulting in less potential impact to hydrology and water quality. Impacts with respect to flooding hazards would also be reduced since some flood hazard areas coincide with the land that would be prohibited from additional urban development under this Alternative. The density increases under the TPA portion of this Alternative would have no additional impact on hydrology and water quality. Overall, impacts to water quality and hydrology would be *less* than the proposed project.
Land Use and Planning	This Alternative would maintain the proposed policy guidance that supports applicable land use plans adopted for the purpose of avoiding or mitigating an environmental impact, and it would not allow new urban uses within the Primary Zone of the Delta. Meanwhile, it would increase the potential amount of housing developed in TPAs, which is better aligned with the goals in Plan Bay Area when compared to the proposed project. Therefore, this Alternative would have a *lesser* impact on land use and planning when compared to the proposed project.
Mineral Resources	Like the FHSZ Alternative, this Alternative would prohibit additional urban/incompatible development in some areas of the EIR Study Area that contain mapped mineral resources. As a result, impacts to mineral resources would decrease. However, impacts would remain significant and unavoidable since this Alternative would not completely eliminate all development in mineral resource areas. The density increases under the TPA portion of this Alternative would have no additional impact on mineral resources. Impacts to mineral resources would be *less* than the proposed project.
Noise	Like the FHSZ Alternative, this Alternative would result in less overall development in the EIR Study Area, thereby reducing noise and vibration impacts associated with construction and traffic. Additionally, the TPA portion of this Alternative is expected to result in fewer vehicle trips, and therefore, less roadway noise. Impacts are expected to remain significant and unavoidable, but *less* than the proposed project.
Population and Housing	This Alternative would result in less growth in the EIR Study Area when compared to the proposed project. Therefore, the development anticipated under this Alternative would be closer aligned with the population, housing, and employment growth forecasts in Plan Bay Area 2040. While CEQA defines this impact as "unplanned" growth and both the proposed project and this Alternative would result in planned growth since

Table 7-7 Increased TPA Density and No Urban FHSZ Development Combined Environmental Analysis

Topic	Environmental Analysis
	they involve the adoption of planning documents, impacts under this Alternative would be considered *less* than the proposed project.
Public Services and Recreation	Since this Alternative would result in a decrease in population when compared to the proposed project, demand for services would decrease as well. In addition, the population would be reduced in areas that could have increased fire response needs due to increased fire hazards. Therefore, impacts under this Alternative would be *less* than the proposed project.
Transportation	Like the FHSZ Alternative, this Alternative would result in less overall development within the EIR Study Area, which would reduce VMT. VMT impacts are also expected to reduce due to the increases in density near transit as part of the TPA portion of this Alternative. However, VMT impacts would not be reduced to less than significant due to the uncertainty of implementing specific VMT-reducing measures across all future development, like the proposed project. Additionally, this Alternative would prohibit additional urban development in High and Very High FHSZs, where there is sometimes limited evacuation access, thereby reducing impacts related to emergency responder access. Overall, impacts to transportation would be *decreased* when compared to the proposed project.
Utilities and Service Systems	This Alternative would result in less overall development, which would result in a commensurate reduction in utility and service systems impacts associated with less water use, less wastewater disposal, and less solid waste production. Impacts would be *less* than the proposed project.
Wildfire	This Alternative would prohibit additional urban development in High and Very High FHSZs, which would reduce impacts from significant and unavoidable to less than significant for wildfire impacts. As discussed in Section 5.18, wildfire impacts are considered significant and unavoidable if urban development is permitted in these areas. This Alternative would ensure that fire hazard risks for new development are *reduced to less than significant*.

This Alternative would meet most of the objectives of the proposed project. It would focus more housing development within the community cores and would adopt the proposed General Plan and CAP, like the proposed project, with the exceptions of density increases in the TPAs and prohibiting new urban development within High and Very High FHSZs. Like the FHSZ Alternative analyzed in Section 7.3.3, this Alternative would however decrease the overall development capacity of the county, resulting in less economic opportunities for the communities affected by this prohibition of new urban development. This Alternative would reduce the most impacts and meets the most project objectives when compared to the other alternatives. Therefore, this Alternative is considered the "environmentally superior alternative."

7.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires a lead agency to identify the "environmentally superior alternative" and, in cases where the "No Project" Alternative is environmentally superior to the proposed project, the environmentally superior development alternative must be identified. The Increased TPA Density and No Urban FHSZ Development Combined Alternative has been identified as the "environmentally superior alternative" to the proposed project. Table 7-8, *Comparison of Project Alternatives to the Proposed Project,* compares the environmental determination of the proposed project with the project alternatives.

7. Alternatives to the Proposed Project

Table 7-8 Comparison of Project Alternatives to the Proposed Project

Topic	Project Environmental Determination	No Project/ Existing Plans Alternative	Increased Density Near TPAs Alternative	No Urban Development within High or Very High FHSZ Alternative	Increased TPA Density and No Urban FHSZ Development Combined Alternative
Aesthetics	LS	-	=	+	+
Agriculture and Forestry Resources	SU	-	=	+	+
Air Quality	SU	+	+	+	+
Biological Resources	SU	-	=	+	+
Cultural Resources and Tribal Cultural Resources	SU	-	=	+	+
Energy	LS	-	+	+	+
Geology and Soils	LSM	=	=	+	+
Greenhouse Gas Emissions	LS	-	+	+	+
Hazards and Hazardous Materials	SU	-	=	+	+
Hydrology and Water Quality	LS	-	=	+	+
Land Use and Planning	LS	-	+	=	-
Mineral Resources	LSM	=	=	+	+
Noise	SU	=	+	+	+
Population and Housing	LS	=	-	+	+
Public Services and Recreation	LS	+	-	+	+
Transportation	SU	-	+	+	+
Utilities and Service Systems	LS	=	-	+	+
Wildfire	SU	-	=	+	+

Note: The symbols in the table indicate the following: No Impact (NI), Less Than Significant (LS), Less Than Significant with Mitigation (LSM), Significant and Unavoidable (SU); Similar Impacts (=), Less Severe Impacts (+), More Severe Impacts (-)

In addition to lessening significant impacts, an alternative must also attempt to meet most of the project objectives. Table 7-9, *Comparison of Alternatives to Project Objectives,* compares each of the alternatives to the project objectives.

Table 7-9 Comparison of Alternatives to Project Objectives

Objective	No Project/ Existing Plans Alternative	Increased Density Near TPAs Alternative	No Urban Development within High or Very High FHSZ Alternative	Increased TPA Density and No Urban FHSZ Development Combined Alternative
Extend the General Plan planning horizon to year 2045 and establish a legally adequate General Plan and Climate Action Plan (CAP) that meet State requirements through a community-based planning process.	Does Not Meet Objective	Meets Objective	Meets Objective	Meets Objective
Through the updates to the land use map, align the map with existing uses that already exist on the ground today, while also focusing more mixed-use development and higher density housing within community cores, where infrastructure and services are available.	Does Not Meet Objective	Meets Objective to Greater Extent	Meets Objective to Lesser Extent	Meets Objective
Provide planning guidance at a community scale, rather than relying on a one-size-fits-all policy approach throughout the county.	Does Not Meet Objective	Meets Objective	Meets Objective	Meets Objective
Create a modern and visionary policy document intended to address the opportunities and challenges of the 21st century including: • **Environmental Justice.** Reduce the unique or compounded health risks in communities that experience the highest levels of pollution and negative health outcomes, such as asthma and low birth weight babies, and the greatest social and economic disadvantages, such as poverty and housing instability. • **Community Health.** Provide opportunities for community members to live healthy lifestyles, including by improving peoples' ability to walk or bike between destinations, providing multi-modal transportation connections, creating opportunities for social interaction, and promoting access to outdoor recreation, healthy food, and medical facilities. Reduce exposure of all community members to pollutants that can adversely affect their health. • **Economic Development.** Develop the county's workforce and attract and support sustainable businesses and industries that provide living-wage jobs, invest in hiring from the local workforce, and engage with communities. Promote innovation, build the tax base, and allow residents to work in the county where they live by improving the existing jobs-housing imbalance. In particular, locate jobs closer to Impacted Communities to support economic empowerment and reduced commute costs for Impacted Community members. • **Sustainability.** Conserve resources, improve resiliency (especially to the impacts of climate change), protect the environment, reduce pollution, and enhance overall quality of life.	Does Not Meet Objective	Meets Objective	Meets Objective to Lesser Extent	Meets Objective to Lesser Extent

7. Alternatives to the Proposed Project

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8. Organizations Consulted and Qualifications of Preparers

ORGANIZATIONS

Contra Costa County

Department of Conservation and Development

Native American Tribes

Confederated Villages of Lisjan

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APPENDICES

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Appendix 5.3-1	**Air Quality and Greenhouse Gas Emissions Data**
Appendix 5.4-1	**Contra Costa County General Plan Update: Biological Resources Existing Conditions Report**
Appendix 5.4-2	**California Department of Fish and Wildlife: RareFind Report, Contra Costa County**
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Appendix 2-1 NOP/NOP Comments

Appendices

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NATIVE AMERICAN HERITAGE COMMISSION

September 25, 2023

Will Nelson
Contra Costa County
30 Muir Road
Martinez, CA 945533

Re: 2023090467, Contra Costa County 2045 General Plan and Climate Action Plan Updates Project, Contra Costa County

Dear Mr. Nelzon:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, § 15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

cc: State Clearinghouse

State of California
Native American Heritage Commission
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From: Zachariasen, Judith@DOC
To: Advance Planning
Cc: OLRA@DOC; OPR State Clearinghouse
Subject: Contra Costa County 2045 General Plan and Climate Action Plan Updates NOP - SCH #2023090467
Date: Thursday, September 28, 2023 3:58:25 PM
Attachments: image001.png

Dear Will Nelson,

The California Geological Survey (CGS) has received the Notice of Preparation of a Draft Environmental Impact Report (DEIR) for the Contra Costa County 2045 General Plan Update. This email conveys the following recommendations from CGS concerning geologic issues related to the project area:

1. Liquefaction and Landslide Hazards

Contra Costa County contains earthquake zones of required investigation (ZORI) for liquefaction and landslides mapped by CGS. CGS has published Earthquake Zones of Required Investigation Maps (EZRIM) for liquefaction and landsliding covering the Clayton, Honker Bay, Antioch North, Antioch South, Jersey Island, Brentwood, Bouldin Island, Woodward Island, and Clifton Court Forebay quadrangles within Contra Costa County. In addition, CGS has recently released preliminary EZRIM for the Mare Island, San Quentin, Vine Hill, Walnut Creek, Richmond, and Diablo quadrangles. These are currently available for public review, and official EZRIM for these quadrangles are expected to be released in February 2024. EZRIM for the Benicia, Briones, Valley, Las Trampas Ridge quadrangles are in development and planned for preliminary release in spring 2024. The DEIR and supporting documents should address liquefaction and landslide hazards as they relate to planned development.
The combined extent of the published EZRIM can be viewed here:
https://maps.conservation.ca.gov/cgs/EQZApp/app/
Individual Seismic Hazard Zone Reports, EZRIM, and associated GIS data are available for download here:
https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps
The County should already have been provided access to the preliminary EZRIM currently under review.

CGS suggests the zones of required investigation for liquefaction and landsliding be shown and discussed in the DEIR.

2. Surface Fault Rupture Hazard

Contra Costa County contains earthquake zones of required investigation (ZORI) for surface fault rupture (Earthquake Fault Zones [EFZ]) associated with the Hayward, Calaveras, Concord, and Greenville faults. The DEIR and supporting documents should address this hazard as it relates to planned development. Additional information is available at the links below:
https://maps.conservation.ca.gov/cgs/EQZApp/app/
https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps

CGS suggests the zones of required investigation for surface fault rupture be shown and discussed in the DEIR.

3. Ground Shaking Hazards

As noted above, the planning area contains EFZs mapped by CGS. In addition, numerous

other active faults are located nearby. The county, therefore, could be subject to significant ground shaking. The DEIR and supporting documents should address this hazard as it relates to planned development. Additional information about ground shaking hazard can be obtained at the following sites:
https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=14d2f75c7c4f4619936dac0d14e1e468
https://earthquake.usgs.gov/scenarios/catalog/bssc2014/

4. Tsunami Hazards

The CGS has mapped a Tsunami Hazard Area (THA) within the planning area. The purpose of a THA is to assist cities and counties in identifying their exposure to tsunami hazards. It is intended for local jurisdictional, coastal evacuation planning uses only. Additional information can be found at the links below:
https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps
https://www.conservation.ca.gov/cgs/tsunami/maps/contra-costa
https://www.conservation.ca.gov/cgs/Documents/Publications/Tsunami-Maps/Tsunami_Hazard_Area_Map_Contra_Costa_County_a11y.pdf

The County should also discuss that some areas may be within a Tsunami Design Zone determined by the California Building Code (CBC). The CBC requires certain design standards for essential/critical or larger structures. The following website provides additional information regarding Tsunami Design Zones: https://asce7tsunami.online/.

If you have any additional comments or questions, please feel free to call or email.

Thank you,
Judy Zachariasen

Judith Zachariasen, PhD, PG, CEG
Senior Engineering Geologist
Fault Zoning Unit Supervisor
Seismic Hazards Program
California Geological Survey

California Department of Conservation
715 P Street, MS 1900, Sacramento, CA 95814
T: (916) 879-2844
E: judith.zachariasen@conservation.ca.gov

From:	Tim Chan
To:	Advance Planning
Cc:	Val Menotti; Kamala Parks; Rachel Factor
Subject:	NOP for the Contra Costa County 2045 General Plan & Climate Action Plan Environmental Impact Report
Date:	Monday, October 16, 2023 10:17:32 AM
Attachments:	20231016 CCC EIR NOP_BART Letter.pdf

Hi Will, attached, please find our comments on the NOP for the Contra Costa County 2045 General Plan & Climate Action Plan Environmental Impact Report. Thank you.

Office: M-W
Remote: Th-F

Tim Chan
Group Manager - Station Area Planning
2150 Webster St., 8th Floor
Oakland, CA 94612
(C) 510.406.8985

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT
2150 Webster Street, P.O. Box 12688
Oakland, CA 94604-2688
(510) 464-6000

2023

Janice Li
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7TH DISTRICT

Janice Li
8TH DISTRICT

Bevan Dufty
9TH DISTRICT

October 16, 2023

Will Nelson, Principal Planner
Contra Costa County
Department of Conservation and Development
30 Muir Road
Martinez, CA 94553
Sent by email to AdvancePlanning@dcd.cccounty.us

RE: Notice of Preparation for the Contra Costa County 2045 General Plan and Climate Action Plan Environmental Impact Report

Greetings, Will

Thank you for providing the notice of preparation to BART of the County's upcoming EIR effort. We always appreciate the opportunity to collaborate with our local partners and to provide input on each other's efforts.

We would like to remind County staff that BART published its Transit-Oriented Development (TOD) Guidelines in May 2017. It provides valuable input as you consider land under your jurisdiction within the half-mile radius of BART stations. In particular, Table 1 and Figure 1 in the TOD Guidelines indicate zoning and parking that is most appropriate for land closest to regionally significant transit stations. Enabling developments that provide high concentrations of residential, commercial, and/or social activities in this half-mile radius will not only help improve ridership for BART but will aid the County's efforts to reduce vehicle miles traveled and greenhouse gas emissions.

Additionally, we encourage staff to ensure that these updates align with the Metropolitan Transportation Commission's Transit-Oriented Communities Policy. Doing so will better position the County for discretionary funding opportunities as they become available.

If you have any questions, you may contact BART's station planners for Contra Costa County: Kamala Parks at kparks2@bart.gov or Rachel Factor at rfactor@bart.gov.

Sincerely,

Tim Chan
Station Area Planning Group Manager

Cc: Val Menotti, Chief Planning and Development Officer
Rachel Factor, BART, Principal Planner
Kamala Parks, BART, Principal Planner

From:	McGowan, Timothy
To:	Advance Planning
Subject:	Notice of Preparation (NOP) for the Contra Costa County 2045 General Plan and Climate Action Plan
Date:	Monday, October 16, 2023 3:30:57 PM
Attachments:	wdpd23_227 Contra Costa County 2045 General Plan and Climate Action Plan.pdf

Please find EBMUD comment letter the Notice of Preparation (NOP) for the Contra Costa County 2045 General Plan and Climate Action Plan attached to this email.

EAST BAY
MUNICIPAL UTILITY DISTRICT

October 16, 2023

Will Nelson, Principal Planner
Contra Costa County
Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

Re: Notice of Preparation for the Contra Costa County 2045 General Plan and Climate Action Plan Environment Impact Report and Notice of Public Scoping Meeting

Dear Mr. Nelson:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Contra Costa County 2045 General Plan and Climate Action Plan located in the Contra Costa County (County). EBMUD has the following comments.

WATER SERVICE

Effective January 1, 2018, water service for new multiunit structures shall be individually metered or sub-metered in compliance with Section 537 of California's Water Code & Section 1954.201-219 of California's Civil Code, which encourages conservation of water in multifamily residential and mixed-use multi-family and commercial buildings by requiring metering infrastructure for each dwelling unit, including appropriate water billing safeguards for both tenants and landlords. EBMUD water services shall be conditioned for all development projects within the General Plan area that are subject to these metering requirements and will be released only after the project sponsor has satisfied all requirements and provided evidence of conformance with Section 537 of California's Water Code & Section 1954.201-2019 of California's Civil Code.

Main extensions that may be required to serve any specific developments within the General Plan area to provide adequate domestic water supply, fire flows, and system redundancy will be at the project sponsor's expense. Please see the attached EBMUD documents for California (Waterworks Standards) Code of Regulations, Title 22, Section 64572 (Water Main Separation) and EBMUD requirements for placement of water mains (Attachment 1). Pipeline and fire hydrant relocations and replacements due to modifications of existing streets, and off-site pipeline improvements, also at the project sponsor's expense, may be required depending on EBMUD metering requirements and fire flow requirements set by the local fire department. When the development plans are finalized for individual projects within the General Plan, project sponsors for individual projects should contact EBMUD's New Business Office and request a water service

estimate to determine costs and conditions of providing water service to the development. Engineering and installation of new and relocated pipelines and services require substantial lead time, which should be provided for in the project sponsor's development schedule.

EBMUD's Standard Site Assessment Report indicate the potential for contaminated soils or groundwater to be present within development projects within the General Plan area. The project sponsor should be aware that EBMUD will not install piping or services in contaminated soil or groundwater (if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste or that may be hazardous to the health and safety of construction and maintenance personnel wearing Level D personal protective equipment. Nor will EBMUD install piping or services in areas where groundwater contaminant concentrations exceed specified limits for discharge to the sanitary sewer system and sewage treatment plants. The project sponsor must submit copies to EBMUD of all known information regarding soil and groundwater quality within or adjacent to the project boundary and a legally sufficient, complete and specific written remediation plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of contaminated soil and groundwater.

EBMUD will not design piping or services until soil and groundwater quality data and remediation plans have been received and reviewed and will not start underground work until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists, or the information supplied by the project sponsor is insufficient, EBMUD may require the project sponsor to perform sampling and analysis to characterize the soil and groundwater that may be encountered during excavation, or EBMUD may perform such sampling and analysis at the project sponsor's expense. If evidence of contamination is discovered during EBMUD work on the project site, work may be suspended until such contamination is adequately characterized and remediated to EBMUD standards.

MOKELUMNE AQUEDUCTS

EBMUD's Mokelumne Aqueducts (Aqueduct) right-of-way (owned in fee) is located within portions of the County (see Attachment 2 - Map of EBMUD Aqueducts within Contra Costa County). Any projects being planned within or immediately adjacent to EBMUD property will need to follow EBMUD's Procedure 718 – Raw Water Aqueduct Right-of-Way Non-Aqueduct Uses. A copy of the procedure is attached for your reference (see Attachment 3).

Design drawings for any project encroachment (roadway, utility, facility, etc.) or restoration projects crossing or within the Aqueduct right-of-way will need to be submitted to EBMUD for review of possible drainage, site grading, fencing, construction access, and other conditions that may impact EBMUD property. EBMUD requires a full set of drawings (full size or 11" x 17") as well as an electronic copy in PDF format. All submittals shall be sent to the attention of Vincent H. Pon, P.E., Superintendent of

Aqueduct Section, 1804 West Main Street, Stockton, CA 95203. Additional information and an encroachment package are included in EBMUD's Procedure 718. Applications for non-EBMUD uses will not be processed unless accompanied by the appropriate application fees outlined in the current applicable Water and Wastewater System Schedule of Rates and Charges and Fees. Contractors must secure an encroachment permit from EBMUD Aqueduct Section prior to mobilizing and starting construction work. A pre-construction meeting with EBMUD is mandatory.

When a project involves the construction of a retaining wall and fence along EBMUD property line; these must be constructed completely outside of EBMUD property, including all footings. The project sponsor shall contact EBMUD's Survey Section to coordinate identifying, locating and marking correct property lines.

WATER RECYCLING

EBMUD's Policy 9.05 requires that customers use non-potable water, including recycled water, for non-domestic purposes when it is of adequate quality and quantity, available at reasonable cost, not detrimental to public health and not injurious to plant, fish and wildlife to offset demand on EBMUD's limited potable water supply.

The County's boundaries include the City of San Ramon and Town of Danville that fall within and around the service area of the Dublin San Ramon Services District - EBMUD Recycled Water Authority (DERWA) and EBMUD's San Ramon Valley's Recycled Water Project transmission and distribution pipeline infrastructure. New projects and developments present several opportunities for recycled water uses ranging from landscape irrigation, toilet flushing, cooling, and other non-potable commercial and industrial applications that can be served by existing or expanded recycled water pipelines in the future. In 2019, DERWA and the participating agencies implemented a moratorium on new recycled water connections in San Ramon and Danville pending securing additional wastewater sources that can be utilized to expand the treatment and service of recycled water within the San Ramon Valley Region. Therefore, as EBMUD advances plans and implements its recycled water supply expansion in that region, EBMUD requests the County and their developers coordinate closely with EBMUD and consider potential recycled water uses during the planning of the various General Plan components to further explore the options and requirements relating to recycled water use. Accordingly, EBMUD will assess and consider the feasibility of providing recycled water to specific project areas for appropriate uses.

WATER CONSERVATION

Individual projects within the General Plan area presents an opportunity to incorporate water conservation measures. EBMUD requests that the County include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance," (Division 2, Title 23, California Code of

Regulations, Chapter 2.7, Sections 490 through 495). The project sponsor should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.
If you have any questions concerning this response, please contact Timothy R. McGowan, Senior Civil Engineer, Major Facilities Planning Section at (510) 287-1981.

Sincerely,

David J. Rehnstrom
Manager of Water Distribution Planning

DJR:EZ:djr
wdpd23_227 Contra Costa County 2045 General Plan and Climate Action Plan.doc

Attachments:
1. Applicant Pipeline Design Criteria
2. Map of Mokelumne Aqueducts
3. EBMUD Procedure 718 – Authorized Uses of Pipeline Rights-of-Way

EAST BAY MUNICIPAL UTILITY DISTRICT

Applicant Pipeline Design Criteria

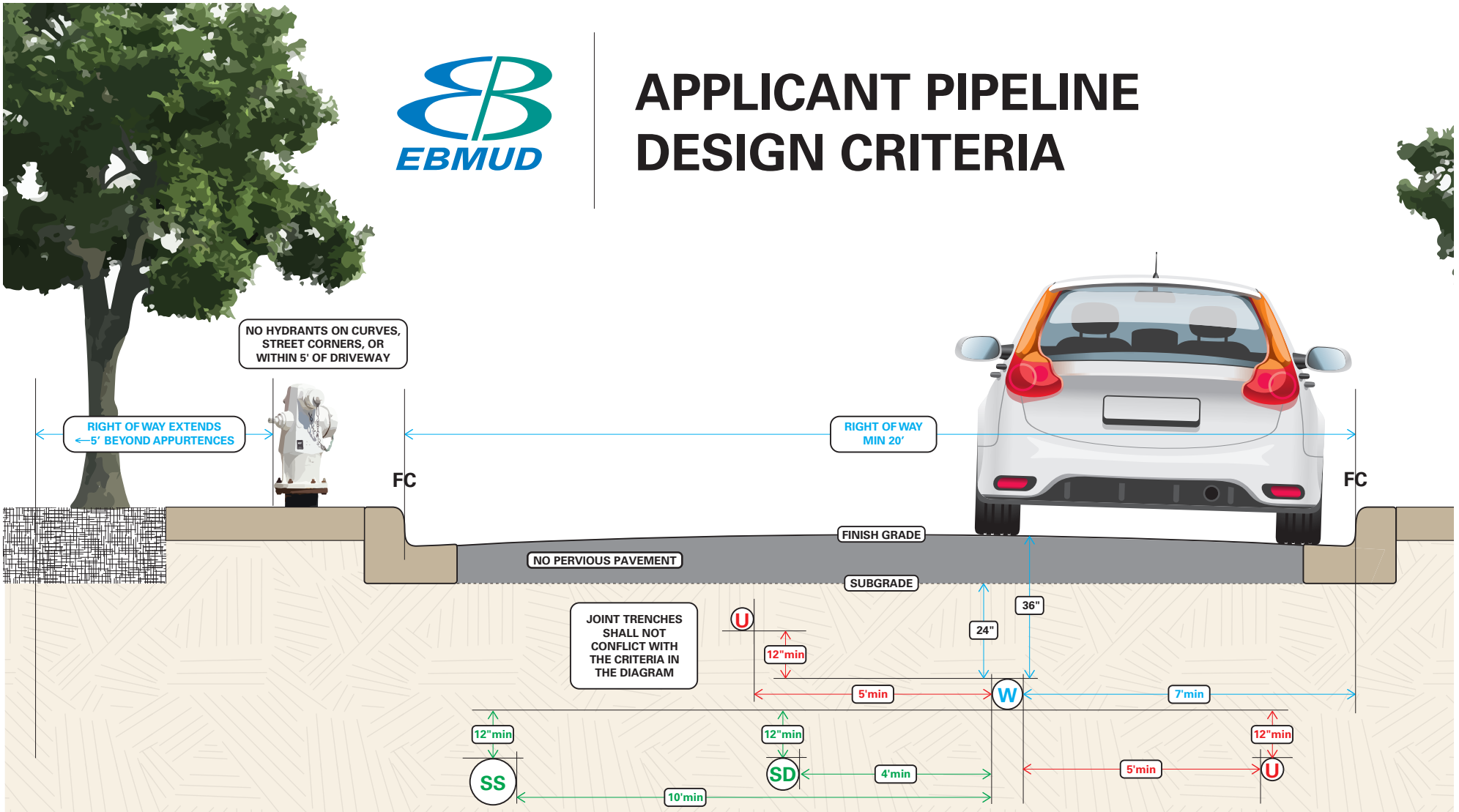
EBMUD values applicant pipeline projects and is committed to providing a thorough and efficient design. To ensure an efficient design process and to avoid significant delays the design criteria below should be adhered to when submitting improvement plans.

Design Criteria

- Water mains shall be seven (7) feet from face of curb.
- Water mains shall maintain a minimum one (1) foot vertical and five (5) foot horizontal clearance from other utilities.
- Gas mains shall meet the one (1) foot vertical separation requirement by installing the gas main below the water main only.
- Water mains shall maintain a minimum ten (10) foot horizontal clearance (O.D. to O.D.) and be located a minimum one (1) foot above any sewer main. Title 22 CCR
- Water mains shall maintain a minimum four (4) feet horizontal clearance (O.D. to O.D.) and be located a minimum one (1) foot above any storm drain. Title 22 CCR
- Water mains shall have a 36-inch cover to final grade and 24-inch cover to pavement subgrade.
- Joint trenches that are in conflict with the criteria above may delay the project. Submit to EBMUD final joint trench plans (no intent plans) which include the size of the joint trench and the utilities located inside.
- Water mains shall not be installed under pervious pavement.
- Water mains installed under decorative pavement, pavers, or stamped concrete will require an additional paving agreement.
- Hydrants shall not be located on curved sections of street, street corners, or within five feet of a driveway.
- Right of ways for 6-inch and 8-inch water mains shall be a minimum of 20 feet wide and extend five (5) feet past the water main centerline.
- Right of ways for 12-inch to 24-inch water mains shall be a minimum of 20 feet wide and extend eight (8) feet past the water main centerline.

Please contact the New Business Office representative assigned to your project if there are any questions regarding the requirements listed above. Meeting this criteria will enable the most efficient design possible.

APPLICANT PIPELINE DESIGN CRITERIA



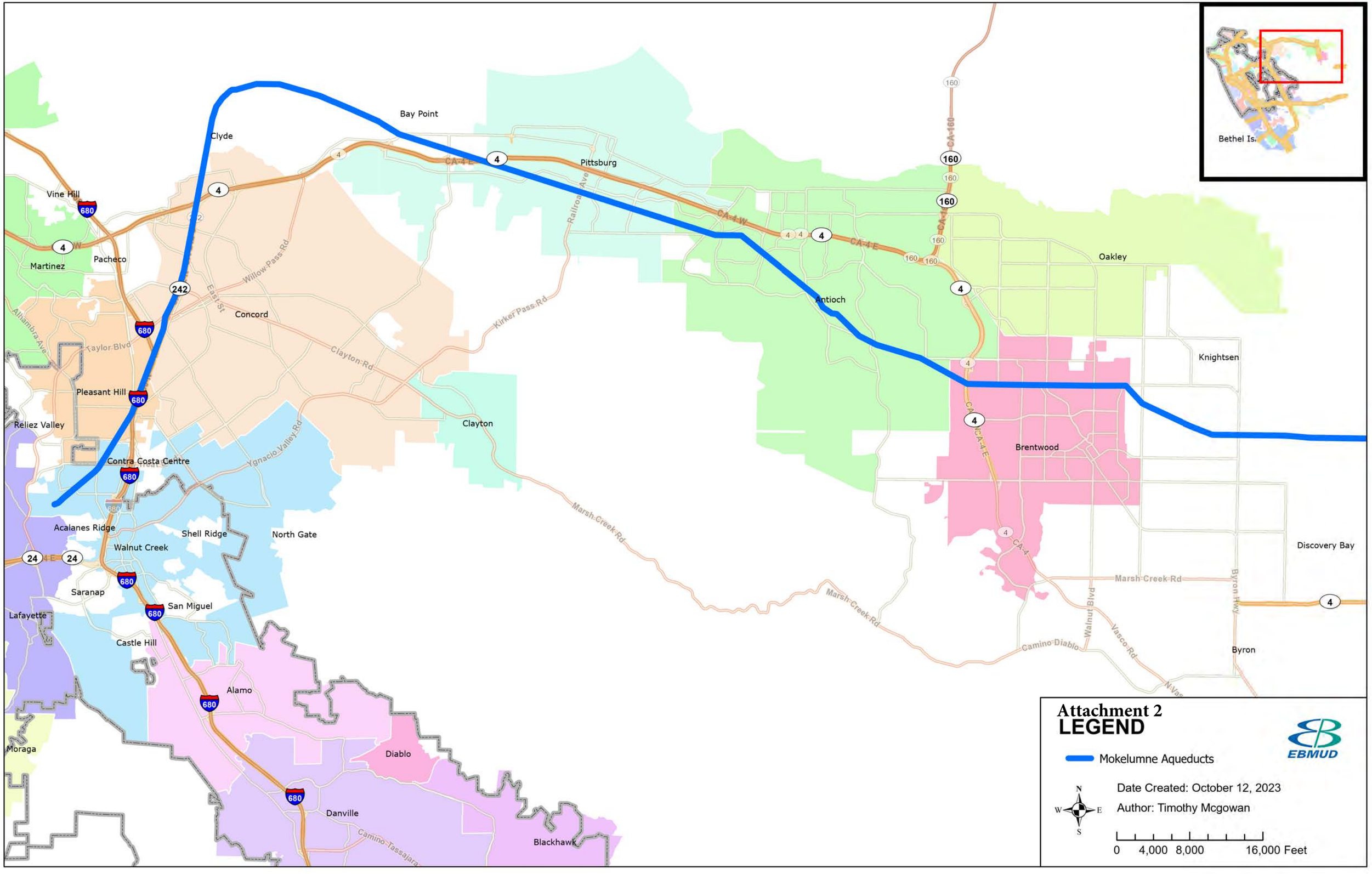
W = WATER
24" cover to subgrade
36" cover to final grade
7' inset from face of curb

U = UTILITY
min 12" vertical clearance
min 5' horizontal clearance

SS = SANITARY SEWER
min 12" below water
min 10' horizontal clearance

SD = STORM DRAIN
min 12" below water
min 4' horizontal clearance

FC= FACE OF CURB


Bethel Is.
Bay Point
Clyde
Pittsburg
Vine Hill
Martinez
Pacheco
Concord
Willow Pass Rd
East St
Kirker Pass Rd
Railroad Ave
Alhambra Ave
Taylor Blvd
Pleasant Hill
Clayton
Clayton Rd
Reliez Valley
Ygnacio Valley Rd
Contra Costa Centre
Acalanes Ridge
Shell Ridge
North Gate
Walnut Creek
Saranap
San Miguel
Lafayette
Castle Hill
Alamo
Moraga
Diablo
Danville
Blackhawk
Camino Tassajara
Antioch
Oakley
Knightsen
Brentwood
Marsh Creek Rd
Discovery Bay
Byron
Byron Hwy
Walnut Blvd
Vasco Rd
Camino Diablo
CA-4 W
CA-4 E
CA-160
Attachment 2
LEGEND
Mokelumne Aqueducts
EBMUD
Date Created: October 12, 2023
Author: Timothy Mcgowan
N
W
E
S
0 4,000 8,000 16,000 Feet

EBMUD

AUTHORIZED USES OF PIPELINE RIGHTS-OF-WAY

EFFECTIVE	08 JUL 20
SUPERSEDES	25 MAY 17
LEAD DEPARTMENT	O&M

PURPOSE – To establish procedures and criteria for review and authorization of overhead, surface, and sub-surface use of District-owned and easement established property containing raw and distribution water aqueducts and pipelines ("pipelines") for purposes other than installation, maintenance, and operation of District pipelines.

Forms Used

L-14	Limited Land Use Permit
K-47	Work Request Agreement
N-15	Certificate of Public Liability Insurance
N-17	Certificate of Workers' Compensation Insurance
	Application for Use of EBMUD Property or Request for Information
	General Fund Receipts for Miscellaneous Payments

Authority and Responsibility

Use, development, and control of fee-owned and easement established rights-of-way for District and non-District uses must be consistent with the District's operations, maintenance, security, and the rights and obligations of the District. District and non-District uses of District-owned pipeline rights-of-way may be permitted, at the District's sole discretion, only if the uses conform to Policy 7.01, Aqueduct and Distribution Pipeline Rights-of-Way Maintenance and the requirements of this Procedure.

- No use of District pipeline rights of way or property by others will be permitted as a condition to meet city/county zoning requirements or to obtain any land use permit, approval, or entitlement affecting properties not owned by the District.
- No use of District properties by others will be permitted except under terms of a written agreement.
- Use of pipeline rights-of-way for District purposes shall have the concurrence of the Director of Operations and Maintenance and shall include all applicable protections required for similar third-party use.
- The Board of Directors has exclusive authority to approve any proposed right-of-way use requiring the adoption and implementation of one or more mitigation measures to minimize potentially significant environmental impacts.
- The decision whether to authorize any party other than the District to use District-owned property containing pipelines for any non-District purpose is a legislative act undertaken at the sole discretion of District staff. No notice or hearing is required to consider an application for use of such property, and staff's decision is not subject to appeal.

Acceptable long-term uses of the pipeline rights-of-way include but are not necessarily limited to: utility crossings, road crossings, limited agriculture, equestrian and pedestrian trails, parks, oil and gas leases, and District-owned ground water wells. Acceptable long-term uses of rights-of-way and easements for future pipelines will be evaluated upon facility completion. Such uses will be authorized in writing. All approved uses will conform to the requirements and limitations described in the attached EBMUD Requirements for Entry or Use of Pipeline Rights-of-Way (Requirements for Entry or Use) and all other conditions as specified in the written approval.

The Water Supply Division and the Water Treatment and Distribution Division are each primarily responsible to implement this Procedure with respect to proposed uses of rights-of-way containing a facility "owned" by that Division. Facility "ownership" for this purpose is determined based on which Division has "Overall Responsibility" for the facility according to Table 1 of Procedure 706 – Facilities: Inspection, Maintenance and Repair. Wherever this Procedure allocates responsibility to both Divisions in the

alternative, the responsibility shall rest with the Division which owns the facility within the right-of-way which is proposed to be used.

The Water Supply or the Water Treatment and Distribution Divisions are responsible for monitoring permitted uses and detecting and preventing unauthorized uses of pipeline rights-of-way, respectively.

The Office of General Counsel and the Manager of Real Estate Services will be consulted when an unauthorized user will not voluntarily desist.

The Water Supply or the Water Treatment and Distribution Divisions are responsible for coordinating the development of recommendations with respect to the terms and conditions to be stipulated when a District or non-District use of a pipeline right-of-way is to be permitted.

The Director of Engineering and Construction shall be consulted as necessary to provide location analysis or to determine what structural, grading, drainage, corrosion protection or other engineering measures are required and to obtain estimates of engineering, design and inspection costs.

Inquiries and Applications for Use

Applications and inquiries for use of pipeline rights-of-way shall be processed by the Water Operations Department. Applications for non-District uses will not be processed unless accompanied by the appropriate application fees specified in the District's "Water and Wastewater System Schedules of Rates and Charges, Capacity Charges, and Other Fees".

The **Water Operations Department** is responsible for:

- Providing requirements for use of the District's pipeline rights-of-way to applicants requesting use of the right-of-way. See the attached Requirements for Entry or Use.
- Providing requirements to applicants for proposed work located adjacent to the District's pipeline rights-of-way which has the potential to impact the District's pipelines (e.g., proposed excavations that may include use of tiebacks that could result in a vertical encroachment and/or excavations that have the potential for ground movements that could damage District pipelines).
- Checking for completeness of any permit (e.g., Encroachment Permit Application) to ensure compliance with the requirements for entry or use of pipeline rights-of-way contained in Requirements for Entry or Use plus any other conditions applicable to the proposed use.
- Collecting engineering, plan review and construction inspection costs and documentation of insurance coverage, if necessary.
- Monitoring existing encroachments and inspection of the construction of new approved encroachments.
- Providing information to the Engineering and Construction Department for technical input regarding additional permit requirements or special restrictions that may be applicable (in addition to those outlined in the Requirements for Entry or Use).
- Assuring proper environmental documentation for proposed uses through consultation with the Water Distribution Planning Division, when appropriate. Policy 7.01, Aqueduct and Distribution Pipeline Rights-of-Way Maintenance, requires the District to ensure that any construction impacts from third-party use of District rights of way are mitigated to the level of "no significant impact."

Real Estate Services is responsible for:

- Advising the Manager of Water Supply or the Manager of Water Treatment and Distribution of any real estate matters which relate to a specific proposed use.
- Collecting application fees and charges, preparing and executing limited land use permits, leases, easements, and all other property-related agreements (except for revocable licenses and temporary entry permits) and recommending fees and charges appropriate to the property use allowed, and for securing payment. See the current applicable Water and Wastewater System Schedule of Rates and Charges and Fees.
- Maintaining records relating to rights-of-way crossings and use, and providing information to the Engineering and Construction Department for the update of District pipeline drawings.

Types of Permit License or Easement

The Manager of Water Supply or Manager or Water Treatment and Distribution shall keep available the forms listing the general requirements set forth in Requirements for Entry or Use for each of the following:

Temporary Entry/Temporary Construction Permit

For temporary access to pipeline rights-of-way such as for surveying, potholing, construction, for temporary access via the District's right-of-way to property adjacent to the right-of-way, and other similar short-term situations.

Revocable License and Revocable Landscape License

For pipelines, sewers, storm drains, overhead and underground cables, public trails, landscaping and other crossings or lateral encroachments.

Limited Land Use Permit

Provides for agricultural or other surface use of the right-of-way for a period not to exceed one year (vehicular parking is prohibited). These permits are renewable annually if inspection reveals satisfactory conformance to conditions of permit.

Easement

For streets, highways, large pipelines, canals and railroads, and other permanent publicly-owned encroachments. Easements are officially recorded with the county having jurisdiction. The consideration for the easement (e.g., fee) will be based on the value of the property being encumbered.

The Manager of Water Supply or Manager of Water Treatment and Distribution shall request review of any proposed revisions to application forms and lists of requirements from the Engineering and Construction Department, Real Estate Services Division, Office of General Counsel, and the District's Pipe Committee.

Processing Applications

Temporary Entry Permits

The Manager of Water Supply or Manager or Water Treatment and Distribution may issue temporary entry and construction permits including imposing standard and temporary conditions relating to the use. The Manager of Real Estate Services and the Office of General Counsel will be consulted regarding unusual circumstances.

Revocable Licenses

The Manager of Water Supply or Manager of Water Treatment and Distribution, if warranted, shall conduct a field investigation to determine pipeline protection requirements and in consultation with the Design Division or the Pipeline Infrastructure Division, will set forth the engineering and operating requirements.

The Manager of Water Supply or Manager of Water Treatment and Distribution, shall then specify any and all requirements, including special conditions to the applicant, and discuss the terms and conditions of the license agreement as well as any processing, design and inspection costs and license fee. The Manager of Water Supply or Manager of Water Treatment and Distribution may then enter into a standard license agreement with relevant special conditions on behalf of the District. The Manager of Real Estate Services and the Office of General Counsel shall be consulted regarding any unusual circumstances.

Copies of all revocable licenses issued by the Water Supply Division or the Water Treatment and Distribution Division shall be provided to the Manager of Real Estate Services.

Limited Land Use Permits

The Manager of Water Supply or Manager of Water Treatment and Distribution, shall convey the District's requirements to the applicant and investigate to determine any special conditions.

Real Estate Services shall prepare the Limited Land Use Permit (Form L-14) in duplicate, including special conditions or stipulations, accompanied by a District-prepared location sketch that will refer to pipeline stationing and other appropriate location identifiers, including adjacent pipeline structures.

Engineering and Construction Department shall prepare the location sketch.

After payment of the stipulated consideration determined by Real Estate Services, the Manager of Water Supply or Manager of Water Treatment and Distribution shall review and execute the permit. These copies are then returned to the Manager of Real Estate Services, together with any stipulated consideration.

Forty-five days before expiration of a Limited Land Use Permit, the Manager of Real Estate Services shall notify the Manager of Water Supply or Manager of Water Treatment and Distribution, who shall investigate the permittee's operations. If renewal of the permit is recommended, the permit will be renewed by letter from the Manager of Real Estate Services.

Leases and Easements

The Water Supply or Water Treatment and Distribution Divisions shall conduct a field investigation to determine requirements for pipeline protection and, in consultation with the Design Division or Pipeline Infrastructure Division, if necessary, will set forth the engineering and operating requirements.

If structural or corrosion protective facilities are required, the Manager of Water Supply or Manager of Water Treatment and Distribution shall request the Manager of Design Division or Pipeline Infrastructure Division to proceed with the required design or plan reviews. (During design, the designer will communicate with the applicant's engineer.) Upon completion of design, the plans will be delivered to the applicant via the Manager of Water Supply or Manager of Water Treatment and Distribution, who will arrange for inspection as required.

The Manager of Real Estate Services shall discuss with the applicant the terms of the agreement and the amount of the consideration, including any processing, design, and inspection costs. Real Estate Services shall obtain an appraisal and engineering estimates, if necessary.

Upon agreement with the applicant, the Manager of Real Estate Services, shall draft, for review and approval by the Manager of Water Supply Division or the Manager of Water Treatment and Distribution Division and Office of General Counsel, an agreement granting the applicant the property interest under the terms and for the consideration as approved. Real Estate Services shall assure that evidence of insurance is provided, if required. The lease or easement shall be submitted to the District's Board of Directors for approval, if required by Procedure 108, Real Estate Transactions. Two copies of the lease or easement shall be sent to the applicant with instructions to sign and return the copies, together with the consideration, to the Manager of Real Estate Services. Easements shall be recorded and the applicant shall provide the Manager of Real Estate Services with the recording data.

Approvals

District and non-District uses of pipeline right-of-ways shall be confirmed in writing, listing any special conditions which may apply to the proposed use to the requesting District departments or third parties by the Manager of Water Supply or Manager of Water Treatment and Distribution.

Terminations

Any third-party use of the District's pipeline property may be terminated at the District's sole discretion, so long as the termination is authorized by and done in a manner compliant with the terms and conditions of the permit, license, or lease that governs the use. If the Water Supply Division or the Water Treatment and Distribution Division terminates any permit or license, the Manager of Real Estate Services and the Design Division shall be so notified by memo. The Office of General Counsel may be consulted before undertaking a termination which may affect the District's legal interests.

Terms and Conditions

The final determination of generally applicable terms and conditions appropriate for District uses of pipeline properties rests with the Director of Operations and Maintenance.

A specific third party applicant for use of pipeline property may be required, as a condition of approval of the application, to comply with the generally applicable terms and conditions, or with different or additional terms and conditions that are determined to be in the District's best interest. The decision to approve or deny an application, and the selection of terms and conditions of any approval, shall rest with the Director of Operations and Maintenance. There is no right to an administrative appeal or hearing, and the decision of the Director or designee is final.

Records

The Manager of Real Estate Services shall maintain a file containing copies of all documents relating to right-of-way crossings or uses, except for temporary encroachment permits, and is responsible for the assignment of right-of-way crossing numbers to approved documents.

The Engineering and Construction Department shall maintain as-built and right-of-way drawings and other information of pipelines. Updates to these drawings shall be made following:

1. Grant of Revocable License or Easement. Notice to be supplied by the Manager of Real Estate Services.

2. Completion of crossing construction covered by license or easement. Notice, including “as built” location data, to be supplied by the applicant to the Water Supply Division or Water Treatment and Distribution Division for transmittal to the Engineering and Construction Department. This notice will be routed through the Engineering and Construction Department, as necessary, then to the Manager of Real Estate Services.

3. Termination of any pipeline right-of-way use. Notice to be supplied by the Manager of Real Estate Services.

Required Fees

Pipeline right-of-way fees for the processing of applications and documents related to proposed uses are included in the “Water and Wastewater System Schedules of Rates and Charges, Capacity Charges, and Other Fees”. The Manager of Water Supply and Manager of Water Treatment and Distribution are responsible for periodic review and updating of Requirements for Entry or Use. The Manager of Real Estate Services is responsible for review and updating of Fees and Documentation Charges, Use of Aqueduct and Distribution Pipeline Rights-of-Way by Others.

References

Policy 7.01 – Aqueduct and Distribution Pipeline Rights-of-Way Maintenance
Procedure 108 – Real Estate Transactions
Procedure 436 – Miscellaneous Accounts Receivable and Cash Receipts
Procedure 706 – Facilities: Inspection, Maintenance and Repair
Requirements for Entry or Use of Pipeline Rights-of-Way (attached)
Water and Wastewater System Schedules of Rates and Charges, Capacity Charges, and Other Fees (as updated periodically)

EBMUD REQUIREMENTS FOR
ENTRY OR USE OF **PIPELINE RIGHTS-OF-WAY**

East Bay Municipal Utility District

1. Requests for encroachment rights or for other uses of the District's raw and distribution water aqueduct and pipeline ("pipeline") properties shall be directed to the Manager of Water Supply, 1804 West Main Street, Stockton, California 95203. Property uses shall only be permitted subject to appropriate written permit, license, easement, or lease agreement.

2. Requests for property uses shall be in writing and accompanied by a completed application, application fees, plan and profile drawings of the area and work involved. District pipeline stationing and adjacent above-ground structures must be shown. Applicant's horizontal and vertical control must be correlated to the District's. Drawings and maps shall be ANSI D size (22x34 inch) or ANSI B size (11x17 inch) and must also be provided in electronic .pdf format. Application must include complete insurance documentation.

3. The applicant must indemnify, defend, and hold harmless the District and associated personnel from and against any claims, losses, and liability arising by reason of the applicant's use of District's property or the applicant's acts or omissions pursuant to any permit or approval issued by the District, on such terms as the District may require. The applicant may be required to provide evidence of insurance coverage.

4. All requests for uses of District property must be consistent with requirements and limitations set forth by Procedure 718 and will be reviewed and approved on a case-by-case basis.

5. District land and facilities shall be restored to a condition as good as that which existed before applicant's entry on the right-of-way.

6. Applicant's use of property shall not increase District costs or interfere with District access, operations, maintenance, or repair of its facilities.

7. The applicant must pay the District the appraised value of the easement or lease, if appropriate, for the rights granted to the applicant. Appropriate environmental documentation must be completed in accordance with the California Environmental Quality Act before the rights can be granted. The District may require the applicant to prepare the documentation at its expense before the application will be considered for approval. The District will review the environmental documentation to determine whether it (i) adequately describes the applicant's project, (ii) contains a detailed disclosure and analysis of the project's impacts, (iii) describes feasible measures to mitigate any construction impacts to the District's right-of-way to a level of no significant impact, and (iv) is otherwise legally sufficient. The District may rely on any existing environmental documentation for the applicant's project if the District determines that the existing documentation meets the above-described standards.

8. For any District-approved encroachment, the applicant must pay the District for any of the following measures, as determined necessary by the District:

    a. Design of structural protective measures
    b. Design of fences or other structures
    c. Corrosion control protective measures
    d. District engineering, plan review, and inspection of activities
    e. Environmental documentation
    f. Application, permit or license fees.

9. The plan for the execution of the work must be approved by the District.

10. The type and weight of equipment working over the pipelines must be approved by the District.

11. The use of vibratory compaction equipment is prohibited on the pipeline right-of-way unless otherwise approved by EBMUD. Allowable compaction effort, allowable equipment, and maximum depth of each lift of fill shall be subject to District review and approval before start of construction.

12. A minimum of 48 hours notice must be given to the District before work commences on District pipeline right-of-way. Contact information will be provided in permit.

13. A minimum of 48 hours notice must be given to the District before work commences on District pipeline right-of-way. Contact information will be provided in permit.

14. A preconstruction meeting is required prior to start of work.

15. No building or portions of buildings shall be constructed on the property. No other types of structures shall be constructed unless specific approval is given by the District.

16. No longitudinal encroachments such as drainage ditches; gas, phone, or electrical lines; pipelines, or roads will be permitted. All property line fences (including footings) must be located completely outside pipeline property lines.

17. District staff shall monitor pile driving or other work which can result in vibration and occurs within 100 feet of the aqueducts. District staff shall also monitor other work located within 100 feet of the pipeline right-of-way, if such work has the potential to result in ground movements that could damage the District's facilities (i.e., large excavations with potential for horizontal or vertical ground deformations within the District's rights-of-way).

18. Railroad, freeway and highway crossings of the pipeline right-of-way shall be on permanent bridges with a minimum vertical clearance of 14 feet 6 inches between the finished ground surface and the underside of the bridge. Crossings of pipeline rights of way, on grade will be over structurally-encased aqueducts with a sleeve for a fourth aqueduct.

19. Street and road crossings constructed on grade shall incorporate protection of the pipelines. Protective measures will be designed by applicant's licensed engineer to District standards with specific District approval of each design.

20. Existing pipeline protective measures such as concrete slabs shall not be cut, penetrated, or otherwise disturbed. If a protective measure is cut, penetrated, or disturbed, it shall be replaced with a new protective measure, designed by applicant's licensed engineer to District standards with specific District approval of design.

21. Traffic control fences or approved barriers shall be installed along each side of the street, road or trail before opening to the public.

22. Temporary construction fences and barricades shall be installed by contractor as directed by the District.

23. No geotechnical exploration such as drilling or boring shall be allowed on an pipeline right-of-way without prior written approval from the District.

24. Any changes in finished grade in the pipeline right-of-way must be approved by the Aqueduct Section. Earth fills or cuts on adjacent property shall not encroach onto District property except where authorized for vehicular crossings on grade and where the District determines that there will be no detrimental effect on or maintenance of the pipelines.

25. Crossings shall be perpendicular to the pipelines and on a constant grade across District property.

26. Sanitary sewers, water lines, petroleum product lines, or other lines crossing above the pipelines must be encased in a steel, polyvinyl chloride (PVC), or reinforced concrete pipe conduit or be imbedded in reinforced concrete with a minimum vertical clearance of two (2) feet between the casing/embedment and the top of District pipelines. The casing shall extend the entire width of the pipelines right-of-way.

27. All pipelines crossing below the pipelines must be encased in a steel or reinforced concrete conduit and provide a minimum of three (3) feet of clearance between the casing and the bottom of the District pipelines.

28. Trenchless construction methods such as horizontal directional drilling or jack-and-bore between the top of the pipelines and the bottom of the protective structure (slab) are prohibited.

29. On pressurized pipe crossings, shutoff valves shall be provided outside and adjacent to both sides of District property.

30. At the point of crossing, steel pipeline crossings and steel casings shall incorporate electrolysis test leads, bond leads, and leads necessary for interference testing. Corrosion control devices, when required, must be approved by the District.

31. Cathodic protection for steel encasements must be installed as follows:

    - Provide a dielectric coating to the exterior surface of the steel casing within the District's right-of-way, 16 mil epoxy or equivalent.
    - Provide galvanic protection to the portion of the steel casing within the District's right-of-way in accordance with the National Association of Corrosion Engineers RP-01-69.
    - If the carrier pipe is constructed of ductile iron or steel, provide electrical isolation between the carrier and casing using casing insulators; redwood skids are not permitted.
    - Provide test results to the District demonstrating the adequacy of the cathodic protection system, and the adequacy of the electrical isolation of the carrier (if metallic) from the casing. The District reserves the right to witness any such tests.

32. Gravity drainage of District property shall be maintained. Open channels constructed across the right-of-way shall be paved with reinforced concrete. Headwalls, inlets, and other appurtenances shall be located outside District property. Drainage facilities shall be provided outside the District's property at the top and/or toe of fill slopes or cuts constructed adjacent to District property to assure adequate drainage.

33. Overhead electrical power conductors across the property shall be a minimum of 30 feet above ground. Communication and cable TV crossings shall be a minimum of 20 feet above the ground. Supporting poles or towers shall be located outside the pipelines right-of-way.

34. Buried electrical cables passing over the pipelines shall be installed in PVC conduit and encased in red concrete across the entire width of the right-of-way. In some cases, PVC-coated steel conduit with a red concrete cap may be substituted. All other buried cables shall be installed in conduits and marked in the appropriate Underground Service Alert (USA) colored marking materials and with surface signs installed at 4-foot intervals that include the utility name, type, and emergency contact information across the entire width of the right-of-way. The minimum vertical clearance between the conduit and the top of the District's pipelines is two (2) feet.

35. Electrical or telecommunications cables shall not be allowed to pass under the pipelines.

36. Vehicular parking and storage of equipment or material on aqueduct or distribution pipelines property are prohibited.

37. All District survey monuments and markers shall be undisturbed. If any District survey markers or monuments must be disturbed, they will be replaced or relocated by the District at applicant's expense prior to the start of any ground disturbing work.

38. All pipeline crossings involving mechanical excavation on the right-of-way require potholing of all pipelines at the site of the proposed crossing. Visible reference markings showing the pipeline alignments and depths to top of pipe shall be maintained for the duration of any mechanical excavation on District property. Excavations within two (2) feet of pipelines shall be made by hand. Entry permits are required for pothole work.

39. All grading or excavating of the right-of-way requires USA notification and the maintenance of a current inquiry identification number.

40. Certified six-sack mix is the minimum acceptable concrete batch to be used on the pipelines right-of-way. Concrete compression strength shall be 3,000 per square inch (PSI) or better at 28 days. If samples do not reach 3,000 PSI at 28 days, the entire section of slab or encasement related to that sample must be removed and replaced at applicant's expense.

41. Each truckload of concrete to be placed on the right-of-way may be sampled by the District. No water may be added to the mix after sampling.

42. Maximum allowable slump is three inches. All concrete exceeding three inches will be rejected and cannot be used on the right-of-way.

43. No traffic will be allowed over protective slabs until 3,000 PSI is reached.

44. All work areas shall be inspected by the District for final approval. As-built drawing submittals are required for District approval.

45. No work is allowed on weekends or District-recognized holidays unless otherwise authorized in the required permit.

California Department of Transportation

DISTRICT 4
OFFICE OF REGIONAL AND COMMUNITY PLANNING
P.O. BOX 23660, MS–10D | OAKLAND, CA 94623-0660
www.dot.ca.gov

October 20, 2023

SCH #: 2023090467
GTS #: 04-CC-2023-00721
GTS ID: 30908
Co/Rt/Pm: CC/VAR/VAR

Will Nelson. Principal Planner
County of Contra Costa
30 Muir Road
Martinez, CA 94553

Re: Contra Costa County 2045 General Plan and Climate Action Plan Updates – Notice of Preparation (NOP) of a Draft environmental Impact Report (DEIR)

Dear Will Nelson:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Contra Costa County 2045 General Plan (GP) and Climate Action Plan (CAP) Updates. We are committed to ensuring that impacts to the State's multimodal transportation system and to our natural environment are identified and mitigated to support a safe, sustainable, integrated and efficient transportation system.

The Local Development Review (LDR) Program reviews land use projects and plans to ensure consistency with our mission and state planning priorities. The following comments are based on our review of the September 2023 NOP.

Project Understanding

The County of Contra Costa is preparing comprehensive updates to its existing GP and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas emissions and enhance community resiliency. Contra Costa County's existing GP was adopted in 1991, with minor revisions in 2005. The Housing Element is being updated in parallel to the rest of the GP. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

Travel Demand Analysis
With the enactment of Senate Bill (SB) 743, Caltrans is focused on maximizing efficient development patterns, innovative travel demand reduction strategies, and multimodal improvements. For more information on how Caltrans assesses Transportation Impact Studies, please review Caltrans' Transportation Impact Study Guide (*link*).

If the project meets the screening criteria established in the County's adopted Vehicle Miles Traveled (VMT) policy to be presumed to have a less-than-significant VMT impact and exempt from detailed VMT analysis, please provide justification to support the exempt status in alignment with the City's VMT policy. Projects that do not meet the screening criteria should include a detailed VMT analysis in the DEIR, which should include the following:

- VMT analysis pursuant to the City's guidelines. Projects that result in automobile VMT per capita above the threshold of significance for existing (i.e. baseline) city-wide or regional values for similar land use types may indicate a significant impact. If necessary, mitigation for increasing VMT should be identified. Mitigation should support the use of transit and active transportation modes. Potential mitigation measures that include the requirements of other agencies such as Caltrans are fully enforceable through permit conditions, agreements, or other legally-binding instruments under the control of the City.

- A schematic illustration of walking, biking and auto conditions at the project site and study area roadways. Potential traffic safety issues to the State Transportation Network (STN) may be assessed by Caltrans via the Interim Safety Guidance (*link*).

- The project's primary and secondary effects on pedestrians, bicycles, travelers with disabilities and transit performance should be evaluated, including countermeasures and trade-offs resulting from mitigating VMT increases. Access to pedestrians, bicycle, and transit facilities must be maintained.

Multimodal Transportation Planning
Please review and include the reference to the *Caltrans District 4 Pedestrian Plan* (2021) and the *Caltrans District 4 Bike Plan* (2018) in the DEIR. These two plans studied existing conditions for walking and biking along and across the State Transportation Network (STN) in the nine-county Bay Area and developed a list of location-based and prioritized needs.

Please note that any Complete Streets reference should be updated to reflect Caltrans Director's Policy 37 (*link*) that highlights the importance of addressing the needs of non-motorists and prioritizing space-efficient forms of mobility, while also facilitating goods movement in a manner with the least environmental and social

impacts. This supersedes Deputy Directive 64-R1, and further builds upon its goals of focusing on the movement of people and goods.

Lead Agency

As the Lead Agency, the County of Contra Costa is responsible for all project mitigation, including any needed improvements to the State Transportation Network (STN). The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures.

Thank you again for including Caltrans in the environmental review process. Should you have any questions regarding this letter or for future project referrals, please contact LDR-D4@dot.ca.gov.

Sincerely,



YUNSHENG LUO
Branch Chief, Local Development Review
Office of Regional and Community Planning

c: State Clearinghouse

From:	Bush, Eva@DeltaCouncil
To:	Advance Planning
Subject:	Comments on the NOP of EIR for the CCC 2045 General Plan and Climate Action Plan update
Date:	Friday, October 20, 2023 10:31:44 AM
Attachments:	image001.png 2023-10-20 CCC 2045 GP & CAP NOP_commentletter_DSC_ADA.pdf

Good Morning,

Thank you for the opportunity to comment on the Notice of Preparation of the EIR for the Contra Costa County 2045 General Plan and Climate Action Plan update.

Enclosed, please find our comment letter.

Thank you,

Eva E. Bush (She/Her/Hers)
Environmental Program Manager
Delta Stewardship Council
Planning & Performance Division

C: (916) 284-1619

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Julie Lee
Maria Mehranian
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EXECUTIVE OFFICER
Jessica R. Pearson

October 20, 2023

County of Contra Costa
Department of Conservation and Development
30 Muir Street
Martinez, CA 94553

Delivered via email: AdvancePlanning@dcd.cccounty.us

RE: Comments on Notice of Preparation of an Environmental Impact Report for the Contra Costa County 2045 General Plan and Climate Action Plan Update, SCH# 2023090467.

Dear Will Nelson:

Thank you for the opportunity to review and comment on the Contra Costa County (County) 2045 General Plan and Climate Action Plan Update Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR). The Delta Stewardship Council (Council) staff appreciates the level of coordination with County staff to date on this project. The Council recognizes the objective of the project, as described in the NOP, for the County to provide comprehensive updates to its existing General Plan and Climate Action Plan that establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions while enhancing community resiliency. The Council is an independent state agency established by the Sacramento-San Joaquin Delta Reform Act of 2009, codified in Division 35 of the California Water Code, sections 85000-85350 (Delta Reform Act). The Delta Reform Act charges the Council with furthering California's coequal goals of providing a more reliable water supply and protecting, restoring, and enhancing the Sacramento-San Joaquin River Delta (Delta) ecosystem. (Water Code, § 85054.) The

Delta Reform Act further states that the coequal goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The Council is charged with furthering California's coequal goals for the Delta through the adoption and implementation of the Delta Plan. (Wat. Code, § 85300.)

The Delta Plan contains regulatory policies, which are set forth in California Code of Regulations, Title 23, sections 5001-5015. Through the Delta Reform Act, the Council was granted specific regulatory and appellate authority over certain actions of State or local public agencies that take place in whole or in part in the Delta. (Wat. Code, §§ 85210, 85225.30.) A state or local agency that proposes to undertake a covered action is required to prepare a written Certification of Consistency with detailed findings as to whether the covered action is consistent with the Delta Plan and submit that Certification to the Council prior to initiation of the implementation of the project. (Wat. Code, § 85225.) The Delta Reform Act also directs the Council to review and provide timely advice to local and regional planning agencies regarding the consistency of local and regional planning documents with the Delta Plan. (Wat. Code, § 85212.)

COVERED ACTION DETERMINATION AND CERTIFICATION OF CONSISTENCY WITH THE DELTA PLAN

Based on the project location and scope, as provided in the NOP, the project may meet the definition of a covered action. Water Code section 85057.5(a) states that a covered action is a plan, program, or project, as defined pursuant to Section 21065 of the Public Resources Code that meets all of the following conditions:

(1) Will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh. The project would occur in part within the boundaries of the Delta.

(2) Will be carried out, approved, or funded by a State or a local public agency. The County would approve the 2045 General Plan and Climate Action Plan Updates.

(3) Is covered by one of the provisions of the Delta Plan. Although we anticipate that the project would be covered by multiple Delta Plan regulatory policies, additional project details are needed to determine which policies would apply.

(4) Will have a significant impact on achievement of one or both of the coequal goals or the implementation of government-sponsored flood control programs to reduce risks to people, property, and State interests in the Delta. The project may have a significant impact on achievement of the coequal goal to protect, restore,

and enhance the Delta ecosystem, and the implementation of government-sponsored flood control programs in the Delta.

The State or local agency approving, funding, or carrying out the project must determine if that project is a covered action and, if so, file a certification of consistency with the Council prior to initiating project implementation. (Wat. Code, § 85225; Cal. Code Regs., tit. 23, § 5001(j)(3).) Additional project details contained in the forthcoming DEIS will be helpful in determining applicable Delta Plan policies supporting this determination.

As the County proceeds with design, development, and environmental impact analysis of the project, the Council invites the County to continue to engage Council staff in early consultation to discuss project features and mitigation measures that would promote consistency with the Delta Plan.

More information on covered actions, early consultation, and the certification process can be found on the Council website, https://coveredactions.deltacouncil.ca.gov.

Council staff are available to discuss issues outlined in this letter as the County proceeds in the next stages of its project and approval processes. Please contact Pat Kelly at 916-902-6577 or Patricia.Kelly@deltacouncil.ca.gov with any questions.

Sincerely,



Jeff Henderson, AICP

Deputy Executive Officer

Appendix 5.3-1 Air Quality and Greenhouse Gas Emissions Data

Appendices

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Land Use Statistics - Contra Costa County

	Existing Conditions	Buildout Estimates	Projected Growth (Proposed Project)	
	2019	2045	2019-2045	%
Housing Units	60,315	83,504	23,189	38%
Population	174,145	239,718	65,573	38%
Employment	38,757	48,153	9,396	24%
Service Population	**212,902**	**287,871**	**74,969**	35%

AQMP Consistency Analysis

Comparison of the Change in Population and VMT in Contra Costa (O-D Method)

Category	Existing	2045 Proposed	2045 Change from Existing	
			Change	Percent
Population	174,145	239,718	65,573	38%
Employment	38,757	48,153	9,396	24%
SP	212,902	287,871	74,969	35%
VMT per Day	3,530,197	4,272,206	742,009	21%
VMT/person	20.3	17.8	-2.4	-12%
VMT/SP	16.6	14.8	-1.7	-10%

Note Origin-Destination (O-D) Methodology is not the same methodology for SB 743, which considers only commute-trip VMT. VMT

Modeling of vehicle miles traveled (VMT) is provided by Fehr and Peers is based on the Contra Costa County Transportation Authority's Contra Costa Transportation Analysis Guidelines. VMT from passenger vehicles and trucks that have an origin or destination in the County using a transportation origin-destination methodology. Accounting of VMT is based on the recommendations of CARB's Regional Targets Advisory Committee (RTAC) created under Senate Bill 375 (SB 375). For accounting purposes, there are three types of trips:

» Vehicle trips that originated and terminated within the County (Internal-Internal, I-I). Using the accounting rules established by RTAC, 100 percent of the length of these trips, and their emissions, are attributed to the County.

» Vehicle trips that either originated or terminated (but not both) within the County (Internal-External or External-Internal, I-X and X-I). Using the accounting rules established by RTAC, 50 percent of the trip length for these trips is attributed to the County.

» Vehicle trips that neither originated nor terminated within the County. These trips are commonly called pass-through trips (External-External, X-X). Using the accounting rules established by RTAC, these trips are not counted towards the County's VMT or emissions.

Contra Costa Community GHG Emissions Inventory and Forecast

Category					With State and Regional Actions				With State and Regional Actions			
	2005		Existing		2030		Change from Existing (2030)		2045		Change from Existing (2045)	
	TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	
On-Road Transportation	628,200	49%	464,040	44%	542,020	45%	77,980		605,080	44%	141,040	30%
Residential Energy	294,930	23%	191,780	18%	217,710	18%	25,930		259,380	19%	67,600	35%
Nonresidential Energy	118,740	9%	159,520	15%	167,720	14%	8,200		180,200	13%	20,680	13%
Solid Waste	243,940	19%	220,760	21%	229,450	19%	8,690		260,490	19%	39,730	18%
Agriculture	33,350	3%	36,130	3%	34,770	3%	-1,360		33,410	2%	-2,720	-8%
Off-road Equipment	34,160	3%	54,010	5%	69,520	6%	15,510		76,100	6%	22,090	41%
Water and Wastewater	8,080	1%	4,870	0%	5,530	0%	660		6,590	0%	1,720	35%
BART	1,040	0%	190	0%	220	0%	30		260	0%	70	37%
Land Use and Sequestration	-70,860	-5%	-70,860	-7%	-67,580	-6%	3,280		-58,890	-4%	11,970	-17%
Total Community Emissions	**1,291,580**	100%	**1,060,440**	100%	**1,199,360**	100%	**138,920**		**1,362,620**	100%	**302,180**	28%
Total Community Emissions with State Actions	**NA**		**NA**		**1,013,840**		**-46,600**		**879,280**		**-181,160**	
Residents	154,270		174,145		199360				239,718		65,573	38%
$MTCO_2e$/capita	8.4		6.1		6.0				5.7		-0.4	-7%
Trajectory to AB 32, SB 32 and AB 1279					**658,700**	40% below 1990 levels			**164,680**	85% below 1990 levels		
Achieves Target without State Actions?					**No**				**No**			
Reductions from Existing and Planned Actions					185,520				483,340			
Reductions from CAP GHG Reduction Strategies					355,540				721,670			
Total GHG emissions with Existing and Planned Actions & CAP GHG Reduction Strategies					**658,300**				**157,610**			
$MTCO_2e$/capita									**0.66**			
Achieves Target with Existing and Planned Actions?					**Yes**				**Yes**			

Source: Based on the emissions inventory and forecast being conducted for the County's Climate Action Plan Update.

Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC Fifth Assessment Report (AR5).

The emissions inventory and forecast is based on activity data for Contra Costa County. This emissions inventory methodology identifies GHG emissions produced within a jurisdiction and captures direct and indirect emissions generated by land uses in a community. The activity data methodology allows a direct comparison between a community's GHG emissions and that identified by CARB in the SB 32 and AB 1279 inventory and forecast prepared for the scoping plan. Unlike a "consumption-based" GHG emissions inventory, an activity-based emissions inventory does not capture lifecycle emissions associated with consumptions of goods. While a consumption-based emissions inventory approach may document GHG emissions associated with the final demand (regardless of where the were generated), a consumption-based emissions inventory excludes emissions associated with products produced within the jurisdiction but consumed elsewhere. For these reasons, an activity-based emissions inventory was determined to be most applicable for determining significant impacts under CEQA.

Unincorporated Contra Costa County GHG emissions in 2005 were 1,291,580 MTCO2e, translating to a 1990 GHG emissions level of 1,097,840 MTCO2e

Note: Excludes GHG emissions natural gas use from Permitted Sources within the County

County of Contra Costa Community Criteria Air Pollutant Emissions Inventory and Forecast

Sources

[1] Source: Fehr and Peers 2023; EMFAC2021 Version 1.0.2 Emissions Database (County - Contra Costa)

[2] Sources: Natural Gas Use based on the Climate Action Plan Update. CalEEMod User's Guide for natural gas criteria air pollutant emission rates. Excludes criteria air pollutant emissions natural gas use from Permitted Sources within the County.

[3] Source: OFFROAD 2021.

[4] Source: CalEEMod User's Guide

EXISTING (2019)

Phase	Existing Criteria Air Pollutant Emissions (lbs/day)				Existing Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	234	1,193	151	57	41	207	26	10
Energy[2]	60	1,129	84	84	11	206	15	15
Residential Fuels (wood, kerosene, propane)	4,152	84	629	629	758	15	115	115
Offroad Equipment[3]	17	16	1	1	3	3	0	0
Consumer Products[4]	2,432				444			
Total	**6,895**	**2,422**	**865**	**771**	**1,256**	**431**	**156**	**140**

EXISTING LAND USES (2045 Emission Rates)

Phase	Existing (2045) Criteria Air Pollutant Emissions (lbs/day)				Existing (2045) Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	47	201	136	44	8	35	24	8
Energy[2]	60	1,129	84	84	11	206	15	15
Residential Fuels (wood, kerosene, propane)	4,152	84	629	629	758	15	115	115
Offroad Equipment[3]	17	16	1	1	3	3	0	0
Consumer Products[4]	2,432				444			
Total	**6,708**	**1,430**	**850**	**758**	**1,224**	**259**	**154**	**138**

Year 2045

Phase	Project (2045) Criteria Air Pollutant Emissions(lbs/day)				Project (2045) Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	57	247	164	53	10	43	28	9
Energy[2]	70	1,307	98	98	13	239	18	18
Residential Fuels (wood, kerosene, propane)	4,152	84	629	629	758	15	115	115
Offroad Equipment[3]	23	17	1	1	4	3	0	0
Consumer Products[4]	3,730				681			
Total	**8,032**	**1,656**	**891**	**780**	**1,465**	**300**	**161**	**142**

County of Contra Costa Community Criteria Air Pollutant Emissions Inventory and Forecast

Net Change (No Project)

Phase	Net Change (2040-2040 No Project) Criteria Air Pollutant Emissions (lbs/day)				Net Change (2040-2040 No Project) Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	10	46	28	9	2	8	5	2
Energy[2]	10	178	13	13	2	33	2	2
Residential Fuels (wood, kerosene, propane)	0	0	0	0	0	0	0	0
Offroad Equipment[3]	5	1	0	0	1	0	0	0
Consumer Products[4]	1,299				237			
Total	**1,324**	**225**	**42**	**23**	**241**	**41**	**7**	**4**
BAAQMD THRESHOLD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Increase from Baseline?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

NET CHANGE (from Existing)

Phase	Net Change (2045-Existing) Criteria Air Pollutant Emissions(lbs/day)				Net Change (2045-Existing) Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	-176	-946	13	-4	-31	-164	2	-1
Energy[2]	10	178	13	13	2	33	2	2
Residential Fuels (wood, kerosene, propane)	0	0	0	0	0	0	0	0
Offroad Equipment[3]	5	1	0	0	1	0	0	0
Consumer Products[4]	1,299	0	0	0	237	0	0	0
Total	**1,137**	**-766**	**26**	**10**	**209**	**-131**	**5**	**2**
BAAQMD THRESHOLD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Increase from Existing	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Criteria Air Pollutants from Natural Gas

Rate	lbs/MMBTU					
Natural Gas	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Residential	0.005	0.092	0.039	0.001	0.007	0.007
Non-Residential	0.005	0.098	0.082	0.001	0.007	0.007
Sources CalEEMod Version 2022.1, 2022, Appendix C. https://www.caleemod.com/documents/handbook/appendices/appendix_c.pdf						

	With State Actions	
Contra Costa	Existing	Year 2045
	Therms	
Residential	30,100,640	35,500,210
Nonresidential	13,784,410	15,356,900
Total	**43,885,050**	**50,857,110**

Natural Gas	Existing tons/year					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Residential	8	138	59	2	11	11
Nonresidential	3	68	57	1	5	5
TOTAL	**11**	**206**	**115**	**2**	**15**	**15**

Natural Gas	2045 tons/year					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Residential	9	163	69	2	12	12
Nonresidential	4	75	63	1	5	5
TOTAL	**13**	**239**	**132**	**3**	**18**	**18**

Fuel Use for Residential Homes

Emission Factors

Source: CalEEMod 2022 User's Guide and 2018 US Energy Information Administration. Residential Energy Consumption Survey.

	Unit	ROG lbs/unit	NOx lbs/unit	CO lbs/unit	SO2 lbs/unit	PM10 lbs/unit	PM2.5 lbs/unit
Propane	MMBTU	0.011	0.142	0.082	0	0.008	0.008
Wood	Tons	229	2.6	252.6	0.4	34.6	34.6

Source Kerosene: AP 42. Volume I. 1.3, Fuel Oil Combustion.

	Unit	ROG lbs/unit	NOx lbs/unit	CO lbs/unit	SO2 lbs/unit	PM10 lbs/unit	PM2.5 lbs/unit
Kerosene (Residential Furnace)	1000 gallons	NA	18	5	0.568	0.4	0.4

Assumes low-sulfur kerosene in California with a sulfur content of no more than 0.04% by weight. Assume PM2.5 is 100% of PM10

Activity Data - Residential Fuel Use

Activity Data Source: Contra Costa County Climate Action Plan Update

Conversions Factors: California Air Resources Board. 2010, May. Local Government Operations Protocol, for the quantification and reporting of greenhouse gas emissions inventories. Version 1.1.

Wood Burning	Existing	Year 2045	Existing	Year 2045
	MMBTU		Tons	
Wood Burning	101,710	101710	6,613	6,613
Note: residential woodburning is decreasing in the County				

Kerosene	Existing	Year 2045	Existing	Year 2045
	Gallons		1000 Gallons	
Residential - Kerosene	16,320	16,320	16	16

Propane	Existing	Year 2045	Existing	Year 2045
	Gallons		MMBTU	
Residential - Propane	1,021,340	1,021,340	92,942	92,942

Fuel Use	Existing tons/year					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Woodburning	757	9	835	1	114	114
Kerosene	NA	0.147	0.041	0.005	0.003	0.003
Propane	1	7	4	0	0	0
TOTAL	**758**	**15**	**839**	**1**	**115**	**115**

Natural Gas	2045 tons/year					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Woodburning	757	9	835	1	114	114
Kerosene	NA	0.147	0.041	0.005	0.003	0.003
Propane	1	7	4	0	0	0
TOTAL	**758**	**15**	**839**	**1**	**115**	**115**

Area Sources - Residential Consumer Product Use[a]

Emissions = EF x Building Area

EF = 2.14E-05 lbs/sqft/day

Sources/Notes:

a. California Emissions Estimator Model, Version 2021.1, Users Guide. Appendix D3.

AVERAGE HOUSING SQFT ASSUMPTIONS

Year Structure was Built	Percent of Housing Stock [a]	Average Square Feet of New Single Family Homes[b]	Average Square Feet (Weighted)
2014 or Later	1.4%	2,617	37
2010 to 2013	1.8%	2,467	44
2000 to 2009	11.8%	2,404	284
1990 to 1999	12.4%	2,116	262
1980 to 1989	15.9%	1,819	289
1970 to 1979	18.9%	1,699	321
1960 to 1969	14.1%	1,715	242
1950 to 1959	12.8%	1,715	220
1940 to 1949	6.5%	1,715	111
1939 or earlier	4.3%	1,715	74
	100%		1,884

Sources/Notes: https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/

a. United States Census Bureau, Selected Housing Characteristics, Contra Costa County, 2019. Table DP04. American Community Survey 5-Year Estimates, Year structure built.

https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2019/

b. United States Census Bureau, Characteristics of New Housing, Characteristics of New Single-Family Houses Completed, Median and Average Square Feet by Location. https://www.census.gov/construction/chars/pdf/c25ann2016.pdf

	2019 Existing	2045
	TOTAL	TOTAL
Housing Units	60,315	83,504
Residential SQFT	113,637,220	174,315,103
lbs VOC per day	2,432	3,730
tons VOC/year	444	681

Notes:

[1] New housing units constructed post-2014 assumed to be 2,617 square feet (based on Source 2).

[2] Daily emissions converted to annual emissions by multiplying by 365 days/year.

Area Sources

Source: OFFROAD2021. https://arb.ca.gov/emfac/emissions-inventory/2f6c8fa1b8ec8bd9f8a4f23b3d84c74a77f77161

OFFROAD2021 Estimate based on:

Agricultural Equipment	Based on agricultural acreage within Contra Costa County
Construction Equipment	Based on housing permits in Contra Costa County
Light Commercial and Industrial Equipment	Based on employment in Contra Costa County
Lawn & Garden	Based on housing units in Contra Costa County

Sources

Farmland Acreage

Source: Department of Conservation and Development, Contra Costa County, 2022. 2019 Report on Agriculture. https://www.contracosta.ca.gov/DocumentCenter/View/70326/2019-Crop-Report-.

Source: Department of Conservation and Development, Contra Costa General Plan Land Use Element Map. https://www.contracosta.ca.gov/DocumentCenter/View/30949/Land-Use-Element-Map-PDF?bidId=.

Source: Buildout Land Use Map.

Existing Farmland (unincorporated)	117,306	
Farmland Acreage at Buildout at 2045	107,866	92%
Percent Reduction	-8.05%	

Construction (Housing Permits)

Source: Housing and Urban Development (HUD). 2022, Accessed June 23. SOCDS Building Permits Database. https://socds.huduser.gov/permits/

Employment

Source. U.S. Census Bureau. Longitudinal Employer-Household Dynamics. 2020 Q1. http://lehd.ces.census.gov/

Source: Fehr and Peers 2023

2019 Existing		**ROG Exhaust**	**NO_x Exhaust**	**CO Exhaust**	**SO_2 Exhaust**	**PM_{10} Exhaust**	**$PM_{2.5}$ Exhaust***
		Tons/year					
Agricultural		0.04	0.24	0.24	0.00	0.01	0.01
Construction Equipment		0.20	1.69	2.45	0.00	0.09	0.08
Lawn & Garden		2.12	0.25	20.96	0.00	0.02	0.02
Light Commercial / Industrial Equipment		0.78	0.75	31.60	0.00	0.02	0.01
TOTAL		3	3	55	0	0.14	0.12

2045	**Forecast Adjusted for:**	**ROG Exhaust**	**NO_x Exhaust**	**CO Exhaust**	**SO2 Exhaust**	**PM10 Exhaust**	**PM2.5 Exhaust***
		Tons/year					
Agricultural	Based on a reduction in Agricultural land in the County	0.04	0.22	0.22	0.00	0.01	0.01
Construction Equipment	Similar to historic	0.20	1.69	2.45	0.00	0.09	0.08
Lawn & Garden	Proportional to housing growth	2.93	0.35	29.02	0.00	0.03	0.03
Light Commercial / Industrial Equipment	Proportional to employment growth	0.97	0.93	39.26	0.00	0.02	0.02
TOTAL		4	3	71	0	0.16	0.13

Contra Costa County OFFROAD2021

Source: https://arb.ca.gov/emfac/emissions-inventory/2f6c8fa1b8ec8bd9f8a4f23b3d84c74a77f77161
Construction includes: Over 25 horsepower, self-propelled, diesel equipment only subjected to In-Use Regulation; AND Under 25 horsepower equipment not subject to the In-Use Regulation

Model Output: OFFROAD2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: Contra Costa
Calendar Year: 2019
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Agriculture

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption (g/yr)	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd
Contra Costa	2019	Agricultural - Agricultural Tractors	Aggregate	Aggregate	Gasoline	46.599	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Agricultural Tractors	Aggregate	Aggregate	Diesel	775,488.169	0.030	0.186	0.141	0.000	0.011	0.010
Contra Costa	2019	Agricultural - ATVs	Aggregate	Aggregate	Gasoline	20,703.139	0.006	0.003	0.060	0.000	0.000	0.000
Contra Costa	2019	Agricultural - ATVs	Aggregate	Aggregate	Diesel	10,088.287	0.000	0.002	0.002	0.000	0.000	0.000
Contra Costa	2019	Agricultural - ATVs	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Bale Wagons (Self Propelled)	Aggregate	Aggregate	Diesel	2,582.452	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Balers (Self Propelled)	Aggregate	Aggregate	Diesel	203.530	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Combine Harvesters	Aggregate	Aggregate	Diesel	37,171.700	0.001	0.008	0.005	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Construction Equipment	Aggregate	Aggregate	Diesel	19,338.362	0.001	0.005	0.003	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Cotton Pickers	Aggregate	Aggregate	Diesel	723.517	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Forage & Silage Harvesters	Aggregate	Aggregate	Diesel	7,061.408	0.000	0.002	0.001	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Forklifts	Aggregate	Aggregate	Diesel	15,732.147	0.001	0.004	0.003	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Hay Squeeze/Stack Retriever	Aggregate	Aggregate	Diesel	2,469.114	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Nut Harvester	Aggregate	Aggregate	Diesel	20,251.292	0.001	0.006	0.004	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Other Harvesters	Aggregate	Aggregate	Diesel	30,376.555	0.001	0.007	0.005	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Sprayers/Spray Rigs	Aggregate	Aggregate	Diesel	41,548.475	0.002	0.012	0.008	0.000	0.001	0.001
Contra Costa	2019	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	Aggregate	Diesel	7,975.782	0.000	0.002	0.001	0.000	0.000	0.000
TOTAL AGRICULTURAL OFFROAD (tons/yr)						991,760.528	0.042	0.238	0.235	0.000	0.014	0.013
ESTIMATED Unincorporated Contra Costa County (tons/year)							0.028	0.161	0.159	0.000	0.009	0.009
ESTIMATED Unincorporated Contra Costa County (lbs/year)							56.8	321.3	317.5	0.4	18.8	17.3

AGRICULTURAL ACREAGE	**2019**
Farmland Acreage in Contra Costa County	173,924
Farmland Acreage in unincorporated Contra Costa County (excludes Grazing Land)	117,306
Percent in the unincorporated County	**67.4**%

Construction and Mining

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption (g/yr)	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd
Contra Costa	2019	Construction and Mining - Bore/Drill Rigs	Aggregate	Aggregate	Diesel	81,901.417	0.001	0.010	0.008	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Cranes	Aggregate	Aggregate	Diesel	194,908.423	0.005	0.056	0.032	0.000	0.003	0.002
Contra Costa	2019	Construction and Mining - Crawler Tractors	Aggregate	Aggregate	Diesel	481,723.300	0.012	0.129	0.068	0.000	0.006	0.006
Contra Costa	2019	Construction and Mining - Excavators	Aggregate	Aggregate	Diesel	866,786.580	0.011	0.118	0.096	0.000	0.005	0.005
Contra Costa	2019	Construction and Mining - Graders	Aggregate	Aggregate	Diesel	326,083.726	0.009	0.096	0.041	0.000	0.004	0.004
Contra Costa	2019	Construction and Mining - Misc - Asphalt Pavers	Aggregate	Aggregate	Gasoline	5,011.175	0.000	0.001	0.018	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Bore/Drill Rigs	Aggregate	Aggregate	Gasoline	3,783.827	0.000	0.000	0.005	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Bore/Drill Rigs	Aggregate	Aggregate	Diesel	29.079	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Cement And Mortar Mixers	Aggregate	Aggregate	Gasoline	7,415.464	0.004	0.002	0.117	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Cement And Mortar Mixers	Aggregate	Aggregate	Diesel	42.381	0.000	0.001	0.001	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Gasoline	16,131.027	0.003	0.003	0.111	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Diesel	1,417.242	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Cranes	Aggregate	Aggregate	Gasoline	3,420.050	0.000	0.000	0.006	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Crushing/Proc. Equipment	Aggregate	Aggregate	Gasoline	44.119	0.000	0.000	0.001	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Gasoline	5,644.449	0.001	0.001	0.048	0.000	0.001	0.000
Contra Costa	2019	Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Diesel	3.394	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Excavators	Aggregate	Aggregate	Diesel	24.291	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Other	Aggregate	Aggregate	Gasoline	5,186.650	0.000	0.000	0.004	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Other	Aggregate	Aggregate	Diesel	6,506.415	0.000	0.003	0.002	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Pavers	Aggregate	Aggregate	Diesel	6.373	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Gasoline	16,171.089	0.007	0.005	0.201	0.000	0.002	0.002
Contra Costa	2019	Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Diesel	10.849	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Gasoline	37,749.934	0.010	0.007	0.324	0.000	0.003	0.002
Contra Costa	2019	Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Diesel	1,924.664	0.000	0.001	0.001	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Gasoline	15,381.507	0.002	0.002	0.069	0.000	0.001	0.000
Contra Costa	2019	Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Diesel	186.465	0.001	0.003	0.002	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Rough Terrain Forklifts	Aggregate	Aggregate	Gasoline	24,119.200	0.001	0.003	0.031	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Rubber Tired Loaders	Aggregate	Aggregate	Gasoline	12,738.500	0.000	0.001	0.019	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Rubber Tired Loaders	Aggregate	Aggregate	Diesel	3.958	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Gasoline	1,145.405	0.000	0.000	0.010	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Diesel	30,728.813	0.002	0.014	0.012	0.000	0.001	0.000
Contra Costa	2019	Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Gasoline	38,112.542	0.003	0.003	0.103	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Diesel	1,283.012	0.004	0.027	0.015	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Surfacing Equipment	Aggregate	Aggregate	Gasoline	5,921.492	0.004	0.003	0.093	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Tampers/Rammers	Aggregate	Aggregate	Gasoline	6,793.058	0.001	0.001	0.057	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Gasoline	8,176.000	0.000	0.000	0.012	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	115.746	0.000	0.002	0.001	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Gasoline	28,545.023	0.003	0.004	0.132	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Diesel	156.568	0.000	0.003	0.002	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Off-Highway Tractors	Aggregate	Aggregate	Diesel	183,253.256	0.004	0.032	0.026	0.000	0.002	0.002
Contra Costa	2019	Construction and Mining - Off-Highway Trucks	Aggregate	Aggregate	Diesel	1,099,345.885	0.019	0.209	0.106	0.000	0.007	0.007
Contra Costa	2019	Construction and Mining - Other	Aggregate	Aggregate	Diesel	245,374.907	0.005	0.051	0.032	0.000	0.003	0.002
Contra Costa	2019	Construction and Mining - Pavers	Aggregate	Aggregate	Diesel	57,796.645	0.001	0.012	0.009	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Paving Equipment	Aggregate	Aggregate	Diesel	33,624.852	0.001	0.006	0.005	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Rollers	Aggregate	Aggregate	Diesel	149,852.204	0.004	0.031	0.029	0.000	0.002	0.002
Contra Costa	2019	Construction and Mining - Rough Terrain Forklifts	Aggregate	Aggregate	Diesel	162,677.987	0.002	0.024	0.030	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Rubber Tired Dozers	Aggregate	Aggregate	Diesel	96,167.373	0.003	0.035	0.024	0.000	0.002	0.002
Contra Costa	2019	Construction and Mining - Rubber Tired Loaders	Aggregate	Aggregate	Diesel	1,321,485.960	0.027	0.288	0.164	0.000	0.013	0.012
Contra Costa	2019	Construction and Mining - Scrapers	Aggregate	Aggregate	Diesel	860,698.145	0.018	0.213	0.126	0.000	0.009	0.008
Contra Costa	2019	Construction and Mining - Skid Steer Loaders	Aggregate	Aggregate	Diesel	157,579.978	0.002	0.025	0.030	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Surfacing Equipment	Aggregate	Aggregate	Diesel	18,084.284	0.000	0.003	0.002	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	1,204,115.588	0.024	0.242	0.222	0.000	0.014	0.013
Contra Costa	2019	Construction and Mining - Trenchers	Aggregate	Aggregate	Diesel	49,764.313	0.002	0.013	0.010	0.000	0.001	0.001

TOTAL CONSTRUCTION OFFROAD (tons/yr)	7,875,154.583	0.199	1.686	2.454	0.002	0.089	0.079
ESTIMATED Unincorporated Contra Costa County (tons/year)		0.019	0.161	0.235	0.000	0.008	0.008
ESTIMATED Unincorporated Contra Costa (lbs/year)		38.0	322.8	469.7	0.4	17.0	15.1

TOTAL UNITS: https://socds.huduser.gov/permits/	2015	2016	2017	2018	2019	Average
Housing Permits in Contra Costa County	2610	2921	1,984	2,607	2,687	2,562
Housing Permits in the Unincorporated Contra Costa County	438	270	284	95	104	238
Percent in the Unincorporated County	17%	9%	14%	4%	4%	**9.6%**

Industrial and Light Commercial

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption (g/yr)	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd
Contra Costa	2019	Industrial - Aerial Lifts	Aggregate	Aggregate	Diesel	40,739.806	0.000	0.005	0.007	0.000	0.000	0.000
Contra Costa	2019	Industrial - Forklifts	Aggregate	Aggregate	Diesel	171,531.023	0.005	0.044	0.037	0.000	0.003	0.003
Contra Costa	2019	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Gasoline	27,350.160	0.003	0.002	0.087	0.000	0.001	0.001
Contra Costa	2019	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Diesel	50.830	0.000	0.001	0.001	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Electric	680.230	0.000	0.000	0.012	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Nat Gas	6,197.700	0.000	0.000	0.016	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Forklifts	Aggregate	Aggregate	Gasoline	849,275.406	0.019	0.086	2.081	0.000	0.001	0.001
Contra Costa	2019	Industrial - Misc - Forklifts	Aggregate	Aggregate	Electric	75.221	0.000	0.000	0.001	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Forklifts	Aggregate	Aggregate	Nat Gas	1,686,500.750	0.000	0.134	1.236	0.000	0.003	0.000
Contra Costa	2019	Industrial - Misc - Other General Industrial Equipment	Aggregate	Aggregate	Gasoline	14,998.942	0.001	0.001	0.083	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Other General Industrial Equipment	Aggregate	Aggregate	Diesel	39.324	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Other Material Handling Equipment	Aggregate	Aggregate	Gasoline	6,365.600	0.000	0.001	0.007	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Sweepers/Scrubbers	Aggregate	Aggregate	Gasoline	48,600.070	0.001	0.004	0.116	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Sweepers/Scrubbers	Aggregate	Aggregate	Diesel	10.074	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Industrial - Other General Industrial Equipment	Aggregate	Aggregate	Diesel	82,844.563	0.002	0.017	0.015	0.000	0.001	0.001
Contra Costa	2019	Industrial - Other Material Handling Equipment	Aggregate	Aggregate	Diesel	48,571.971	0.001	0.010	0.007	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Gasoline	1,112,785.886	0.137	0.085	7.311	0.000	0.001	0.001
Contra Costa	2019	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Diesel	27,665.687	0.001	0.007	0.007	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Gas Compressors	Aggregate	Aggregate	Nat Gas	334,624.700	0.000	0.019	0.223	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Gasoline	1,799,298.008	0.394	0.152	10.681	0.000	0.002	0.002
Contra Costa	2019	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Diesel	151,301.596	0.005	0.035	0.028	0.000	0.001	0.002
Contra Costa	2019	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Nat Gas	10,760.200	0.000	0.001	0.006	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pressure Washers	Aggregate	Aggregate	Gasoline	786,217.814	0.099	0.045	5.370	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pressure Washers	Aggregate	Aggregate	Diesel	800.157	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pressure Washers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pumps	Aggregate	Aggregate	Gasoline	231,905.284	0.031	0.016	1.070	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pumps	Aggregate	Aggregate	Diesel	82,584.476	0.003	0.019	0.016	0.000	0.001	0.001
Contra Costa	2019	Light Commercial - Misc - Pumps	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Welders	Aggregate	Aggregate	Gasoline	488,565.970	0.068	0.033	3.147	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Welders	Aggregate	Aggregate	Diesel	150,267.006	0.006	0.035	0.034	0.000	0.002	0.002
Contra Costa	2019	Light Commercial - Misc - Welders	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL LIGHT COMMERCIAL + INDUSTRIAL OFFROAD (tons/yr)						8,160,608.454	0.777	0.752	31.598	0.002	0.017	0.015
ESTIMATED Unincorporated Contra Costa County (tons/year)							0.077	0.075	3.150	0.000	0.002	0.001
ESTIMATED Unincorporated Contra Costa (lbs/year)							154.87	149.99	6,299.67	0.32	3.47	2.91

EMPLOYMENT	**2019**
Employment in Contra Costa County	388,796
Employment in Unincorporated Contra Costa County	38,757
Percent in the unincorporated County	**10.0%**

Lawn and Garden

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption (g/yr)	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd
Contra Costa	2019	Lawn and Garden - Misc - Chainsaws	Aggregate	Aggregate	Gasoline	303,129.698	0.380	0.011	1.024	0.000	0.005	0.003
Contra Costa	2019	Lawn and Garden - Misc - Chainsaws	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Chainsaws Preempt	Aggregate	Aggregate	Gasoline	178,035.748	0.330	0.010	0.552	0.000	0.002	0.002
Contra Costa	2019	Lawn and Garden - Misc - Chainsaws Preempt	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Chippers/Stump Grinders	Aggregate	Aggregate	Gasoline	3,056.980	0.000	0.000	0.020	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Chippers/Stump Grinders	Aggregate	Aggregate	Diesel	193.196	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Chippers/Stump Grinders	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Lawn Mowers	Aggregate	Aggregate	Gasoline	717,684.957	0.115	0.058	4.108	0.000	0.003	0.003
Contra Costa	2019	Lawn and Garden - Misc - Lawn Mowers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Leaf Blowers/Vacuums	Aggregate	Aggregate	Gasoline	786,503.248	0.627	0.020	2.812	0.000	0.008	0.006
Contra Costa	2019	Lawn and Garden - Misc - Leaf Blowers/Vacuums	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Other	Aggregate	Aggregate	Gasoline	14,647.182	0.002	0.001	0.093	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Other	Aggregate	Aggregate	Diesel	96.904	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Rear Engine Riding Mowers	Aggregate	Aggregate	Gasoline	1,350,073.976	0.230	0.103	9.284	0.000	0.002	0.001
Contra Costa	2019	Lawn and Garden - Misc - Rear Engine Riding Mowers	Aggregate	Aggregate	Diesel	77,634.324	0.003	0.018	0.011	0.000	0.001	0.000
Contra Costa	2019	Lawn and Garden - Misc - Rear Engine Riding Mowers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Snowblowers	Aggregate	Aggregate	Gasoline	497.356	0.000	0.000	0.004	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Snowblowers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Tillers	Aggregate	Aggregate	Gasoline	13,731.922	0.005	0.001	0.076	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Tillers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Trimmers/Edgers/Brush Cutters	Aggregate	Aggregate	Gasoline	594,440.686	0.403	0.022	2.172	0.000	0.003	0.002
Contra Costa	2019	Lawn and Garden - Misc - Trimmers/Edgers/Brush Cutters	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Wood Splitters	Aggregate	Aggregate	Gasoline	126,998.940	0.024	0.009	0.804	0.000	0.000	0.000
TOTAL LAWN & GARDEN (tons/yr)						4,166,725.117	2.119	0.253	20.958	0.001	0.024	0.018
ESTIMATED Unincorporated Contra Costa County (tons/year)							0.309	0.037	3.055	0.000	0.004	0.003
ESTIMATED Unincorporated Contra Costa (lbs/day)							618	74	6,111	0	7	5

HOUSING UNITS	**2019**
Housing Units in Contra Costa County (2019)	413,719
Housing Units in unincorporated Contra Costa County	60,315
Percent in the unincorporated county	**14.6%**

Contra Costa County VMT

Source: Fehr and Peers 2023. Based on the County of Contra Costa Transportation Analysis Guidelines.

	Daily VMT			Total Daily VMT	Total with RTAC	Percent Fleet VMT	Residents	Jobs	Service Population	VMT/SP	VMT/SP w RTAC
	IX	XI	II								
Existing - TOTAL	3,256,431	3,212,745	295,609	6,764,785	3,530,197		174,145	38,757	212,902	31.8	16.6
Passenger Vehicles	3,198,500	3,156,803	293,655	6,648,959	3,471,307	98%					
LHDT	40,753	39,075	1,562	81,390	41,476	1.2%					
MHDT	3,220	3,103	154	6,476	3,315	0.1%					
HHDT	13,958	13,764	238	27,960	14,099	0.4%					
2045	3,889,245	3,826,897	414,135	8,130,277	4,272,206		239,718	48,153	287,871	28.2	14.8
Passenger Vehicles	3,810,521	3,758,120	411,335	7,979,977	4,195,656	98%					
LHDT	55,028	48,113	2,209	105,350	53,780	1.3%					
MHDT	4,527	3,814	227	8,567	4,397	0.1%					
HHDT	19,170	16,850	363	36,383	18,373	0.4%					

Notes: Total may not add to 100% due to rounding.

IX = Internal-External

XI = External- Internal

II = Internal-Internal

Modeling of vehicle miles traveled (VMT) is provided by Fehr and Peers is based on the Contra Costa County Transportation Authority's Contra Costa Transportation Analysis Guidelines. VMT from passenger vehicles and trucks that have an origin or destination in the County using a transportation origin-destination methodology. Accounting of VMT is based on the recommendations of CARB's Regional Targets Advisory Committee (RTAC) created under Senate Bill 375 (SB 375). For accounting purposes, there are three types of trips:

- Vehicle trips that originated and terminated within the County (Internal-Internal, I-I). Using the accounting rules established by RTAC, 100 percent of the length of these trips, and their emissions, are attributed to the County.
- Vehicle trips that either originated or terminated (but not both) within the County (Internal-External or External-Internal, I-X and X-I). Using the accounting rules established by RTAC, 50 percent of the trip length for these trips is attributed to the
- Vehicle trips that neither originated nor terminated within the County. These trips are commonly called pass-through trips (External-External, X-X). Using the accounting rules established by RTAC, these trips are not counted towards the County's

Percent VMT from Housing assumes trip lengths for residential and non-residential land uses are similar.

Contra Costa — TRANSPORTATION SECTOR

Source: EMFAC2021 V. 1.0.2. , Web Database - Emissions Rates. Contra Costa County. Based on the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Global Warming Potentials (GWPs)

Note: MTons = metric tons; CO_2e = carbon dioxide-equivalent.

Criteria Air Pollutant Emissions

	lbs/day					
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Existing	234	1,193	9,689	27	151	57
Existing in year 2045	47	201	3,722	18	136	44
2045	57	247	4,502	22	164	53
Change from Existing Conditions (2019-2045)	-176	-946	-5,188	-5	13	-4
Change from Existing Land Uses (2045 Emission Rates)	-10	-46	-780	-4	-28	-9

	Tons/year					
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Existing	41	207	1,681	5	26	10
Existing in year 2045	8	35	646	3	24	8
2045	10	43	781	4	28	9
Change from Existing Conditions (2019-2045)	-31	-164	-900	-1	2	-1
Change from Existing Land Uses (2045 Emission Rates)	-2	-8	-135	-1	-5	-2

lbs to Tons 2000

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the 2008 Climate Change Scoping Plan Measure Documentation Supplement.

Year 2019 Existing: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.2) Emission Rates, Contra Costa County, Average Speed, Average Fleet

Source: F&P 2023	Small Trucks	Medium Trucks	Heavy Trucks	Passenger Vehicles
Truck Trip Percentage	1.2%	0.1%	0.4%	98.3%
EMFAC Default	3.66%	1.00%	2.63%	92.71%

Daily VMT	**3,530,197**	**lbs/day**

Vehicle Type	Fuel Type	Percent of VMT	Adjusted Percent VMT	ROG	NOx	CO	SOx	PM10	PM2.5
All Other Buses	Diesel	0.02%	0.00%	0.19	1.86	0.46	0.00	0.08	0.07
All Other Buses	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
LDA	Gasoline	48.63%	51.58%	68.99	315.11	4,141.18	11.91	67.14	23.64
LDA	Diesel	0.22%	0.23%	0.60	5.87	6.58	0.04	0.66	0.45
LDA	Electricity	1.15%	1.22%	0.00	0.00	0.00	0.00	1.18	0.34
LDA	Plug-in Hybrid	0.83%	0.88%	0.10	0.24	15.57	0.10	0.87	0.29
LDT1	Gasoline	5.00%	5.30%	19.68	88.23	863.65	1.43	7.92	3.02
LDT1	Diesel	0.00%	0.00%	0.04	0.20	0.24	0.00	0.03	0.03
LDT1	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.01	0.00
LDT1	Plug-in Hybrid	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT2	Gasoline	21.94%	23.27%	34.17	224.61	2,093.94	6.79	32.53	11.50
LDT2	Diesel	0.09%	0.10%	0.12	0.56	1.00	0.02	0.18	0.09
LDT2	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT2	Plug-in Hybrid	0.03%	0.04%	0.00	0.01	0.62	0.00	0.04	0.01
LHD1	Gasoline	1.79%	0.57%	3.06	13.36	68.61	0.42	3.94	1.39
LHD1	Diesel	1.22%	0.39%	7.52	86.51	22.30	0.19	4.46	2.56
LHD2	Gasoline	0.20%	0.06%	0.30	1.45	7.02	0.05	0.51	0.18
LHD2	Diesel	0.45%	0.14%	2.37	22.91	6.40	0.08	1.69	0.90
MCY	Gasoline	0.41%	0.43%	48.53	23.75	561.17	0.06	0.60	0.23
MDV	Gasoline	14.08%	14.94%	41.66	244.37	1,846.10	5.29	21.35	7.64
MDV	Diesel	0.25%	0.27%	0.28	1.94	4.20	0.09	0.49	0.24
MDV	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
MDV	Plug-in Hybrid	0.05%	0.06%	0.01	0.02	1.00	0.01	0.06	0.02
MH	Gasoline	0.08%	0.01%	0.11	0.52	2.93	0.02	0.05	0.02
MH	Diesel	0.03%	0.00%	0.04	1.66	0.15	0.00	0.06	0.05
Motor Coach	Diesel	0.01%	0.00%	0.03	0.69	0.10	0.00	0.03	0.02
OBUS	Gasoline	0.06%	0.01%	0.08	0.57	1.82	0.01	0.04	0.01
PTO	Diesel	0.05%	0.01%	0.28	4.36	1.04	0.01	0.11	0.10
SBUS	Gasoline	0.01%	0.00%	0.08	0.14	1.71	0.00	0.01	0.00
SBUS	Diesel	0.04%	0.01%	0.02	1.65	0.07	0.00	0.03	0.02
SBUS	Natural Gas	0.00%	0.00%	0.00	0.01	0.28	0.00	0.00	0.00
T6 CAIRP Class 4	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Diesel	0.00%	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Diesel	0.01%	0.00%	0.01	0.15	0.02	0.00	0.01	0.01
T6 Instate Delivery Class 4	Diesel	0.03%	0.00%	0.14	1.77	0.37	0.00	0.07	0.06
T6 Instate Delivery Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 5	Diesel	0.03%	0.00%	0.06	0.80	0.15	0.00	0.03	0.02
T6 Instate Delivery Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 6	Diesel	0.06%	0.01%	0.19	2.47	0.50	0.01	0.10	0.08
T6 Instate Delivery Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 7	Diesel	0.01%	0.00%	0.03	0.50	0.09	0.00	0.02	0.02
T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Other Class 4	Diesel	0.10%	0.01%	0.35	5.39	0.98	0.01	0.22	0.19
T6 Instate Other Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Other Class 5	Diesel	0.22%	0.02%	0.28	4.67	0.83	0.02	0.24	0.17
T6 Instate Other Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Instate Other Class 6	Diesel	0.17%	0.02%	0.37	5.82	1.06	0.01	0.26	0.20
T6 Instate Other Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Instate Other Class 7	Diesel	0.11%	0.01%	0.19	3.36	0.54	0.01	0.15	0.11
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Instate Tractor Class 6	Diesel	0.00%	0.00%	0.01	0.10	0.02	0.00	0.01	0.00
T6 Instate Tractor Class 7	Diesel	0.02%	0.00%	0.02	0.48	0.05	0.00	0.01	0.01

T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 6	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 OOS Class 7	Diesel	0.01%	0.00%	0.00	0.10	0.01	0.00	0.01	0.00
T6 Public Class 4	Diesel	0.01%	0.00%	0.01	0.63	0.02	0.00	0.01	0.00
T6 Public Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 5	Diesel	0.02%	0.00%	0.01	0.49	0.02	0.00	0.01	0.00
T6 Public Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Public Class 6	Diesel	0.02%	0.00%	0.01	0.98	0.03	0.00	0.01	0.01
T6 Public Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 7	Diesel	0.03%	0.00%	0.03	2.27	0.07	0.00	0.03	0.02
T6 Public Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Utility Class 5	Diesel	0.01%	0.00%	0.00	0.09	0.01	0.00	0.00	0.00
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Diesel	0.00%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Diesel	0.00%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6TS	Gasoline	0.14%	0.01%	0.26	1.35	5.88	0.02	0.06	0.02
T7 CAIRP Class 8	Diesel	0.45%	0.07%	0.47	19.11	1.73	0.08	0.96	0.53
T7 CAIRP Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T7 NNOOS Class 8	Diesel	0.54%	0.08%	0.92	24.43	3.63	0.10	1.42	0.90
T7 NOOS Class 8	Diesel	0.20%	0.03%	0.24	8.64	0.87	0.03	0.43	0.25
T7 Other Port Class 8	Diesel	0.04%	0.01%	0.05	1.95	0.17	0.01	0.07	0.03
T7 POAK Class 8	Diesel	0.14%	0.02%	0.24	8.12	0.77	0.03	0.28	0.13
T7 POAK Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T7 Public Class 8	Diesel	0.07%	0.01%	0.15	11.04	0.48	0.02	0.21	0.11
T7 Public Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T7 Single Concrete/Transit Mix Class 8	Diesel	0.02%	0.00%	0.04	1.00	0.15	0.00	0.06	0.04
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.09	0.00	0.00	0.00
T7 Single Dump Class 8	Diesel	0.12%	0.02%	0.28	7.33	1.06	0.02	0.35	0.23
T7 Single Dump Class 8	Natural Gas	0.01%	0.00%	0.00	0.03	0.52	0.00	0.01	0.00
T7 Single Other Class 8	Diesel	0.11%	0.02%	0.32	7.33	1.20	0.02	0.38	0.26
T7 Single Other Class 8	Natural Gas	0.01%	0.00%	0.00	0.03	0.45	0.00	0.01	0.00
T7 SWCV Class 8	Diesel	0.05%	0.01%	0.02	5.44	0.05	0.02	0.16	0.06
T7 SWCV Class 8	Natural Gas	0.04%	0.01%	0.06	1.27	12.01	0.00	0.12	0.04
T7 Tractor Class 8	Diesel	0.39%	0.06%	0.68	22.30	2.46	0.07	0.95	0.56
T7 Tractor Class 8	Natural Gas	0.03%	0.00%	0.01	0.21	3.70	0.00	0.04	0.01
T7 Utility Class 8	Diesel	0.01%	0.00%	0.00	0.22	0.02	0.00	0.01	0.00
T7IS	Gasoline	0.00%	0.00%	0.02	0.06	0.62	0.00	0.00	0.00
UBUS	Gasoline	0.02%	0.00%	0.00	0.02	0.10	0.00	0.03	0.01
UBUS	Diesel	0.09%	0.01%	0.12	2.16	0.16	0.01	0.16	0.06
UBUS	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL	100.00%	100.00%	234	1,193	9,689	27	151	57

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Contra Costa
Calendar Year: 2019
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

		g/mile																	
Vehicle Category	Fuel	ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	VMT Total	% of VMT
All Other Buses	Diesel	7.83E-01	7.62E+00	1.90E+00	1.20E-02	2.88E-01	1.20E-02	4.61E-02	3.47E-01	2.76E-01	3.00E-03	1.61E-02	2.95E-01	1.27E+03	3.64E-02	2.00E-01	5,401	0.02%
All Other Buses	Natural Gas	1.04E-02	3.00E-01	3.09E+00	0.00E+00	5.82E-04	1.20E-02	4.61E-02	5.87E-02	5.35E-04	3.00E-03	1.61E-02	1.97E-02	1.09E+03	7.29E-01	2.21E-01	92	0.00%
LDA	Gasoline	1.72E-02	7.85E-02	1.03E+00	2.97E-03	1.46E-03	8.00E-03	7.26E-03	1.67E-02	1.35E-03	2.00E-03	2.54E-03	5.89E-03	3.00E+02	4.07E-03	6.89E-03	12,708,469	48.63%
LDA	Diesel	3.32E-02	3.24E-01	3.63E-01	2.30E-03	2.12E-02	8.00E-03	7.27E-03	3.65E-02	2.03E-02	2.00E-03	2.55E-03	2.48E-02	2.43E+02	1.54E-03	3.83E-02	57,342	0.22%
LDA	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-03	4.36E-03	1.24E-02	0.00E+00	2.00E-03	1.53E-03	3.53E-03	0.00E+00	0.00E+00	0.00E+00	301,373	1.15%
LDA	Plug-in Hybrid	1.46E-03	3.46E-03	2.26E-01	1.46E-03	9.14E-04	8.00E-03	3.79E-03	1.27E-02	8.41E-04	2.00E-03	1.33E-03	4.17E-03	1.47E+02	4.66E-04	6.39E-04	217,659	0.83%
LDT1	Gasoline	4.77E-02	2.14E-01	2.09E+00	3.48E-03	2.45E-03	8.00E-03	8.74E-03	1.92E-02	2.25E-03	2.00E-03	3.06E-03	7.31E-03	3.51E+02	1.03E-02	1.43E-02	1,306,567	5.00%
LDT1	Diesel	3.08E-01	1.59E+00	1.93E+00	3.96E-03	2.32E-01	8.00E-03	1.01E-02	2.50E-01	2.22E-01	2.00E-03	3.54E-03	2.27E-01	4.18E+02	1.43E-02	6.58E-02	399	0.00%
LDT1	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-03	4.39E-03	1.24E-02	0.00E+00	2.00E-03	1.54E-03	3.54E-03	0.00E+00	0.00E+00	0.00E+00	1,597	0.01%
LDT1	Plug-in Hybrid	1.47E-03	3.47E-03	2.27E-01	1.46E-03	1.07E-03	8.00E-03	3.78E-03	1.28E-02	9.80E-04	2.00E-03	1.32E-03	4.30E-03	1.48E+02	4.71E-04	6.50E-04	19	0.00%
LDT2	Gasoline	1.89E-02	1.24E-01	1.16E+00	3.75E-03	1.51E-03	8.00E-03	8.45E-03	1.80E-02	1.39E-03	2.00E-03	2.96E-03	6.35E-03	3.79E+02	4.47E-03	8.97E-03	5,733,691	21.94%
LDT2	Diesel	1.54E-02	7.50E-02	1.34E-01	3.19E-03	7.25E-03	8.00E-03	8.19E-03	2.34E-02	6.94E-03	2.00E-03	2.86E-03	1.18E-02	3.37E+02	7.17E-04	5.31E-02	23,795	0.09%
LDT2	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-03	4.35E-03	1.24E-02	0.00E+00	2.00E-03	1.52E-03	3.52E-03	0.00E+00	0.00E+00	0.00E+00	825	0.00%
LDT2	Plug-in Hybrid	1.44E-03	3.41E-03	2.23E-01	1.44E-03	1.04E-03	8.00E-03	3.79E-03	1.28E-02	9.52E-04	2.00E-03	1.33E-03	4.28E-03	1.45E+02	4.64E-04	6.42E-04	8,729	0.03%
LHD1	Gasoline	6.84E-02	2.99E-01	1.53E+00	9.47E-03	2.05E-03	8.00E-03	7.80E-02	8.80E-02	1.89E-03	2.00E-03	2.73E-02	3.12E-02	9.57E+02	1.34E-02	1.66E-02	467,246	1.79%
LHD1	Diesel	2.47E-01	2.84E+00	7.32E-01	6.12E-03	5.63E-02	1.20E-02	7.80E-02	1.46E-01	5.38E-02	3.00E-03	2.73E-02	8.41E-02	6.46E+02	1.15E-02	1.02E-01	318,262	1.22%
LHD2	Gasoline	6.01E-02	2.88E-01	1.39E+00	1.06E-02	1.87E-03	8.00E-03	9.10E-02	1.01E-01	1.72E-03	2.00E-03	3.19E-02	3.56E-02	1.07E+03	1.22E-02	1.62E-02	52,570	0.20%
LHD2	Diesel	2.12E-01	2.04E+00	5.71E-01	7.52E-03	4.74E-02	1.20E-02	9.10E-02	1.50E-01	4.54E-02	3.00E-03	3.19E-02	8.02E-02	7.94E+02	9.83E-03	1.25E-01	117,069	0.45%
MCY	Gasoline	1.45E+00	7.10E-01	1.68E+01	1.92E-03	1.91E-03	4.00E-03	1.20E-02	1.79E-02	1.80E-03	1.00E-03	4.20E-03	7.00E-03	1.94E+02	2.07E-01	4.55E-02	105,968	0.41%
MDV	Gasoline	3.58E-02	2.10E-01	1.59E+00	4.55E-03	1.65E-03	8.00E-03	8.71E-03	1.84E-02	1.52E-03	2.00E-03	3.05E-03	6.57E-03	4.59E+02	7.54E-03	1.33E-02	3,680,635	14.08%
MDV	Diesel	1.34E-02	9.24E-02	2.00E-01	4.12E-03	7.06E-03	8.00E-03	8.20E-03	2.33E-02	6.75E-03	2.00E-03	2.87E-03	1.16E-02	4.35E+02	6.23E-04	6.85E-02	66,483	0.25%
MDV	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-03	4.43E-03	1.24E-02	0.00E+00	2.00E-03	1.55E-03	3.55E-03	0.00E+00	0.00E+00	0.00E+00	40	0.00%
MDV	Plug-in Hybrid	1.46E-03	3.46E-03	2.27E-01	1.46E-03	1.07E-03	8.00E-03	3.78E-03	1.28E-02	9.82E-04	2.00E-03	1.32E-03	4.31E-03	1.48E+02	4.70E-04	6.48E-04	13,902	0.05%
MH	Gasoline	1.23E-01	5.78E-01	3.28E+00	1.93E-02	2.15E-03	1.20E-02	4.50E-02	5.92E-02	1.98E-03	3.00E-03	1.58E-02	2.07E-02	1.95E+03	2.43E-02	3.24E-02	19,766	0.08%
MH	Diesel	1.31E-01	4.90E+00	4.52E-01	1.02E-02	1.31E-01	1.60E-02	4.48E-02	1.91E-01	1.25E-01	4.00E-03	1.57E-02	1.45E-01	1.08E+03	6.10E-03	1.70E-01	7,504	0.03%
Motor Coach	Diesel	1.77E-01	4.33E+00	6.23E-01	1.66E-02	1.08E-01	1.20E-02	7.91E-02	1.99E-01	1.03E-01	3.00E-03	2.77E-02	1.34E-01	1.76E+03	8.24E-03	2.77E-01	3,505	0.01%
OBUS	Gasoline	1.20E-01	8.70E-01	2.76E+00	1.84E-02	7.69E-04	1.20E-02	4.48E-02	5.76E-02	7.07E-04	3.00E-03	1.57E-02	1.94E-02	1.85E+03	2.47E-02	3.94E-02	14,573	0.06%
PTO	Diesel	4.50E-01	7.06E+00	1.68E+00	2.08E-02	1.75E-01	0.00E+00	0.00E+00	1.75E-01	1.68E-01	0.00E+00	0.00E+00	1.68E-01	2.20E+03	2.09E-02	3.46E-01	13,666	0.05%
SBUS	Gasoline	4.71E-01	8.54E-01	1.05E+01	8.23E-03	3.40E-03	8.00E-03	4.49E-02	5.63E-02	3.16E-03	2.00E-03	1.57E-02	2.09E-02	8.31E+02	7.41E-02	3.99E-02	3,602	0.01%
SBUS	Diesel	5.31E-02	3.64E+00	1.64E-01	1.08E-02	2.02E-02	1.20E-02	4.49E-02	7.72E-02	1.94E-02	3.00E-03	1.57E-02	3.81E-02	1.14E+03	2.47E-03	1.80E-01	10,026	0.04%
SBUS	Natural Gas	5.20E-02	6.41E-01	1.26E+01	0.00E+00	3.67E-03	1.20E-02	4.49E-02	6.06E-02	3.38E-03	3.00E-03	1.57E-02	2.21E-02	1.31E+03	3.64E+00	2.66E-01	491	0.00%
T6 CAIRP Class 4	Diesel	8.78E-02	2.18E+00	3.12E-01	1.08E-02	7.44E-02	1.20E-02	4.23E-02	1.29E-01	7.12E-02	3.00E-03	1.48E-02	8.90E-02	1.14E+03	4.08E-03	1.79E-01	103	0.00%
T6 CAIRP Class 5	Diesel	5.99E-02	1.64E+00	2.28E-01	1.07E-02	5.44E-02	1.20E-02	4.23E-02	1.09E-01	5.21E-02	3.00E-03	1.48E-02	6.99E-02	1.13E+03	2.78E-03	1.78E-01	141	0.00%
T6 CAIRP Class 6	Diesel	8.56E-02	2.14E+00	3.18E-01	1.06E-02	7.67E-02	1.20E-02	4.23E-02	1.31E-01	7.34E-02	3.00E-03	1.48E-02	9.12E-02	1.12E+03	3.97E-03	1.76E-01	369	0.00%
T6 CAIRP Class 7	Diesel	8.48E-02	2.28E+00	2.89E-01	9.99E-03	6.94E-02	1.20E-02	4.23E-02	1.24E-01	6.64E-02	3.00E-03	1.48E-02	8.42E-02	1.06E+03	3.94E-03	1.66E-01	2,313	0.01%
T6 Instate Delivery Class 4	Diesel	5.67E-01	7.12E+00	1.49E+00	1.19E-02	2.29E-01	1.20E-02	4.76E-02	2.89E-01	2.20E-01	3.00E-03	1.66E-02	2.39E-01	1.26E+03	2.63E-02	1.98E-01	8,874	0.03%
T6 Instate Delivery Class 4	Natural Gas	1.04E-02	2.97E-01	3.25E+00	0.00E+00	6.54E-04	1.20E-02	4.76E-02	6.02E-02	6.02E-04	3.00E-03	1.66E-02	2.02E-02	1.11E+03	7.28E-01	2.27E-01	28	0.00%
T6 Instate Delivery Class 5	Diesel	2.80E-01	3.98E+00	7.42E-01	1.17E-02	1.08E-01	1.20E-02	4.76E-02	1.68E-01	1.03E-01	3.00E-03	1.66E-02	1.23E-01	1.24E+03	1.30E-02	1.95E-01	7,209	0.03%
T6 Instate Delivery Class 5	Natural Gas	1.04E-02	3.00E-01	3.25E+00	0.00E+00	6.39E-04	1.20E-02	4.76E-02	6.02E-02	5.87E-04	3.00E-03	1.66E-02	2.02E-02	1.11E+03	7.27E-01	2.27E-01	27	0.00%
T6 Instate Delivery Class 6	Diesel	4.35E-01	5.63E+00	1.14E+00	1.17E-02	1.78E-01	1.20E-02	4.76E-02	2.37E-01	1.70E-01	3.00E-03	1.66E-02	1.90E-01	1.24E+03	2.02E-02	1.95E-01	15,676	0.06%
T6 Instate Delivery Class 6	Natural Gas	1.04E-02	2.98E-01	3.25E+00	0.00E+00	6.48E-04	1.20E-02	4.76E-02	6.02E-02	5.96E-04	3.00E-03	1.66E-02	2.02E-02	1.11E+03	7.28E-01	2.26E-01	59	0.00%
T6 Instate Delivery Class 7	Diesel	4.82E-01	6.94E+00	1.26E+00	1.18E-02	2.19E-01	1.20E-02	4.76E-02	2.79E-01	2.10E-01	3.00E-03	1.66E-02	2.29E-01	1.25E+03	2.24E-02	1.96E-01	2,563	0.01%
T6 Instate Delivery Class 7	Natural Gas	1.05E-02	2.84E-01	3.28E+00	0.00E+00	7.30E-04	1.20E-02	4.76E-02	6.03E-02	6.71E-04	3.00E-03	1.66E-02	2.03E-02	1.09E+03	7.36E-01	2.22E-01	12	0.00%
T6 Instate Other Class 4	Diesel	5.02E-01	7.70E+00	1.41E+00	1.12E-02	2.58E-01	1.20E-02	4.49E-02	3.14E-01	2.46E-01	3.00E-03	1.57E-02	2.65E-01	1.19E+03	2.33E-02	1.87E-01	25,076	0.10%
T6 Instate Other Class 4	Natural Gas	7.97E-03	2.28E-01	2.83E+00	0.00E+00	5.11E-04	1.20E-02	4.49E-02	5.74E-02	4.69E-04	3.00E-03	1.57E-02	1.92E-02	9.65E+02	5.58E-01	1.97E-01	51	0.00%
T6 Instate Other Class 5	Diesel	1.68E-01	2.84E+00	5.08E-01	1.10E-02	8.85E-02	1.20E-02	4.49E-02	1.45E-01	8.47E-02	3.00E-03	1.57E-02	1.03E-01	1.16E+03	7.81E-03	1.83E-01	58,748	0.22%
T6 Instate Other Class 5	Natural Gas	7.93E-03	2.31E-01	2.83E+00	0.00E+00	4.93E-04	1.20E-02	4.49E-02	5.74E-02	4.54E-04	3.00E-03	1.57E-02	1.92E-02	9.64E+02	5.55E-01	1.96E-01	216	0.00%
T6 Instate Other Class 6	Diesel	2.94E-01	4.68E+00	8.53E-01	1.10E-02	1.53E-01	1.20E-02	4.49E-02	2.09E-01	1.46E-01	3.00E-03	1.57E-02	1.65E-01	1.16E+03	1.36E-02	1.82E-01	44,475	0.17%
T6 Instate Other Class 6	Natural Gas	8.01E-03	2.24E-01	2.83E+00	0.00E+00	5.35E-04	1.20E-02	4.49E-02	5.74E-02	4.92E-04	3.00E-03	1.57E-02	1.92E-02	9.66E+02	5.61E-01	1.97E-01	195	0.00%
T6 Instate Other Class 7	Diesel	2.51E-01	4.35E+00	6.99E-01	1.10E-02	1.34E-01	1.20E-02	4.49E-02	1.91E-01	1.28E-01	3.00E-03	1.57E-02	1.47E-01	1.16E+03	1.17E-02	1.83E-01	27,656	0.11%
T6 Instate Other Class 7	Natural Gas	8.72E-03	1.64E-01	2.80E+00	0.00E+00	9.07E-04	1.20E-02	4.49E-02	5.78E-02	8.34E-04	3.00E-03	1.57E-02	1.95E-02	9.36E+02	6.10E-01	1.91E-01	405	0.00%
T6 Instate Tractor Class 6	Diesel	5.67E-01	7.27E+00	1.58E+00	1.14E-02	3.33E-01	1.20E-02	4.49E-02	3.90E-01	3.19E-01	3.00E-03	1.57E-02	3.37E-01	1.21E+03	2.63E-02	1.90E-01	485	0.00%
T6 Instate Tractor Class 7	Diesel	1.65E-01	4.27E+00	4.58E-01	1.07E-02	6.85E-02	1.20E-02	4.49E-02	1.25E-01	6.56E-02	3.00E-03	1.57E-02	8.43E-02	1.13E+03	7.68E-03	1.78E-01	4,054	0.02%
T6 Instate Tractor Class 7	Natural Gas	8.54E-03	1.80E-01	2.81E+00	0.00E+00	8.12E-04	1.20E-02	4.49E-02	5.77E-02	7.47E-04	3.00E-03	1.57E-02	1.94E-02	9.36E+02	5.97E-01	1.91E-01	28	0.00%
T6 OOS Class 4	Diesel	8.78E-02	2.18E+00	3.12E-01	1.08E-02	7.44E-02	1.20E-02	4.23E-02	1.29E-01	7.12E-02	3.00E-03	1.48E-02	8.90E-02	1.14E+03	4.08E-03	1.79E-01	58	0.00%
T6 OOS Class 5	Diesel	5.99E-02	1.64E+00	2.28E-01	1.07E-02	5.44E-02	1.20E-02	4.23E-02	1.09E-01	5.21E-02	3.00E-03	1.48E-02	6.99E-02	1.13E+03	2.78E-03	1.78E-01	79	0.00%
T6 OOS Class 6	Diesel	8.56E-02	2.14E+00	3.18E-01	1.06E-02	7.67E-02	1.20E-02	4.23E-02	1.31E-01	7.34E-02	3.00E-03	1.48E-02	9.12E-02	1.12E+03	3.97E-03	1.76E-01	207	0.00%
T6 OOS Class 7	Diesel	9.39E-02	2.39E+00	3.19E-01	9.98E-03	7.66E-02	1.20E-02	4.23E-02	1.31E-01	7.33E-02	3.00E-03	1.48E-02	9.11E-02	1.05E+03	4.36E-03	1.66E-01	1,508	0.01%
T6 Public Class 4	Diesel	1.16E-01	8.19E+00	2.70E-01	1.22E-02	4.12E-02	1.20E-02	4.62E-02	9.94E-02	3.94E-02	3.00E-03	1.62E-02	5.86E-02	1.29E+03	5.37E-03	2.03E-01	2,745	0.01%
T6 Public Class 4	Natural Gas	1.10E-02	3.17E-01	3.03E+00	0.00E+00	5.68E-04	1.20E-02	4.62E-02	5.87E-02	5.23E-04	3.00E-03	1.62E-02	1.97E-02	1.07E+03	7.72E-01	2.18E-01	1	0.00%
T6 Public Class 5	Diesel	6.54E-02	3.59E+00	1.77E-01	1.18E-02	1.78E-02	1.20E-02	4.62E-02	7.59E-02	1.70E-02	3.00E-03	1.62E-02	3.62E-02	1.25E+03	3.04E-03	1.96E-01	4,833	0.02%

T6 Public Class 5	Natural Gas	1.22E-02	1.31E-01	3.08E+00	0.00E+00	1.45E-03	1.20E-02	4.62E-02	5.96E-02	1.33E-03	3.00E-03	1.62E-02	2.05E-02	1.06E+03	8.52E-01	2.16E-01	272	0.00%
T6 Public Class 6	Diesel	1.18E-01	7.79E+00	2.64E-01	1.22E-02	5.19E-02	1.20E-02	4.62E-02	1.10E-01	4.97E-02	3.00E-03	1.62E-02	6.88E-02	1.29E+03	5.50E-03	2.03E-01	4,495	0.02%
T6 Public Class 6	Natural Gas	1.19E-02	1.76E-01	3.09E+00	0.00E+00	1.24E-03	1.20E-02	4.62E-02	5.94E-02	1.14E-03	3.00E-03	1.62E-02	2.03E-02	1.05E+03	8.33E-01	2.13E-01	76	0.00%
T6 Public Class 7	Diesel	1.48E-01	9.61E+00	3.12E-01	1.24E-02	6.92E-02	1.20E-02	4.62E-02	1.27E-01	6.62E-02	3.00E-03	1.62E-02	8.54E-02	1.31E+03	6.86E-03	2.07E-01	8,450	0.03%
T6 Public Class 7	Natural Gas	1.19E-02	1.81E-01	3.10E+00	0.00E+00	1.21E-03	1.20E-02	4.62E-02	5.94E-02	1.11E-03	3.00E-03	1.62E-02	2.03E-02	1.04E+03	8.31E-01	2.12E-01	154	0.00%
T6 Utility Class 5	Diesel	2.45E-02	1.27E+00	9.54E-02	1.08E-02	6.14E-03	1.20E-02	4.55E-02	6.36E-02	5.88E-03	3.00E-03	1.59E-02	2.48E-02	1.14E+03	1.14E-03	1.79E-01	2,429	0.01%
T6 Utility Class 5	Natural Gas	9.34E-03	2.70E-01	2.89E+00	0.00E+00	5.18E-04	1.20E-02	4.55E-02	5.80E-02	4.76E-04	3.00E-03	1.59E-02	1.94E-02	1.01E+03	6.54E-01	2.06E-01	35	0.00%
T6 Utility Class 6	Diesel	3.71E-02	2.08E+00	1.24E-01	1.10E-02	1.08E-02	1.20E-02	4.55E-02	6.83E-02	1.03E-02	3.00E-03	1.59E-02	2.92E-02	1.17E+03	1.72E-03	1.83E-01	461	0.00%
T6 Utility Class 6	Natural Gas	9.34E-03	2.70E-01	2.89E+00	0.00E+00	5.18E-04	1.20E-02	4.55E-02	5.80E-02	4.76E-04	3.00E-03	1.59E-02	1.94E-02	9.95E+02	6.54E-01	2.03E-01	4	0.00%
T6 Utility Class 7	Diesel	2.80E-02	1.92E+00	1.00E-01	1.10E-02	1.03E-02	1.20E-02	4.55E-02	6.78E-02	9.87E-03	3.00E-03	1.59E-02	2.88E-02	1.17E+03	1.30E-03	1.83E-01	635	0.00%
T6 Utility Class 7	Natural Gas	9.34E-03	2.70E-01	2.89E+00	0.00E+00	5.18E-04	1.20E-02	4.55E-02	5.80E-02	4.76E-04	3.00E-03	1.59E-02	1.94E-02	1.00E+03	6.54E-01	2.04E-01	13	0.00%
T6TS	Gasoline	2.58E-01	1.33E+00	5.81E+00	1.88E-02	2.08E-03	1.20E-02	4.50E-02	5.91E-02	1.92E-03	3.00E-03	1.58E-02	2.07E-02	1.90E+03	4.74E-02	5.56E-02	36,239	0.14%
T7 CAIRP Class 8	Diesel	8.81E-02	3.58E+00	3.24E-01	1.51E-02	6.62E-02	3.60E-02	7.73E-02	1.80E-01	6.33E-02	9.00E-03	2.71E-02	9.94E-02	1.60E+03	4.09E-03	2.52E-01	118,223	0.45%
T7 CAIRP Class 8	Natural Gas	1.32E-02	2.62E-01	4.60E+00	0.00E+00	1.74E-03	3.60E-02	7.41E-02	1.12E-01	1.60E-03	9.00E-03	2.59E-02	3.65E-02	1.18E+03	9.23E-01	2.41E-01	201	0.00%
T7 NNOOS Class 8	Diesel	1.45E-01	3.84E+00	5.72E-01	1.52E-02	1.09E-01	3.60E-02	7.82E-02	2.24E-01	1.05E-01	9.00E-03	2.74E-02	1.41E-01	1.61E+03	6.74E-03	2.54E-01	140,606	0.54%
T7 NOOS Class 8	Diesel	1.03E-01	3.74E+00	3.75E-01	1.51E-02	7.38E-02	3.60E-02	7.75E-02	1.87E-01	7.06E-02	9.00E-03	2.71E-02	1.07E-01	1.60E+03	4.78E-03	2.52E-01	51,092	0.20%
T7 Other Port Class 8	Diesel	1.19E-01	4.46E+00	3.80E-01	1.63E-02	3.11E-02	3.60E-02	9.40E-02	1.61E-01	2.98E-02	9.00E-03	3.29E-02	7.17E-02	1.72E+03	5.53E-03	2.71E-01	9,668	0.04%
T7 POAK Class 8	Diesel	1.47E-01	4.97E+00	4.69E-01	1.63E-02	4.14E-02	3.60E-02	9.60E-02	1.73E-01	3.96E-02	9.00E-03	3.36E-02	8.22E-02	1.73E+03	6.85E-03	2.72E-01	36,148	0.14%
T7 POAK Class 8	Natural Gas	1.70E-02	7.05E-01	1.10E+01	0.00E+00	1.36E-03	3.60E-02	8.52E-02	1.23E-01	1.25E-03	9.00E-03	2.98E-02	4.01E-02	1.49E+03	1.19E+00	3.04E-01	79	0.00%
T7 Public Class 8	Diesel	1.73E-01	1.27E+01	5.50E-01	1.87E-02	8.30E-02	3.60E-02	1.21E-01	2.40E-01	7.94E-02	9.00E-03	4.24E-02	1.31E-01	1.98E+03	8.01E-03	3.12E-01	19,202	0.07%
T7 Public Class 8	Natural Gas	2.61E-02	7.55E-01	1.07E+01	0.00E+00	2.46E-03	3.60E-02	1.07E-01	1.45E-01	2.26E-03	9.00E-03	3.75E-02	4.87E-02	1.68E+03	1.83E+00	3.43E-01	61	0.00%
T7 Single Concrete/Transit Mix Class 8	Diesel	1.73E-01	4.05E+00	6.29E-01	1.62E-02	1.11E-01	3.60E-02	8.68E-02	2.33E-01	1.06E-01	9.00E-03	3.04E-02	1.45E-01	1.71E+03	8.02E-03	2.69E-01	5,440	0.02%
T7 Single Concrete/Transit Mix Class 8	Natural Gas	1.51E-02	4.28E-01	7.58E+00	0.00E+00	1.68E-03	3.60E-02	8.16E-02	1.19E-01	1.54E-03	9.00E-03	2.86E-02	3.91E-02	1.28E+03	1.06E+00	2.60E-01	249	0.00%
T7 Single Dump Class 8	Diesel	2.06E-01	5.33E+00	7.69E-01	1.60E-02	1.31E-01	3.60E-02	8.91E-02	2.56E-01	1.25E-01	9.00E-03	3.12E-02	1.65E-01	1.69E+03	9.58E-03	2.67E-01	30,417	0.12%
T7 Single Dump Class 8	Natural Gas	1.51E-02	4.26E-01	7.57E+00	0.00E+00	1.68E-03	3.60E-02	8.24E-02	1.20E-01	1.54E-03	9.00E-03	2.88E-02	3.94E-02	1.32E+03	1.06E+00	2.68E-01	1,525	0.01%
T7 Single Other Class 8	Diesel	2.37E-01	5.43E+00	8.92E-01	1.61E-02	1.56E-01	3.60E-02	8.97E-02	2.82E-01	1.49E-01	9.00E-03	3.14E-02	1.90E-01	1.70E+03	1.10E-02	2.68E-01	29,887	0.11%
T7 Single Other Class 8	Natural Gas	1.51E-02	4.26E-01	7.59E+00	0.00E+00	1.68E-03	3.60E-02	8.29E-02	1.21E-01	1.54E-03	9.00E-03	2.90E-02	3.96E-02	1.31E+03	1.06E+00	2.67E-01	1,308	0.01%
T7 SWCV Class 8	Diesel	3.05E-02	8.80E+00	8.25E-02	3.90E-02	1.36E-02	3.60E-02	2.10E-01	2.60E-01	1.30E-02	9.00E-03	7.35E-02	9.55E-02	4.12E+03	1.42E-03	6.49E-01	13,676	0.05%
T7 SWCV Class 8	Natural Gas	1.30E-01	2.64E+00	2.50E+01	0.00E+00	2.74E-03	3.60E-02	2.10E-01	2.49E-01	2.52E-03	9.00E-03	7.35E-02	8.50E-02	1.72E+03	5.48E+00	3.51E-01	10,621	0.04%
T7 Tractor Class 8	Diesel	1.49E-01	4.88E+00	5.39E-01	1.51E-02	8.69E-02	3.60E-02	8.54E-02	2.08E-01	8.32E-02	9.00E-03	2.99E-02	1.22E-01	1.60E+03	6.91E-03	2.51E-01	101,106	0.39%
T7 Tractor Class 8	Natural Gas	1.42E-02	5.64E-01	9.76E+00	0.00E+00	1.24E-03	3.60E-02	7.85E-02	1.16E-01	1.14E-03	9.00E-03	2.75E-02	3.76E-02	1.22E+03	9.96E-01	2.49E-01	8,401	0.03%
T7 Utility Class 8	Diesel	4.10E-02	2.46E+00	1.98E-01	1.68E-02	1.14E-02	3.60E-02	9.84E-02	1.46E-01	1.09E-02	9.00E-03	3.44E-02	5.43E-02	1.78E+03	1.90E-03	2.80E-01	1,945	0.01%
T7IS	Gasoline	9.28E+00	2.69E+01	2.61E+02	2.92E-02	1.82E-02	2.00E-02	1.18E-01	1.56E-01	1.71E-02	5.00E-03	4.13E-02	6.34E-02	2.95E+03	1.10E+00	5.76E-01	52	0.00%
UBUS	Gasoline	1.03E-02	9.66E-02	4.08E-01	1.37E-02	1.22E-03	1.00E-02	1.01E-01	1.12E-01	1.12E-03	2.50E-03	3.52E-02	3.88E-02	1.39E+03	3.24E-03	1.03E-02	5,509	0.02%
UBUS	Diesel	1.12E-01	2.03E+00	1.53E-01	1.33E-02	7.36E-03	3.09E-02	1.10E-01	1.48E-01	7.04E-03	7.73E-03	3.85E-02	5.33E-02	1.41E+03	5.20E-03	2.21E-01	23,552	0.09%
UBUS	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-02	5.50E-02	7.80E-02	0.00E+00	5.75E-03	1.93E-02	2.50E-02	0.00E+00	0.00E+00	0.00E+00	336	0.00%
																Total VMT	26,132,029	

lbs/Mile															
ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	
1.73E-03	1.68E-02	4.18E-03	2.65E-05	2.65E-05	1.02E-04	6.36E-04	7.64E-04	6.61E-06	3.56E-05	6.08E-04	6.51E-04	2.80E+00	8.02E-05	4.41E-04	
2.30E-05	6.62E-04	6.82E-03	0.00E+00	2.65E-05	1.02E-04	1.28E-06	1.29E-04	6.61E-06	3.56E-05	1.18E-06	4.34E-05	2.40E+00	1.61E-03	4.88E-04	
3.79E-05	1.73E-04	2.27E-03	6.54E-06	1.76E-05	1.60E-05	3.23E-06	3.69E-05	4.41E-06	5.60E-06	2.97E-06	1.30E-05	6.61E-01	8.98E-06	1.52E-05	
7.31E-05	7.14E-04	8.01E-04	5.08E-06	1.76E-05	1.60E-05	4.67E-05	8.04E-05	4.41E-06	5.61E-06	4.47E-05	5.47E-05	5.37E-01	3.39E-06	8.45E-05	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	9.61E-06	0.00E+00	2.72E-05	4.41E-06	3.36E-06	0.00E+00	7.77E-06	0.00E+00	0.00E+00	0.00E+00	
3.22E-06	7.63E-06	4.99E-04	3.22E-06	1.76E-05	8.35E-06	2.02E-06	2.80E-05	4.41E-06	2.92E-06	1.85E-06	9.19E-06	3.25E-01	1.03E-06	1.41E-06	
1.05E-04	4.71E-04	4.61E-03	7.66E-06	1.76E-05	1.93E-05	5.40E-06	4.23E-05	4.41E-06	6.74E-06	4.97E-06	1.61E-05	7.74E-01	2.28E-05	3.15E-05	
6.78E-04	3.50E-03	4.27E-03	8.73E-06	1.76E-05	2.23E-05	5.11E-04	5.51E-04	4.41E-06	7.81E-06	4.89E-04	5.01E-04	9.22E-01	3.15E-05	1.45E-04	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	9.69E-06	0.00E+00	2.73E-05	4.41E-06	3.39E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00	
3.23E-06	7.65E-06	5.01E-04	3.23E-06	1.76E-05	8.34E-06	2.35E-06	2.83E-05	4.41E-06	2.92E-06	2.16E-06	9.49E-06	3.26E-01	1.04E-06	1.43E-06	
4.16E-05	2.73E-04	2.55E-03	8.26E-06	1.76E-05	1.86E-05	3.33E-06	3.96E-05	4.41E-06	6.52E-06	3.07E-06	1.40E-05	8.35E-01	9.86E-06	1.98E-05	
3.40E-05	1.65E-04	2.95E-04	7.04E-06	1.76E-05	1.80E-05	1.60E-05	5.17E-05	4.41E-06	6.32E-06	1.53E-05	2.60E-05	7.43E-01	1.58E-06	1.17E-04	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	9.60E-06	0.00E+00	2.72E-05	4.41E-06	3.36E-06	0.00E+00	7.77E-06	0.00E+00	0.00E+00	0.00E+00	
3.17E-06	7.51E-06	4.92E-04	3.17E-06	1.76E-05	8.35E-06	2.28E-06	2.83E-05	4.41E-06	2.92E-06	2.10E-06	9.43E-06	3.20E-01	1.02E-06	1.42E-06	
1.51E-04	6.58E-04	3.38E-03	2.09E-05	1.76E-05	1.72E-04	4.52E-06	1.94E-04	4.41E-06	6.02E-05	4.16E-06	6.88E-05	2.11E+00	2.95E-05	3.67E-05	
5.44E-04	6.26E-03	1.61E-03	1.35E-05	2.65E-05	1.72E-04	1.24E-04	3.22E-04	6.61E-06	6.02E-05	1.19E-04	1.85E-04	1.42E+00	2.53E-05	2.24E-04	
1.32E-04	6.34E-04	3.08E-03	2.33E-05	1.76E-05	2.01E-04	4.12E-06	2.22E-04	4.41E-06	7.02E-05	3.79E-06	7.84E-05	2.36E+00	2.69E-05	3.58E-05	
4.67E-04	4.51E-03	1.26E-03	1.66E-05	2.65E-05	2.01E-04	1.05E-04	3.32E-04	6.61E-06	7.02E-05	1.00E-04	1.77E-04	1.75E+00	2.17E-05	2.76E-04	
3.20E-03	1.56E-03	3.70E-02	4.23E-06	8.82E-06	2.65E-05	4.21E-06	3.95E-05	2.20E-06	9.26E-06	3.96E-06	1.54E-05	4.27E-01	4.56E-04	1.00E-04	
7.90E-05	4.63E-04	3.50E-03	1.00E-05	1.76E-05	1.92E-05	3.64E-06	4.05E-05	4.41E-06	6.72E-06	3.35E-06	1.45E-05	1.01E+00	1.66E-05	2.93E-05	
2.96E-05	2.04E-04	4.41E-04	9.08E-06	1.76E-05	1.81E-05	1.56E-05	5.13E-05	4.41E-06	6.33E-06	1.49E-05	2.56E-05	9.59E-01	1.37E-06	1.51E-04	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	9.76E-06	0.00E+00	2.74E-05	4.41E-06	3.42E-06	0.00E+00	7.83E-06	0.00E+00	0.00E+00	0.00E+00	
3.22E-06	7.63E-06	5.00E-04	3.22E-06	1.76E-05	8.34E-06	2.35E-06	2.83E-05	4.41E-06	2.92E-06	2.16E-06	9.49E-06	3.25E-01	1.04E-06	1.43E-06	
2.71E-04	1.27E-03	7.24E-03	4.25E-05	2.65E-05	9.92E-05	4.74E-06	1.30E-04	6.61E-06	3.47E-05	4.37E-06	4.57E-05	4.30E+00	5.36E-05	7.15E-05	
2.90E-04	1.08E-02	9.97E-04	2.25E-05	3.53E-05	9.87E-05	2.88E-04	4.22E-04	8.82E-06	3.46E-05	2.75E-04	3.19E-04	2.38E+00	1.35E-05	3.75E-04	
3.91E-04	9.55E-03	1.37E-03	3.67E-05	2.65E-05	1.74E-04	2.38E-04	4.39E-04	6.61E-06	6.10E-05	2.27E-04	2.95E-04	3.88E+00	1.82E-05	6.10E-04	
2.65E-04	1.92E-03	6.09E-03	4.05E-05	2.65E-05	9.88E-05	1.70E-06	1.27E-04	6.61E-06	3.46E-05	1.56E-06	4.27E-05	4.09E+00	5.43E-05	8.70E-05	
9.92E-04	1.56E-02	3.71E-03	4.58E-05	0.00E+00	0.00E+00	3.87E-04	3.87E-04	0.00E+00	0.00E+00	3.70E-04	3.70E-04	4.84E+00	4.61E-05	7.62E-04	
1.04E-03	1.88E-03	2.32E-02	1.81E-05	1.76E-05	9.90E-05	7.50E-06	1.24E-04	4.41E-06	3.47E-05	6.97E-06	4.60E-05	1.83E+00	1.63E-04	8.79E-05	
1.17E-04	8.03E-03	3.61E-04	2.39E-05	2.65E-05	9.90E-05	4.46E-05	1.70E-04	6.61E-06	3.47E-05	4.27E-05	8.40E-05	2.52E+00	5.43E-06	3.97E-04	
1.15E-04	1.41E-03	2.78E-02	0.00E+00	2.65E-05	9.90E-05	8.10E-06	1.34E-04	6.61E-06	3.47E-05	7.45E-06	4.87E-05	2.88E+00	8.02E-03	5.87E-04	
1.94E-04	4.80E-03	6.87E-04	2.38E-05	2.65E-05	9.33E-05	1.64E-04	2.84E-04	6.61E-06	3.26E-05	1.57E-04	1.96E-04	2.51E+00	9.00E-06	3.96E-04	
1.32E-04	3.61E-03	5.03E-04	2.37E-05	2.65E-05	9.33E-05	1.20E-04	2.40E-04	6.61E-06	3.26E-05	1.15E-04	1.54E-04	2.50E+00	6.14E-06	3.94E-04	
1.89E-04	4.72E-03	7.01E-04	2.34E-05	2.65E-05	9.33E-05	1.69E-04	2.89E-04	6.61E-06	3.26E-05	1.62E-04	2.01E-04	2.47E+00	8.76E-06	3.89E-04	
1.87E-04	5.02E-03	6.38E-04	2.20E-05	2.65E-05	9.33E-05	1.53E-04	2.73E-04	6.61E-06	3.26E-05	1.46E-04	1.86E-04	2.33E+00	8.68E-06	3.66E-04	
1.25E-03	1.57E-02	3.28E-03	2.62E-05	2.65E-05	1.05E-04	5.06E-04	6.37E-04	6.61E-06	3.67E-05	4.84E-04	5.27E-04	2.77E+00	5.80E-05	4.36E-04	
2.29E-05	6.55E-04	7.17E-03	0.00E+00	2.65E-05	1.05E-04	1.44E-06	1.33E-04	6.61E-06	3.67E-05	1.33E-06	4.46E-05	2.45E+00	1.61E-03	5.00E-04	
6.17E-04	8.76E-03	1.63E-03	2.58E-05	2.65E-05	1.05E-04	2.38E-04	3.70E-04	6.61E-06	3.67E-05	2.28E-04	2.71E-04	2.73E+00	2.87E-05	4.30E-04	
2.29E-05	6.61E-04	7.16E-03	0.00E+00	2.65E-05	1.05E-04	1.41E-06	1.33E-04	6.61E-06	3.67E-05	1.29E-06	4.46E-05	2.45E+00	1.60E-03	5.00E-04	
9.60E-04	1.24E-02	2.52E-03	2.59E-05	2.65E-05	1.05E-04	3.92E-04	5.23E-04	6.61E-06	3.67E-05	3.75E-04	4.18E-04	2.73E+00	4.46E-05	4.30E-04	
2.29E-05	6.58E-04	7.16E-03	0.00E+00	2.65E-05	1.05E-04	1.43E-06	1.33E-04	6.61E-06	3.67E-05	1.31E-06	4.46E-05	2.45E+00	1.60E-03	4.99E-04	
1.06E-03	1.53E-02	2.77E-03	2.60E-05	2.65E-05	1.05E-04	4.83E-04	6.14E-04	6.61E-06	3.67E-05	4.62E-04	5.05E-04	2.75E+00	4.94E-05	4.33E-04	
2.32E-05	6.26E-04	7.24E-03	0.00E+00	2.65E-05	1.05E-04	1.61E-06	1.33E-04	6.61E-06	3.67E-05	1.48E-06	4.48E-05	2.40E+00	1.62E-03	4.89E-04	
1.11E-03	1.70E-02	3.10E-03	2.47E-05	2.65E-05	9.89E-05	5.68E-04	6.93E-04	6.61E-06	3.46E-05	5.43E-04	5.84E-04	2.61E+00	5.14E-05	4.11E-04	
1.76E-05	5.02E-04	6.24E-03	0.00E+00	2.65E-05	9.89E-05	1.13E-06	1.26E-04	6.61E-06	3.46E-05	1.03E-06	4.23E-05	2.13E+00	1.23E-03	4.34E-04	
3.71E-04	6.27E-03	1.12E-03	2.42E-05	2.65E-05	9.89E-05	1.95E-04	3.20E-04	6.61E-06	3.46E-05	1.87E-04	2.28E-04	2.56E+00	1.72E-05	4.03E-04	
1.75E-05	5.09E-04	6.25E-03	0.00E+00	2.65E-05	9.89E-05	1.09E-06	1.26E-04	6.61E-06	3.46E-05	1.00E-06	4.22E-05	2.12E+00	1.22E-03	4.33E-04	
6.47E-04	1.03E-02	1.88E-03	2.42E-05	2.65E-05	9.89E-05	3.36E-04	4.62E-04	6.61E-06	3.46E-05	3.22E-04	3.63E-04	2.55E+00	3.01E-05	4.02E-04	
1.77E-05	4.93E-04	6.24E-03	0.00E+00	2.65E-05	9.89E-05	1.18E-06	1.27E-04	6.61E-06	3.46E-05	1.08E-06	4.23E-05	2.13E+00	1.24E-03	4.34E-04	
5.54E-04	9.59E-03	1.54E-03	2.42E-05	2.65E-05	9.89E-05	2.96E-04	4.21E-04	6.61E-06	3.46E-05	2.83E-04	3.24E-04	2.56E+00	2.57E-05	4.03E-04	
1.92E-05	3.62E-04	6.17E-03	0.00E+00	2.65E-05	9.89E-05	2.00E-06	1.27E-04	6.61E-06	3.46E-05	1.84E-06	4.31E-05	2.06E+00	1.34E-03	4.21E-04	
1.25E-03	1.60E-02	3.49E-03	2.52E-05	2.65E-05	9.89E-05	7.34E-04	8.60E-04	6.61E-06	3.46E-05	7.03E-04	7.44E-04	2.66E+00	5.81E-05	4.19E-04	
3.65E-04	9.41E-03	1.01E-03	2.36E-05	2.65E-05	9.89E-05	1.51E-04	2.76E-04	6.61E-06	3.46E-05	1.45E-04	1.86E-04	2.49E+00	1.69E-05	3.92E-04	
1.88E-05	3.97E-04	6.19E-03	0.00E+00	2.65E-05	9.89E-05	1.79E-06	1.27E-04	6.61E-06	3.46E-05	1.65E-06	4.29E-05	2.06E+00	1.32E-03	4.21E-04	
1.94E-04	4.80E-03	6.87E-04	2.38E-05	2.65E-05	9.33E-05	1.64E-04	2.84E-04	6.61E-06	3.26E-05	1.57E-04	1.96E-04	2.51E+00	9.00E-06	3.96E-04	
1.32E-04	3.61E-03	5.03E-04	2.37E-05	2.65E-05	9.33E-05	1.20E-04	2.40E-04	6.61E-06	3.26E-05	1.15E-04	1.54E-04	2.50E+00	6.14E-06	3.94E-04	
1.89E-04	4.72E-03	7.01E-04	2.34E-05	2.65E-05	9.33E-05	1.69E-04	2.89E-04	6.61E-06	3.26E-05	1.62E-04	2.01E-04	2.47E+00	8.76E-06	3.89E-04	
2.07E-04	5.28E-03	7.04E-04	2.20E-05	2.65E-05	9.33E-05	1.69E-04	2.89E-04	6.61E-06	3.26E-05	1.62E-04	2.01E-04	2.33E+00	9.61E-06	3.66E-04	
2.55E-04	1.81E-02	5.96E-04	2.68E-05	2.65E-05	1.02E-04	9.08E-05	2.19E-04	6.61E-06	3.56E-05	8.69E-05	1.29E-04	2.84E+00	1.18E-05	4.46E-04	
2.43E-05	6.98E-04	6.68E-03	0.00E+00	2.65E-05	1.02E-04	1.25E-06	1.29E-04	6.61E-06	3.56E-05	1.15E-06	4.34E-05	2.35E+00	1.70E-03	4.80E-04	
1.44E-04	7.92E-03	3.91E-04	2.60E-05	2.65E-05	1.02E-04	3.92E-05	1.67E-04	6.61E-06	3.56E-05	3.75E-05	7.97E-05	2.75E+00	6.70E-06	4.33E-04	

1.00E-06

2.68E-05	2.90E-04	6.78E-03	0.00E+00	2.65E-05	1.02E-04	3.19E-06	1.31E-04	6.61E-06	3.56E-05	2.93E-06	4.52E-05	2.34E+00	1.88E-03	4.76E-04
2.61E-04	1.72E-02	5.82E-04	2.69E-05	2.65E-05	1.02E-04	1.14E-04	2.43E-04	6.61E-06	3.56E-05	1.10E-04	1.52E-04	2.84E+00	1.21E-05	4.47E-04
2.63E-05	3.88E-04	6.81E-03	0.00E+00	2.65E-05	1.02E-04	2.73E-06	1.31E-04	6.61E-06	3.56E-05	2.51E-06	4.47E-05	2.31E+00	1.84E-03	4.70E-04
3.26E-04	2.12E-02	6.89E-04	2.74E-05	2.65E-05	1.02E-04	1.53E-04	2.81E-04	6.61E-06	3.56E-05	1.46E-04	1.88E-04	2.89E+00	1.51E-05	4.55E-04
2.62E-05	3.99E-04	6.83E-03	0.00E+00	2.65E-05	1.02E-04	2.67E-06	1.31E-04	6.61E-06	3.56E-05	2.46E-06	4.47E-05	2.29E+00	1.83E-03	4.68E-04
5.40E-05	2.80E-03	2.10E-04	2.38E-05	2.65E-05	1.00E-04	1.35E-05	1.40E-04	6.61E-06	3.51E-05	1.30E-05	5.47E-05	2.51E+00	2.51E-06	3.95E-04
2.06E-05	5.94E-04	6.38E-03	0.00E+00	2.65E-05	1.00E-04	1.14E-06	1.28E-04	6.61E-06	3.51E-05	1.05E-06	4.28E-05	2.23E+00	1.44E-03	4.54E-04
8.18E-05	4.59E-03	2.73E-04	2.43E-05	2.65E-05	1.00E-04	2.37E-05	1.50E-04	6.61E-06	3.51E-05	2.27E-05	6.44E-05	2.57E+00	3.80E-06	4.04E-04
2.06E-05	5.94E-04	6.38E-03	0.00E+00	2.65E-05	1.00E-04	1.14E-06	1.28E-04	6.61E-06	3.51E-05	1.05E-06	4.28E-05	2.19E+00	1.44E-03	4.47E-04
6.17E-05	4.23E-03	2.21E-04	2.43E-05	2.65E-05	1.00E-04	2.27E-05	1.49E-04	6.61E-06	3.51E-05	2.17E-05	6.35E-05	2.57E+00	2.86E-06	4.04E-04
2.06E-05	5.94E-04	6.38E-03	0.00E+00	2.65E-05	1.00E-04	1.14E-06	1.28E-04	6.61E-06	3.51E-05	1.05E-06	4.28E-05	2.21E+00	1.44E-03	4.50E-04
5.70E-04	2.94E-03	1.28E-02	4.15E-05	2.65E-05	9.92E-05	4.59E-06	1.30E-04	6.61E-06	3.47E-05	4.24E-06	4.56E-05	4.20E+00	1.04E-04	1.22E-04
1.94E-04	7.89E-03	7.14E-04	3.34E-05	7.94E-05	1.70E-04	1.46E-04	3.96E-04	1.98E-05	5.97E-05	1.40E-04	2.19E-04	3.53E+00	9.02E-06	5.56E-04
2.91E-05	5.77E-04	1.01E-02	0.00E+00	7.94E-05	1.63E-04	3.83E-06	2.47E-04	1.98E-05	5.72E-05	3.52E-06	8.05E-05	2.60E+00	2.04E-03	5.31E-04
3.20E-04	8.48E-03	1.26E-03	3.36E-05	7.94E-05	1.72E-04	2.41E-04	4.93E-04	1.98E-05	6.03E-05	2.31E-04	3.11E-04	3.55E+00	1.49E-05	5.59E-04
2.27E-04	8.25E-03	8.27E-04	3.34E-05	7.94E-05	1.71E-04	1.63E-04	4.13E-04	1.98E-05	5.98E-05	1.56E-04	2.35E-04	3.53E+00	1.05E-05	5.56E-04
2.63E-04	9.84E-03	8.38E-04	3.59E-05	7.94E-05	2.07E-04	6.86E-05	3.55E-04	1.98E-05	7.26E-05	6.56E-05	1.58E-04	3.80E+00	1.22E-05	5.98E-04
3.25E-04	1.10E-02	1.03E-03	3.60E-05	7.94E-05	2.12E-04	9.13E-05	3.82E-04	1.98E-05	7.41E-05	8.73E-05	1.81E-04	3.80E+00	1.51E-05	5.99E-04
3.74E-05	1.55E-03	2.43E-02	0.00E+00	7.94E-05	1.88E-04	2.99E-06	2.70E-04	1.98E-05	6.58E-05	2.75E-06	8.84E-05	3.29E+00	2.62E-03	6.71E-04
3.80E-04	2.81E-02	1.21E-03	4.13E-05	7.94E-05	2.67E-04	1.83E-04	5.30E-04	1.98E-05	9.35E-05	1.75E-04	2.88E-04	4.37E+00	1.77E-05	6.87E-04
5.76E-05	1.67E-03	2.35E-02	0.00E+00	7.94E-05	2.36E-04	5.42E-06	3.21E-04	1.98E-05	8.26E-05	4.98E-06	1.07E-04	3.71E+00	4.03E-03	7.56E-04
3.81E-04	8.93E-03	1.39E-03	3.56E-05	7.94E-05	1.91E-04	2.44E-04	5.14E-04	1.98E-05	6.69E-05	2.33E-04	3.20E-04	3.77E+00	1.77E-05	5.93E-04
3.34E-05	9.43E-04	1.67E-02	0.00E+00	7.94E-05	1.80E-04	3.69E-06	2.63E-04	1.98E-05	6.30E-05	3.40E-06	8.62E-05	2.81E+00	2.34E-03	5.74E-04
4.55E-04	1.18E-02	1.69E-03	3.53E-05	7.94E-05	1.96E-04	2.88E-04	5.64E-04	1.98E-05	6.87E-05	2.76E-04	3.64E-04	3.74E+00	2.11E-05	5.88E-04
3.34E-05	9.39E-04	1.67E-02	0.00E+00	7.94E-05	1.82E-04	3.70E-06	2.65E-04	1.98E-05	6.36E-05	3.40E-06	8.68E-05	2.90E+00	2.34E-03	5.92E-04
5.23E-04	1.20E-02	1.97E-03	3.55E-05	7.94E-05	1.98E-04	3.44E-04	6.21E-04	1.98E-05	6.92E-05	3.29E-04	4.18E-04	3.75E+00	2.43E-05	5.91E-04
3.34E-05	9.39E-04	1.67E-02	0.00E+00	7.94E-05	1.83E-04	3.69E-06	2.66E-04	1.98E-05	6.40E-05	3.40E-06	8.72E-05	2.88E+00	2.34E-03	5.88E-04
6.73E-05	1.94E-02	1.82E-04	8.60E-05	7.94E-05	4.63E-04	3.00E-05	5.72E-04	1.98E-05	1.62E-04	2.87E-05	2.11E-04	9.09E+00	3.13E-06	1.43E-03
2.87E-04	5.83E-03	5.52E-02	0.00E+00	7.94E-05	4.63E-04	6.05E-06	5.48E-04	1.98E-05	1.62E-04	5.56E-06	1.87E-04	3.80E+00	1.21E-02	7.74E-04
3.28E-04	1.08E-02	1.19E-03	3.33E-05	7.94E-05	1.88E-04	1.92E-04	4.59E-04	1.98E-05	6.59E-05	1.83E-04	2.69E-04	3.52E+00	1.52E-05	5.54E-04
3.14E-05	1.24E-03	2.15E-02	0.00E+00	7.94E-05	1.73E-04	2.74E-06	2.55E-04	1.98E-05	6.05E-05	2.51E-06	8.29E-05	2.69E+00	2.19E-03	5.49E-04
9.04E-05	5.43E-03	4.37E-04	3.71E-05	7.94E-05	2.17E-04	2.51E-05	3.21E-04	1.98E-05	7.59E-05	2.40E-05	1.20E-04	3.92E+00	4.20E-06	6.17E-04
2.04E-02	5.92E-02	5.76E-01	6.44E-05	4.41E-05	2.60E-04	4.01E-05	3.45E-04	1.10E-05	9.11E-05	3.77E-05	1.40E-04	6.51E+00	2.44E-03	1.27E-03
2.27E-05	2.13E-04	9.00E-04	3.03E-05	2.21E-05	2.22E-04	2.70E-06	2.46E-04	5.52E-06	7.76E-05	2.48E-06	8.56E-05	3.06E+00	7.14E-06	2.27E-05
2.47E-04	4.48E-03	3.38E-04	2.93E-05	6.82E-05	2.43E-04	1.62E-05	3.27E-04	1.71E-05	8.49E-05	1.55E-05	1.17E-04	3.10E+00	1.15E-05	4.88E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.07E-05	1.21E-04	0.00E+00	1.72E-04	1.27E-05	4.24E-05	0.00E+00	5.51E-05	0.00E+00	0.00E+00	0.00E+00

MTens/Mile															
ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	
7.83E-07	7.62E-06	1.90E-06	1.20E-08	1.20E-08	4.61E-08	2.88E-07	3.47E-07	3.00E-09	1.61E-08	2.76E-07	2.95E-07	1.27E-03	3.64E-08	2.00E-07	
1.04E-08	3.00E-07	3.09E-06	0.00E+00	1.20E-08	4.61E-08	5.82E-10	5.87E-08	3.00E-09	1.61E-08	5.35E-10	1.97E-08	1.09E-03	7.29E-07	2.21E-07	
1.72E-08	7.85E-08	1.03E-06	2.97E-09	8.00E-09	7.26E-09	1.46E-09	1.67E-08	2.00E-09	2.54E-09	1.35E-09	5.89E-09	3.00E-04	4.07E-09	6.89E-09	
3.32E-08	3.24E-07	3.63E-07	2.30E-09	8.00E-09	7.27E-09	2.12E-08	3.65E-08	2.00E-09	2.55E-09	2.03E-08	2.48E-08	2.43E-04	1.54E-09	3.83E-08	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.36E-09	0.00E+00	1.24E-08	2.00E-09	1.53E-09	0.00E+00	3.53E-09	0.00E+00	0.00E+00	0.00E+00	
1.46E-09	3.46E-09	2.26E-07	1.46E-09	8.00E-09	3.79E-09	9.14E-10	1.27E-08	2.00E-09	1.33E-09	8.41E-10	4.17E-09	1.47E-04	4.66E-10	6.39E-10	
4.77E-08	2.14E-07	2.09E-06	3.48E-09	8.00E-09	8.74E-09	2.45E-09	1.92E-08	2.00E-09	3.06E-09	2.25E-09	7.31E-09	3.51E-04	1.03E-08	1.43E-08	
3.08E-07	1.59E-06	1.93E-06	3.96E-09	8.00E-09	1.01E-08	2.32E-07	2.50E-07	2.00E-09	3.54E-09	2.22E-07	2.27E-07	4.18E-04	1.43E-08	6.58E-08	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.39E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00	
1.47E-09	3.47E-09	2.27E-07	1.46E-09	8.00E-09	3.78E-09	1.07E-09	1.28E-08	2.00E-09	1.32E-09	9.80E-10	4.30E-09	1.48E-04	4.71E-10	6.50E-10	
1.89E-08	1.24E-07	1.16E-06	3.75E-09	8.00E-09	8.45E-09	1.51E-09	1.80E-08	2.00E-09	2.96E-09	1.39E-09	6.35E-09	3.79E-04	4.47E-09	8.97E-09	
1.54E-08	7.50E-08	1.34E-07	3.19E-09	8.00E-09	8.19E-09	7.25E-09	2.34E-08	2.00E-09	2.86E-09	6.94E-09	1.18E-08	3.37E-04	7.17E-10	5.31E-08	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.35E-09	0.00E+00	1.24E-08	2.00E-09	1.52E-09	0.00E+00	3.52E-09	0.00E+00	0.00E+00	0.00E+00	
1.44E-09	3.41E-09	2.23E-07	1.44E-09	8.00E-09	3.79E-09	1.04E-09	1.28E-08	2.00E-09	1.33E-09	9.52E-10	4.28E-09	1.45E-04	4.64E-10	6.42E-10	
6.84E-08	2.99E-07	1.53E-06	9.47E-09	8.00E-09	7.80E-08	2.05E-09	8.80E-08	2.00E-09	2.73E-08	1.89E-09	3.12E-08	9.57E-04	1.34E-08	1.66E-08	
2.47E-07	2.84E-06	7.32E-07	6.12E-09	1.20E-08	7.80E-08	5.63E-08	1.46E-07	3.00E-09	2.73E-08	5.38E-08	8.41E-08	6.46E-04	1.15E-08	1.02E-07	
6.01E-08	2.88E-07	1.39E-06	1.06E-08	8.00E-09	9.10E-08	1.87E-09	1.01E-07	2.00E-09	3.19E-08	1.72E-09	3.56E-08	1.07E-03	1.22E-08	1.62E-08	
2.12E-07	2.04E-06	5.71E-07	7.52E-09	1.20E-08	9.10E-08	4.74E-08	1.50E-07	3.00E-09	3.19E-08	4.54E-08	8.02E-08	7.94E-04	9.83E-09	1.25E-07	
1.45E-06	7.10E-07	1.68E-05	1.92E-09	4.00E-09	1.20E-08	1.91E-09	1.79E-08	1.00E-09	4.20E-09	1.80E-09	7.00E-09	1.94E-04	2.07E-07	4.55E-08	
3.58E-08	2.10E-07	1.59E-06	4.55E-09	8.00E-09	8.71E-09	1.65E-09	1.84E-08	2.00E-09	3.05E-09	1.52E-09	6.57E-09	4.59E-04	7.54E-09	1.33E-08	
1.34E-08	9.24E-08	2.00E-07	4.12E-09	8.00E-09	8.20E-09	7.06E-09	2.33E-08	2.00E-09	2.87E-09	6.75E-09	1.16E-08	4.35E-04	6.23E-10	6.85E-08	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.43E-09	0.00E+00	1.24E-08	2.00E-09	1.55E-09	0.00E+00	3.55E-09	0.00E+00	0.00E+00	0.00E+00	
1.46E-09	3.46E-09	2.27E-07	1.46E-09	8.00E-09	3.78E-09	1.07E-09	1.28E-08	2.00E-09	1.32E-09	9.82E-10	4.31E-09	1.48E-04	4.70E-10	6.48E-10	
1.23E-07	5.78E-07	3.28E-06	1.93E-08	1.20E-08	4.50E-08	2.15E-09	5.92E-08	3.00E-09	1.58E-08	1.98E-09	2.07E-08	1.95E-03	2.43E-08	3.24E-08	
1.31E-07	4.90E-06	4.52E-07	1.02E-08	1.60E-08	4.48E-08	1.31E-07	1.91E-07	4.00E-09	1.57E-08	1.25E-07	1.45E-07	1.08E-03	6.10E-09	1.70E-07	
1.77E-07	4.33E-06	6.23E-07	1.66E-08	1.20E-08	7.91E-08	1.08E-07	1.99E-07	3.00E-09	2.77E-08	1.03E-07	1.34E-07	1.76E-03	8.24E-09	2.77E-07	
1.20E-07	8.70E-07	2.76E-06	1.84E-08	1.20E-08	4.48E-08	7.69E-10	5.76E-08	3.00E-09	1.57E-08	7.07E-10	1.94E-08	1.85E-03	2.47E-08	3.94E-08	
4.50E-07	7.06E-06	1.68E-06	2.08E-08	0.00E+00	0.00E+00	1.75E-07	1.75E-07	0.00E+00	0.00E+00	1.68E-07	1.68E-07	2.20E-03	2.09E-08	3.46E-07	
4.71E-07	8.54E-07	1.05E-05	8.23E-09	8.00E-09	4.49E-08	3.40E-09	5.63E-08	2.00E-09	1.57E-08	3.16E-09	2.09E-08	8.31E-04	7.41E-08	3.99E-08	
5.31E-08	3.64E-06	1.64E-07	1.08E-08	1.20E-08	4.49E-08	2.02E-08	7.72E-08	3.00E-09	1.57E-08	1.94E-08	3.81E-08	1.14E-03	2.47E-09	1.80E-07	
5.20E-08	6.41E-07	1.26E-05	0.00E+00	1.20E-08	4.49E-08	3.67E-09	6.06E-08	3.00E-09	1.57E-08	3.38E-09	2.21E-08	1.31E-03	3.64E-06	2.66E-07	
8.78E-08	2.18E-06	3.12E-07	1.08E-08	1.20E-08	4.23E-08	7.44E-08	1.29E-07	3.00E-09	1.48E-08	7.12E-08	8.90E-08	1.14E-03	4.08E-09	1.79E-07	
5.99E-08	1.64E-06	2.28E-07	1.07E-08	1.20E-08	4.23E-08	5.44E-08	1.09E-07	3.00E-09	1.48E-08	5.21E-08	6.99E-08	1.13E-03	2.78E-09	1.78E-07	
8.56E-08	2.14E-06	3.18E-07	1.06E-08	1.20E-08	4.23E-08	7.67E-08	1.31E-07	3.00E-09	1.48E-08	7.34E-08	9.12E-08	1.12E-03	3.97E-09	1.76E-07	
8.48E-08	2.28E-06	2.89E-07	9.99E-09	1.20E-08	4.23E-08	6.94E-08	1.24E-07	3.00E-09	1.48E-08	6.64E-08	8.42E-08	1.06E-03	3.94E-09	1.66E-07	
5.67E-07	7.12E-06	1.49E-06	1.19E-08	1.20E-08	4.76E-08	2.29E-07	2.89E-07	3.00E-09	1.66E-08	2.20E-07	2.39E-07	1.26E-03	2.63E-08	1.98E-07	
1.04E-08	2.97E-07	3.25E-06	0.00E+00	1.20E-08	4.76E-08	6.54E-10	6.02E-08	3.00E-09	1.66E-08	6.02E-10	2.02E-08	1.11E-03	7.28E-07	2.27E-07	
2.80E-07	3.98E-06	7.42E-07	1.17E-08	1.20E-08	4.76E-08	1.08E-07	1.68E-07	3.00E-09	1.66E-08	1.03E-07	1.23E-07	1.24E-03	1.30E-08	1.95E-07	
1.04E-08	3.00E-07	3.25E-06	0.00E+00	1.20E-08	4.76E-08	6.39E-10	6.02E-08	3.00E-09	1.66E-08	5.87E-10	2.02E-08	1.11E-03	7.27E-07	2.27E-07	
4.35E-07	5.63E-06	1.14E-06	1.17E-08	1.20E-08	4.76E-08	1.78E-07	2.37E-07	3.00E-09	1.66E-08	1.70E-07	1.90E-07	1.24E-03	2.02E-08	1.95E-07	
1.04E-08	2.98E-07	3.25E-06	0.00E+00	1.20E-08	4.76E-08	6.48E-10	6.02E-08	3.00E-09	1.66E-08	5.96E-10	2.02E-08	1.11E-03	7.28E-07	2.26E-07	
4.82E-07	6.94E-06	1.26E-06	1.18E-08	1.20E-08	4.76E-08	2.19E-07	2.79E-07	3.00E-09	1.66E-08	2.10E-07	2.29E-07	1.25E-03	2.24E-08	1.96E-07	
1.05E-08	2.84E-07	3.28E-06	0.00E+00	1.20E-08	4.76E-08	7.30E-10	6.03E-08	3.00E-09	1.66E-08	6.71E-10	2.03E-08	1.09E-03	7.36E-07	2.22E-07	
5.02E-07	7.70E-06	1.41E-06	1.12E-08	1.20E-08	4.49E-08	2.58E-07	3.14E-07	3.00E-09	1.57E-08	2.46E-07	2.65E-07	1.19E-03	2.33E-08	1.87E-07	
7.97E-09	2.28E-07	2.83E-06	0.00E+00	1.20E-08	4.49E-08	5.11E-10	5.74E-08	3.00E-09	1.57E-08	4.69E-10	1.92E-08	9.65E-04	5.58E-07	1.97E-07	
1.68E-07	2.84E-06	5.08E-07	1.10E-08	1.20E-08	4.49E-08	8.85E-08	1.45E-07	3.00E-09	1.57E-08	8.47E-08	1.03E-07	1.16E-03	7.81E-09	1.83E-07	
7.93E-09	2.31E-07	2.83E-06	0.00E+00	1.20E-08	4.49E-08	4.93E-10	5.74E-08	3.00E-09	1.57E-08	4.54E-10	1.92E-08	9.64E-04	5.55E-07	1.96E-07	
2.94E-07	4.68E-06	8.53E-07	1.10E-08	1.20E-08	4.49E-08	1.53E-07	2.09E-07	3.00E-09	1.57E-08	1.46E-07	1.65E-07	1.16E-03	1.36E-08	1.82E-07	
8.01E-09	2.24E-07	2.83E-06	0.00E+00	1.20E-08	4.49E-08	5.35E-10	5.74E-08	3.00E-09	1.57E-08	4.92E-10	1.92E-08	9.66E-04	5.61E-07	1.97E-07	
2.51E-07	4.35E-06	6.99E-07	1.10E-08	1.20E-08	4.49E-08	1.34E-07	1.91E-07	3.00E-09	1.57E-08	1.28E-07	1.47E-07	1.16E-03	1.17E-08	1.83E-07	
8.72E-09	1.64E-07	2.80E-06	0.00E+00	1.20E-08	4.49E-08	9.07E-10	5.78E-08	3.00E-09	1.57E-08	8.34E-10	1.95E-08	9.36E-04	6.10E-07	1.91E-07	
5.67E-07	7.27E-06	1.58E-06	1.14E-08	1.20E-08	4.49E-08	3.33E-07	3.90E-07	3.00E-09	1.57E-08	3.19E-07	3.37E-07	1.21E-03	2.63E-08	1.90E-07	
1.65E-07	4.27E-06	4.58E-07	1.07E-08	1.20E-08	4.49E-08	6.85E-08	1.25E-07	3.00E-09	1.57E-08	6.56E-08	8.43E-08	1.13E-03	7.68E-09	1.78E-07	
8.54E-09	1.80E-07	2.81E-06	0.00E+00	1.20E-08	4.49E-08	8.12E-10	5.77E-08	3.00E-09	1.57E-08	7.47E-10	1.94E-08	9.36E-04	5.97E-07	1.91E-07	
8.78E-08	2.18E-06	3.12E-07	1.08E-08	1.20E-08	4.23E-08	7.44E-08	1.29E-07	3.00E-09	1.48E-08	7.12E-08	8.90E-08	1.14E-03	4.08E-09	1.79E-07	
5.99E-08	1.64E-06	2.28E-07	1.07E-08	1.20E-08	4.23E-08	5.44E-08	1.09E-07	3.00E-09	1.48E-08	5.21E-08	6.99E-08	1.13E-03	2.78E-09	1.78E-07	
8.56E-08	2.14E-06	3.18E-07	1.06E-08	1.20E-08	4.23E-08	7.67E-08	1.31E-07	3.00E-09	1.48E-08	7.34E-08	9.12E-08	1.12E-03	3.97E-09	1.76E-07	
9.39E-08	2.39E-06	3.19E-07	9.98E-09	1.20E-08	4.23E-08	7.66E-08	1.31E-07	3.00E-09	1.48E-08	7.33E-08	9.11E-08	1.05E-03	4.36E-09	1.66E-07	
1.16E-07	8.19E-06	2.70E-07	1.22E-08	1.20E-08	4.62E-08	4.12E-08	9.94E-08	3.00E-09	1.62E-08	3.94E-08	5.86E-08	1.29E-03	5.37E-09	2.03E-07	
1.10E-08	3.17E-07	3.03E-06	0.00E+00	1.20E-08	4.62E-08	5.68E-10	5.87E-08	3.00E-09	1.62E-08	5.23E-10	1.97E-08	1.07E-03	7.72E-07	2.18E-07	
6.54E-08	3.59E-06	1.77E-07	1.18E-08	1.20E-08	4.62E-08	1.78E-08	7.59E-08	3.00E-09	1.62E-08	1.70E-08	3.62E-08	1.25E-03	3.04E-09	1.96E-07	

1.22E-08	1.31E-07	3.08E-06	0.00E+00	1.20E-08	4.62E-08	1.45E-09	5.96E-08	3.00E-09	1.62E-08	1.33E-09	2.05E-08	1.06E-03	8.52E-07	2.16E-07
1.18E-07	7.79E-06	2.64E-07	1.22E-08	1.20E-08	4.62E-08	5.19E-08	1.10E-07	3.00E-09	1.62E-08	4.97E-08	6.88E-08	1.29E-03	5.50E-09	2.03E-07
1.19E-08	1.76E-07	3.09E-06	0.00E+00	1.20E-08	4.62E-08	1.24E-09	5.94E-08	3.00E-09	1.62E-08	1.14E-09	2.03E-08	1.05E-03	8.33E-07	2.13E-07
1.48E-07	9.61E-06	3.12E-07	1.24E-08	1.20E-08	4.62E-08	6.92E-08	1.27E-07	3.00E-09	1.62E-08	6.62E-08	8.54E-08	1.31E-03	6.86E-09	2.07E-07
1.19E-08	1.81E-07	3.10E-06	0.00E+00	1.20E-08	4.62E-08	1.21E-09	5.94E-08	3.00E-09	1.62E-08	1.11E-09	2.03E-08	1.04E-03	8.31E-07	2.12E-07
2.45E-08	1.27E-06	9.54E-08	1.08E-08	1.20E-08	4.55E-08	6.14E-09	6.36E-08	3.00E-09	1.59E-08	5.88E-09	2.48E-08	1.14E-03	1.14E-09	1.79E-07
9.34E-09	2.70E-07	2.89E-06	0.00E+00	1.20E-08	4.55E-08	5.18E-10	5.80E-08	3.00E-09	1.59E-08	4.76E-10	1.94E-08	1.01E-03	6.54E-07	2.06E-07
3.71E-08	2.08E-06	1.24E-07	1.10E-08	1.20E-08	4.55E-08	1.08E-08	6.83E-08	3.00E-09	1.59E-08	1.03E-08	2.92E-08	1.17E-03	1.72E-09	1.83E-07
9.34E-09	2.70E-07	2.89E-06	0.00E+00	1.20E-08	4.55E-08	5.18E-10	5.80E-08	3.00E-09	1.59E-08	4.76E-10	1.94E-08	9.95E-04	6.54E-07	2.03E-07
2.80E-08	1.92E-06	1.00E-07	1.10E-08	1.20E-08	4.55E-08	1.03E-08	6.78E-08	3.00E-09	1.59E-08	9.87E-09	2.88E-08	1.17E-03	1.30E-09	1.83E-07
9.34E-09	2.70E-07	2.89E-06	0.00E+00	1.20E-08	4.55E-08	5.18E-10	5.80E-08	3.00E-09	1.59E-08	4.76E-10	1.94E-08	1.00E-03	6.54E-07	2.04E-07
2.58E-07	1.33E-06	5.81E-06	1.88E-08	1.20E-08	4.50E-08	2.08E-09	5.91E-08	3.00E-09	1.58E-08	1.92E-09	2.07E-08	1.90E-03	4.74E-08	5.56E-08
8.81E-08	3.58E-06	3.24E-07	1.51E-08	3.60E-08	7.73E-08	6.62E-08	1.80E-07	9.00E-09	2.71E-08	6.33E-08	9.94E-08	1.60E-03	4.09E-09	2.52E-07
1.32E-08	2.62E-07	4.60E-06	0.00E+00	3.60E-08	7.41E-08	1.74E-09	1.12E-07	9.00E-09	2.59E-08	1.60E-09	3.65E-08	1.18E-03	9.23E-07	2.41E-07
1.45E-07	3.84E-06	5.72E-07	1.52E-08	3.60E-08	7.82E-08	1.09E-07	2.24E-07	9.00E-09	2.74E-08	1.05E-07	1.41E-07	1.61E-03	6.74E-09	2.54E-07
1.03E-07	3.74E-06	3.75E-07	1.51E-08	3.60E-08	7.75E-08	7.38E-08	1.87E-07	9.00E-09	2.71E-08	7.06E-08	1.07E-07	1.60E-03	4.78E-09	2.52E-07
1.19E-07	4.46E-06	3.80E-07	1.63E-08	3.60E-08	9.40E-08	3.11E-08	1.61E-07	9.00E-09	3.29E-08	2.98E-08	7.17E-08	1.72E-03	5.53E-09	2.71E-07
1.47E-07	4.97E-06	4.69E-07	1.63E-08	3.60E-08	9.60E-08	4.14E-08	1.73E-07	9.00E-09	3.36E-08	3.96E-08	8.22E-08	1.73E-03	6.85E-09	2.72E-07
1.70E-08	7.05E-07	1.10E-05	0.00E+00	3.60E-08	8.52E-08	1.36E-09	1.23E-07	9.00E-09	2.98E-08	1.25E-09	4.01E-08	1.49E-03	1.19E-06	3.04E-07
1.73E-07	1.27E-05	5.50E-07	1.87E-08	3.60E-08	1.21E-07	8.30E-08	2.40E-07	9.00E-09	4.24E-08	7.94E-08	1.31E-07	1.98E-03	8.01E-09	3.12E-07
2.61E-08	7.55E-07	1.07E-05	0.00E+00	3.60E-08	1.07E-07	2.46E-09	1.45E-07	9.00E-09	3.75E-08	2.26E-09	4.87E-08	1.68E-03	1.83E-06	3.43E-07
1.73E-07	4.05E-06	6.29E-07	1.62E-08	3.60E-08	8.68E-08	1.11E-07	2.33E-07	9.00E-09	3.04E-08	1.06E-07	1.45E-07	1.71E-03	8.02E-09	2.69E-07
1.51E-08	4.28E-07	7.58E-06	0.00E+00	3.60E-08	8.16E-08	1.68E-09	1.19E-07	9.00E-09	2.86E-08	1.54E-09	3.91E-08	1.28E-03	1.06E-06	2.60E-07
2.06E-07	5.33E-06	7.69E-07	1.60E-08	3.60E-08	8.91E-08	1.31E-07	2.56E-07	9.00E-09	3.12E-08	1.25E-07	1.65E-07	1.69E-03	9.58E-09	2.67E-07
1.51E-08	4.26E-07	7.57E-06	0.00E+00	3.60E-08	8.24E-08	1.68E-09	1.20E-07	9.00E-09	2.88E-08	1.54E-09	3.94E-08	1.32E-03	1.06E-06	2.68E-07
2.37E-07	5.43E-06	8.92E-07	1.61E-08	3.60E-08	8.97E-08	1.56E-07	2.82E-07	9.00E-09	3.14E-08	1.49E-07	1.90E-07	1.70E-03	1.10E-08	2.68E-07
1.51E-08	4.26E-07	7.59E-06	0.00E+00	3.60E-08	8.29E-08	1.68E-09	1.21E-07	9.00E-09	2.90E-08	1.54E-09	3.96E-08	1.31E-03	1.06E-06	2.67E-07
3.05E-08	8.80E-06	8.25E-08	3.90E-08	3.60E-08	2.10E-07	1.36E-08	2.60E-07	9.00E-09	7.35E-08	1.30E-08	9.55E-08	4.12E-03	1.42E-09	6.49E-07
1.30E-07	2.64E-06	2.50E-05	0.00E+00	3.60E-08	2.10E-07	2.74E-09	2.49E-07	9.00E-09	7.35E-08	2.52E-09	8.50E-08	1.72E-03	5.48E-06	3.51E-07
1.49E-07	4.88E-06	5.39E-07	1.51E-08	3.60E-08	8.54E-08	8.69E-08	2.08E-07	9.00E-09	2.99E-08	8.32E-08	1.22E-07	1.60E-03	6.91E-09	2.51E-07
1.42E-08	5.64E-07	9.76E-06	0.00E+00	3.60E-08	7.85E-08	1.24E-09	1.16E-07	9.00E-09	2.75E-08	1.14E-09	3.76E-08	1.22E-03	9.96E-07	2.49E-07
4.10E-08	2.46E-06	1.98E-07	1.68E-08	3.60E-08	9.84E-08	1.14E-08	1.46E-07	9.00E-09	3.44E-08	1.09E-08	5.43E-08	1.78E-03	1.90E-09	2.80E-07
9.28E-06	2.69E-05	2.61E-04	2.92E-08	2.00E-08	1.18E-07	1.82E-08	1.56E-07	5.00E-09	4.13E-08	1.71E-08	6.34E-08	2.95E-03	1.10E-06	5.76E-07
1.03E-08	9.66E-08	4.08E-07	1.37E-08	1.00E-08	1.01E-07	1.22E-09	1.12E-07	2.50E-09	3.52E-08	1.12E-09	3.88E-08	1.39E-03	3.24E-09	1.03E-08
1.12E-07	2.03E-06	1.53E-07	1.33E-08	3.09E-08	1.10E-07	7.36E-09	1.48E-07	7.73E-09	3.85E-08	7.04E-09	5.33E-08	1.41E-03	5.20E-09	2.21E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-08	5.50E-08	0.00E+00	7.80E-08	5.75E-09	1.93E-08	0.00E+00	2.50E-08	0.00E+00	0.00E+00	0.00E+00

Existing in Year 2045: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.2) Emission Rates, Contra Costa County, Average Speed, Average Fleet

Source: F&P 2023	Small Trucks	Medium Trucks	Heavy Trucks	Passenger Vehicles
Truck Trip Percentage	1.2%	0.1%	0.4%	98.3%
EMFAC Default	3.44%	1.10%	2.99%	92.47%

Daily VMT	**3,530,197**			**lbs/day**					
Vehicle Type	**Fuel Type**	**Percent of VMT**	**Adjusted Percent of VMT**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
All Other Buses	Diesel	0.02%	0.00%	0.01	0.22	0.04	0.00	0.01	0.01
All Other Buses	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
LDA	Gasoline	42.85%	45.57%	9.92	69.74	1,629.40	7.80	56.48	17.93
LDA	Diesel	0.03%	0.03%	0.01	0.04	0.28	0.00	0.04	0.01
LDA	Electricity	6.20%	6.59%	0.00	0.00	0.00	0.00	6.36	1.81
LDA	Plug-in Hybrid	2.05%	2.18%	0.19	0.45	29.29	0.19	2.07	0.61
LDT1	Gasoline	2.66%	2.83%	0.69	4.75	108.32	0.56	3.83	1.23
LDT1	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	Electricity	0.08%	0.09%	0.00	0.00	0.00	0.00	0.09	0.02
LDT1	Plug-in Hybrid	0.06%	0.07%	0.01	0.01	0.91	0.01	0.06	0.02
LDT2	Gasoline	22.89%	24.34%	7.45	43.58	1,026.34	5.02	32.72	10.49
LDT2	Diesel	0.09%	0.09%	0.08	0.20	0.89	0.02	0.15	0.07
LDT2	Electricity	0.64%	0.68%	0.00	0.00	0.00	0.00	0.66	0.19
LDT2	Plug-in Hybrid	0.62%	0.66%	0.06	0.14	8.93	0.06	0.63	0.19
LHD1	Gasoline	0.93%	0.32%	0.11	0.55	14.75	0.19	2.17	0.76
LHD1	Diesel	0.61%	0.21%	1.48	4.90	3.83	0.09	1.78	0.80
LHD1	Electricity	1.21%	0.41%	0.00	0.00	0.00	0.00	1.51	0.50
LHD2	Gasoline	0.11%	0.04%	0.01	0.06	1.69	0.02	0.28	0.10
LHD2	Diesel	0.29%	0.10%	0.86	3.28	2.27	0.05	0.97	0.45
LHD2	Electricity	0.29%	0.31%	0.00	0.00	0.00	0.00	1.29	0.43
MCY	Gasoline	0.33%	0.35%	21.28	12.86	267.92	0.05	0.49	0.20
MDV	Gasoline	12.87%	13.68%	4.80	28.74	610.63	3.44	18.57	5.97
MDV	Diesel	0.14%	0.15%	0.05	0.14	1.60	0.04	0.21	0.07
MDV	Electricity	0.58%	0.62%	0.00	0.00	0.00	0.00	0.60	0.17
MDV	Plug-in Hybrid	0.38%	0.41%	0.04	0.08	5.46	0.04	0.39	0.11
MH	Gasoline	0.04%	0.00%	0.00	0.07	0.06	0.01	0.02	0.01
MH	Diesel	0.02%	0.00%	0.02	0.56	0.06	0.00	0.02	0.01
Motor Coach	Diesel	0.01%	0.00%	0.00	0.12	0.00	0.00	0.02	0.01
OBUS	Gasoline	0.01%	0.00%	0.00	0.04	0.07	0.00	0.01	0.00
OBUS	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
PTO	Diesel	0.03%	0.00%	0.00	0.77	0.05	0.00	0.00	0.00
PTO	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
SBUS	Gasoline	0.02%	0.00%	0.00	0.02	0.03	0.00	0.01	0.00
SBUS	Diesel	0.02%	0.00%	0.00	0.08	0.01	0.00	0.01	0.00
SBUS	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
SBUS	Natural Gas	0.00%	0.00%	0.00	0.00	0.09	0.00	0.00	0.00
T6 CAIRP Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Diesel	0.01%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 4	Diesel	0.02%	0.00%	0.00	0.04	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 4	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 5	Diesel	0.01%	0.00%	0.00	0.04	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 5	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 6	Diesel	0.03%	0.00%	0.00	0.08	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 6	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Delivery Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 7	Diesel	0.01%	0.00%	0.00	0.04	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00

T6 Instate Other Class 4	Diesel	0.05%	0.00%	0.00	0.09	0.01	0.00	0.02	0.01
T6 Instate Other Class 4	Electricity	0.06%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Other Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Other Class 5	Diesel	0.12%	0.01%	0.00	0.21	0.03	0.01	0.05	0.02
T6 Instate Other Class 5	Electricity	0.13%	0.01%	0.00	0.00	0.00	0.00	0.03	0.01
T6 Instate Other Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Instate Other Class 6	Diesel	0.09%	0.01%	0.00	0.16	0.03	0.01	0.04	0.01
T6 Instate Other Class 6	Electricity	0.10%	0.01%	0.00	0.00	0.00	0.00	0.02	0.01
T6 Instate Other Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Instate Other Class 7	Diesel	0.07%	0.01%	0.00	0.22	0.02	0.00	0.03	0.01
T6 Instate Other Class 7	Electricity	0.05%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Instate Tractor Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Diesel	0.01%	0.00%	0.00	0.04	0.00	0.00	0.01	0.00
T6 Instate Tractor Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 OOS Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 7	Diesel	0.01%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 Public Class 4	Diesel	0.01%	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6 Public Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 5	Diesel	0.01%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Public Class 5	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 6	Diesel	0.01%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Public Class 6	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 7	Diesel	0.02%	0.00%	0.00	0.06	0.01	0.00	0.01	0.00
T6 Public Class 7	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Utility Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 5	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6TS	Gasoline	0.08%	0.01%	0.01	0.04	0.10	0.01	0.03	0.01
T6TS	Electricity	0.09%	0.01%	0.00	0.00	0.00	0.00	0.02	0.01
T7 CAIRP Class 8	Diesel	0.43%	0.06%	0.05	5.42	0.17	0.05	0.66	0.30
T7 CAIRP Class 8	Electricity	0.12%	0.02%	0.00	0.00	0.00	0.00	0.10	0.03
T7 CAIRP Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T7 NNOOS Class 8	Diesel	0.66%	0.09%	0.08	9.12	0.26	0.08	1.01	0.45
T7 NOOS Class 8	Diesel	0.24%	0.03%	0.03	3.41	0.10	0.03	0.37	0.17
T7 Other Port Class 8	Diesel	0.05%	0.01%	0.00	0.58	0.03	0.01	0.07	0.03
T7 Other Port Class 8	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T7 POAK Class 8	Diesel	0.16%	0.02%	0.02	2.09	0.11	0.02	0.24	0.10
T7 POAK Class 8	Electricity	0.04%	0.00%	0.00	0.00	0.00	0.00	0.03	0.01
T7 POAK Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T7 Public Class 8	Diesel	0.04%	0.01%	0.01	0.92	0.07	0.01	0.07	0.03
T7 Public Class 8	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.03	0.01
T7 Public Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T7 Single Concrete/Transit Mix Class 8	Diesel	0.01%	0.00%	0.00	0.07	0.00	0.00	0.01	0.00
T7 Single Concrete/Transit Mix Class 8	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T7 Single Dump Class 8	Diesel	0.06%	0.01%	0.01	0.66	0.03	0.01	0.08	0.03
T7 Single Dump Class 8	Electricity	0.05%	0.01%	0.00	0.00	0.00	0.00	0.04	0.01
T7 Single Dump Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.17	0.00	0.00	0.00
T7 Single Other Class 8	Diesel	0.07%	0.01%	0.01	0.75	0.04	0.01	0.10	0.04
T7 Single Other Class 8	Electricity	0.07%	0.01%	0.00	0.00	0.00	0.00	0.06	0.02
T7 Single Other Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.19	0.00	0.01	0.00

T7 SWCV Class 8	Diesel	0.01%	0.00%	0.00	0.34	0.01	0.00	0.02	0.01
T7 SWCV Class 8	Electricity	0.04%	0.00%	0.00	0.00	0.00	0.00	0.05	0.02
T7 SWCV Class 8	Natural Gas	0.05%	0.01%	0.01	0.18	5.54	0.00	0.12	0.04
T7 Tractor Class 8	Diesel	0.40%	0.05%	0.04	4.92	0.20	0.05	0.59	0.25
T7 Tractor Class 8	Electricity	0.08%	0.01%	0.00	0.00	0.00	0.00	0.07	0.02
T7 Tractor Class 8	Natural Gas	0.03%	0.00%	0.01	0.07	1.43	0.00	0.04	0.01
T7 Utility Class 8	Diesel	0.00%	0.00%	0.00	0.05	0.00	0.00	0.01	0.00
T7 Utility Class 8	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T7IS	Gasoline	0.00%	0.00%	0.00	0.01	0.08	0.00	0.00	0.00
T7IS	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	Gasoline	0.01%	0.00%	0.00	0.00	0.05	0.00	0.01	0.00
UBUS	Electricity	0.09%	0.01%	0.00	0.00	0.00	0.00	0.08	0.02
		100%	100%	47	201	3,722	18	136	44

Year 2045: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.2) Emission Rates, Contra Costa County, Average Speed, Average Fleet

Source: F&P 2023	Small Trucks	Medium Trucks	Heavy Trucks	Passenger Vehicles
Truck Trip Percentage	1.3%	0.1%	0.4%	98.2%
EMFAC Default	3.44%	1.10%	2.99%	92.47%

Daily VMT	**4,272,206**			**lbs/day**					
Vehicle Type	**Fuel Type**	**Percent of VMT**	**Adjusted Percent of VMT**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
All Other Buses	Diesel	0.02%	0.00%	0.01	0.28	0.05	0.00	0.02	0.01
All Other Buses	Natural Gas	0.00%	0.00%	0.00	0.00	0.12	0.00	0.00	0.00
LDA	Gasoline	42.85%	45.51%	11.99	84.29	1,969.41	9.43	68.27	21.67
LDA	Diesel	0.03%	0.03%	0.01	0.05	0.34	0.00	0.04	0.02
LDA	Electricity	6.20%	6.58%	0.00	0.00	0.00	0.00	7.68	2.19
LDA	Plug-in Hybrid	2.05%	2.17%	0.23	0.54	35.40	0.23	2.50	0.73
LDT1	Gasoline	2.66%	2.83%	0.83	5.75	130.92	0.68	4.63	1.49
LDT1	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	Electricity	0.08%	0.09%	0.00	0.00	0.00	0.00	0.10	0.03
LDT1	Plug-in Hybrid	0.06%	0.07%	0.01	0.02	1.10	0.01	0.08	0.02
LDT2	Gasoline	22.89%	24.31%	9.00	52.67	1,240.50	6.07	39.54	12.68
LDT2	Diesel	0.09%	0.09%	0.10	0.24	1.07	0.02	0.18	0.08
LDT2	Electricity	0.64%	0.68%	0.00	0.00	0.00	0.00	0.79	0.23
LDT2	Plug-in Hybrid	0.62%	0.66%	0.07	0.16	10.79	0.07	0.76	0.22
LHD1	Gasoline	0.93%	0.34%	0.14	0.71	19.13	0.24	2.81	0.98
LHD1	Diesel	0.61%	0.22%	1.92	6.35	4.96	0.12	2.30	1.03
LHD1	Electricity	1.21%	0.44%	0.00	0.00	0.00	0.00	1.96	0.65
LHD2	Gasoline	0.11%	0.04%	0.01	0.08	2.20	0.03	0.37	0.13
LHD2	Diesel	0.29%	0.10%	1.12	4.25	2.94	0.07	1.26	0.58
LHD2	Electricity	0.29%	0.11%	0.00	0.00	0.00	0.00	0.54	0.18
MCY	Gasoline	0.33%	0.35%	25.72	15.54	323.82	0.06	0.60	0.24
MDV	Gasoline	12.87%	13.66%	5.80	34.73	738.05	4.15	22.45	7.22
MDV	Diesel	0.14%	0.15%	0.06	0.17	1.94	0.04	0.26	0.09
MDV	Electricity	0.58%	0.62%	0.00	0.00	0.00	0.00	0.72	0.21
MDV	Plug-in Hybrid	0.38%	0.41%	0.04	0.10	6.60	0.04	0.47	0.14
MH	Gasoline	0.04%	0.01%	0.01	0.10	0.08	0.01	0.03	0.01
MH	Diesel	0.02%	0.00%	0.02	0.73	0.07	0.00	0.03	0.01
Motor Coach	Diesel	0.01%	0.00%	0.00	0.16	0.01	0.00	0.02	0.01
OBUS	Gasoline	0.01%	0.00%	0.00	0.05	0.09	0.00	0.01	0.00
OBUS	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
PTO	Diesel	0.03%	0.00%	0.01	1.00	0.07	0.01	0.00	0.00
PTO	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
SBUS	Gasoline	0.02%	0.00%	0.00	0.03	0.04	0.00	0.01	0.00
SBUS	Diesel	0.02%	0.00%	0.00	0.10	0.01	0.00	0.01	0.01
SBUS	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
SBUS	Natural Gas	0.00%	0.00%	0.00	0.00	0.11	0.00	0.00	0.00
T6 CAIRP Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Diesel	0.01%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 4	Diesel	0.02%	0.00%	0.00	0.06	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 4	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Delivery Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 5	Diesel	0.01%	0.00%	0.00	0.05	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 5	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 6	Diesel	0.03%	0.00%	0.00	0.11	0.02	0.00	0.02	0.01
T6 Instate Delivery Class 6	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Delivery Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 7	Diesel	0.01%	0.00%	0.00	0.05	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00

T6 Instate Other Class 4	Diesel	0.05%	0.00%	0.00	0.12	0.02	0.00	0.03	0.01
T6 Instate Other Class 4	Electricity	0.06%	0.01%	0.00	0.00	0.00	0.00	0.02	0.01
T6 Instate Other Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Instate Other Class 5	Diesel	0.12%	0.01%	0.01	0.28	0.04	0.01	0.06	0.02
T6 Instate Other Class 5	Electricity	0.13%	0.01%	0.00	0.00	0.00	0.00	0.04	0.01
T6 Instate Other Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T6 Instate Other Class 6	Diesel	0.09%	0.01%	0.00	0.22	0.03	0.01	0.05	0.02
T6 Instate Other Class 6	Electricity	0.10%	0.01%	0.00	0.00	0.00	0.00	0.03	0.01
T6 Instate Other Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Instate Other Class 7	Diesel	0.07%	0.01%	0.00	0.30	0.03	0.01	0.04	0.01
T6 Instate Other Class 7	Electricity	0.05%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T6 Instate Tractor Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Diesel	0.01%	0.00%	0.00	0.05	0.01	0.00	0.01	0.00
T6 Instate Tractor Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 OOS Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 7	Diesel	0.01%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 Public Class 4	Diesel	0.01%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Public Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 5	Diesel	0.01%	0.00%	0.00	0.05	0.01	0.00	0.01	0.00
T6 Public Class 5	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Public Class 6	Diesel	0.01%	0.00%	0.00	0.04	0.00	0.00	0.00	0.00
T6 Public Class 6	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Public Class 7	Diesel	0.02%	0.00%	0.00	0.07	0.01	0.00	0.01	0.00
T6 Public Class 7	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Utility Class 5	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 Utility Class 5	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6TS	Gasoline	0.08%	0.01%	0.01	0.05	0.13	0.01	0.04	0.01
T6TS	Electricity	0.09%	0.01%	0.00	0.00	0.00	0.00	0.03	0.01
T7 CAIRP Class 8	Diesel	0.43%	0.06%	0.07	7.06	0.23	0.07	0.86	0.39
T7 CAIRP Class 8	Electricity	0.12%	0.02%	0.00	0.00	0.00	0.00	0.13	0.04
T7 CAIRP Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T7 NNOOS Class 8	Diesel	0.66%	0.09%	0.10	11.88	0.34	0.10	1.31	0.59
T7 NOOS Class 8	Diesel	0.24%	0.03%	0.04	4.44	0.13	0.04	0.48	0.22
T7 Other Port Class 8	Diesel	0.05%	0.01%	0.01	0.75	0.04	0.01	0.09	0.04
T7 Other Port Class 8	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T7 POAK Class 8	Diesel	0.16%	0.02%	0.02	2.72	0.14	0.03	0.31	0.12
T7 POAK Class 8	Electricity	0.04%	0.01%	0.00	0.00	0.00	0.00	0.04	0.01
T7 POAK Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T7 Public Class 8	Diesel	0.04%	0.01%	0.02	1.19	0.09	0.01	0.09	0.03
T7 Public Class 8	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.03	0.01
T7 Public Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T7 Single Concrete/Transit Mix Class 8	Diesel	0.01%	0.00%	0.00	0.09	0.00	0.00	0.02	0.01
T7 Single Concrete/Transit Mix Class 8	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T7 Single Dump Class 8	Diesel	0.06%	0.01%	0.01	0.86	0.04	0.01	0.11	0.04
T7 Single Dump Class 8	Electricity	0.05%	0.01%	0.00	0.00	0.00	0.00	0.06	0.02
T7 Single Dump Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.22	0.00	0.01	0.00
T7 Single Other Class 8	Diesel	0.07%	0.01%	0.01	0.98	0.05	0.01	0.14	0.05
T7 Single Other Class 8	Electricity	0.07%	0.01%	0.00	0.00	0.00	0.00	0.08	0.02
T7 Single Other Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.25	0.00	0.01	0.00

T7 SWCV Class 8	Diesel	0.01%	0.00%	0.00	0.44	0.01	0.00	0.02	0.01
T7 SWCV Class 8	Electricity	0.04%	0.01%	0.00	0.00	0.00	0.00	0.07	0.02
T7 SWCV Class 8	Natural Gas	0.05%	0.01%	0.01	0.23	7.22	0.00	0.16	0.05
T7 Tractor Class 8	Diesel	0.40%	0.06%	0.06	6.41	0.26	0.07	0.77	0.32
T7 Tractor Class 8	Electricity	0.08%	0.01%	0.00	0.00	0.00	0.00	0.09	0.03
T7 Tractor Class 8	Natural Gas	0.03%	0.00%	0.01	0.09	1.87	0.00	0.06	0.02
T7 Utility Class 8	Diesel	0.00%	0.00%	0.00	0.06	0.01	0.00	0.01	0.00
T7 Utility Class 8	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T7IS	Gasoline	0.00%	0.00%	0.00	0.01	0.11	0.00	0.00	0.00
T7IS	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	Gasoline	0.01%	0.00%	0.00	0.00	0.07	0.00	0.01	0.00
UBUS	Electricity	0.09%	0.01%	0.00	0.00	0.00	0.00	0.10	0.03
		100%	100%	57	247	4,502	22	164	53

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Contra Costa
Calendar Year: 2045
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

g/mile

2.20E-03

Vehicle Category	Fuel	ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	VMT Total	% of VMT
All Other Buses	Diesel	0.0482023	1.0396672	0.175379	0.0100037	0.013294	0.012	0.0461373	0.0714313	0.0127189	0.003	0.0161481	0.0318669	1056.4233	0.0022389	0.1664399	6,384	0.020%
All Other Buses	Natural Gas	0.0119435	0.1062462	3.378567	0	0.0015899	0.012	0.0461373	0.0597272	0.0014618	0.003	0.0161481	0.0206099	920.52685	0.8359115	0.1876554	110	0.000%
LDA	Gasoline	0.0027979	0.019665	0.4594603	0.0021999	0.0004938	0.008	0.0074333	0.0159271	0.0004541	0.002	0.0026016	0.0050557	222.52852	0.000965	0.0032065	13,762,597	42.851%
LDA	Diesel	0.004491	0.0185521	0.130639	0.0017278	0.0012758	0.008	0.0074618	0.0167376	0.0012206	0.002	0.0026116	0.0058322	182.34868	0.0002086	0.0287291	8,294	0.026%
LDA	Electricity	0	0	0	0	0	0.008	0.0043934	0.0123935	0	0.002	0.0015377	0.0035377	0	0	0	1,990,003	6.196%
LDA	Plug-in Hybrid	0.0011242	0.0026422	0.1728897	0.0011111	0.0002028	0.008	0.0039951	0.0121979	0.0001865	0.002	0.0013983	0.0035847	112.38798	0.0003425	0.0004464	657,425	2.047%
LDT1	Gasoline	0.0031204	0.0215819	0.4916631	0.0025531	0.0005447	0.008	0.0088326	0.0173773	0.0005008	0.002	0.0030914	0.0055922	258.25564	0.001054	0.0033835	854,993	2.662%
LDT1	Diesel	0.011547	0.0267724	0.1213164	0.0031902	0.0040887	0.008	0.0087537	0.0208424	0.0039118	0.002	0.0030638	0.0089756	336.67623	0.0005363	0.0530435	10	0.000%
LDT1	Electricity	0	0	0	0	0	0.008	0.0043945	0.0123945	0	0.002	0.0015381	0.0035381	0	0	0	26,674	0.083%
LDT1	Plug-in Hybrid	0.0011204	0.0026333	0.1723082	0.0011073	0.000195	0.008	0.0039983	0.0121932	0.0001793	0.002	0.0013994	0.0035787	112.00971	0.000343	0.0004491	20,424	0.064%
LDT2	Gasoline	0.0039313	0.0230043	0.5417927	0.0026496	0.0005136	0.008	0.0087577	0.0172712	0.0004722	0.002	0.0030652	0.0055374	268.01048	0.0012999	0.0034864	7,351,513	22.889%
LDT2	Diesel	0.01158	0.0274343	0.1218747	0.0023744	0.0041118	0.008	0.0087589	0.0208708	0.003934	0.002	0.0030656	0.0089996	250.5867	0.0005379	0.03948	28,253	0.088%
LDT2	Electricity	0	0	0	0	0	0.008	0.0043946	0.0123946	0	0.002	0.0015381	0.0035381	0	0	0	205,505	0.640%
LDT2	Plug-in Hybrid	0.0011226	0.0026384	0.1726353	0.0011095	0.0001992	0.008	0.0039981	0.0121972	0.0001831	0.002	0.0013993	0.0035825	112.22524	0.0003429	0.000448	200,691	0.625%
LHD1	Gasoline	0.0042341	0.0219607	0.593743	0.0074533	0.0012744	0.008	0.078	0.0872744	0.0011718	0.002	0.0273	0.0304718	753.92124	0.0012555	0.0018581	300,298	0.935%
LHD1	Diesel	0.0913701	0.3022812	0.2362061	0.005734	0.0196634	0.012	0.078	0.1096634	0.0188128	0.003	0.0273	0.0491128	605.14081	0.004244	0.0953402	195,896	0.610%
LHD1	Electricity	0	0	0	0	0	0.008	0.039	0.047	0	0.002	0.01365	0.01565	0	0	0	389,367	1.212%
LHD2	Gasoline	0.0036018	0.0216063	0.6028785	0.0083574	0.0012565	0.008	0.091	0.1002565	0.0011553	0.002	0.03185	0.0350053	845.37532	0.0011059	0.0021771	33,970	0.106%
LHD2	Diesel	0.1133306	0.4307398	0.2975405	0.0067019	0.0248746	0.012	0.091	0.1278746	0.0237985	0.003	0.03185	0.0586485	707.28933	0.005264	0.1114337	92,038	0.287%
LHD2	Electricity	0	0	0	0	0	0.008	0.0455	0.0535	0	0.002	0.015925	0.017925	0	0	0	93,744	0.292%
MCY	Gasoline	0.7803644	0.4714589	9.8257191	0.0018259	0.0021187	0.004	0.012	0.0181187	0.0019754	0.001	0.0042	0.0071754	184.69102	0.1309164	0.0354614	105,817	0.329%
MDV	Gasoline	0.0045044	0.026989	0.573515	0.0032271	0.0005307	0.008	0.0089116	0.0174423	0.000488	0.002	0.0031191	0.0056071	326.42796	0.0014262	0.0037182	4,131,948	12.865%
MDV	Diesel	0.0044283	0.0117473	0.1365246	0.0031175	0.0011147	0.008	0.0089528	0.0180675	0.0010664	0.002	0.0031335	0.0061999	329.00609	0.0002057	0.051835	45,544	0.142%
MDV	Electricity	0	0	0	0	0	0.008	0.0044001	0.0124001	0	0.002	0.00154	0.00354	0	0	0	186,791	0.582%
MDV	Plug-in Hybrid	0.0011239	0.0026413	0.172825	0.0011107	0.0002037	0.008	0.0040021	0.0122058	0.0001873	0.002	0.0014007	0.003588	112.34944	0.0003417	0.0004444	122,560	0.382%
MH	Gasoline	0.0114614	0.1963862	0.1585281	0.0192267	0.0014727	0.012	0.0450174	0.0584902	0.0013541	0.003	0.0157561	0.0201102	1944.8378	0.004036	0.0181226	11,674	0.036%
MH	Diesel	0.0862098	2.576505	0.2540272	0.0103064	0.0283879	0.016	0.0447853	0.0891732	0.0271599	0.004	0.0156748	0.0468347	1087.6895	0.0040043	0.1713659	6,730	0.021%
Motor Coach	Diesel	0.0105293	0.9325411	0.0359028	0.0145012	0.0236612	0.012	0.0814729	0.1171341	0.0226376	0.003	0.0285155	0.0541531	1531.3695	0.0004891	0.2412679	4,011	0.012%
OBUS	Gasoline	0.02462	0.2777057	0.4903288	0.0151856	0.0012812	0.012	0.0447987	0.0580799	0.001178	0.003	0.0156795	0.0198576	1536.0679	0.0054995	0.0165529	4,573	0.014%
OBUS	Electricity	0	0	0	0	0	0.012	0.0223994	0.0343994	0	0.003	0.0078398	0.0108398	0	0	0	5,190	0.016%
PTO	Diesel	0.0147593	2.5647613	0.1826767	0.0165735	0.0040723	0	0	0.0040723	0.0038961	0	0	0.0038961	1750.2117	0.0006855	0.2757466	9,261	0.029%
PTO	Electricity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,466	0.026%
SBUS	Gasoline	0.0083844	0.1291335	0.1940946	0.0072857	0.001228	0.008	0.0449171	0.0541451	0.0011291	0.002	0.015721	0.0188501	736.97368	0.0019944	0.0121762	4,991	0.016%
SBUS	Diesel	0.0078703	0.43011	0.058087	0.010006	0.0036115	0.012	0.0449171	0.0605286	0.0034552	0.003	0.015721	0.0221762	1056.6674	0.0003656	0.1664784	5,574	0.017%
SBUS	Electricity	0	0	0	0	0	0.0106252	0.0224586	0.0330838	0	0.0026563	0.0078605	0.0105168	0	0	0	7,025	0.022%
SBUS	Natural Gas	0.0384401	0.2964605	8.1369977	0	0.0036743	0.012	0.0449171	0.0605914	0.0033783	0.003	0.015721	0.0220993	1128.2014	2.6903716	0.2299912	333	0.001%
T6 CAIRP Class 4	Diesel	0.0053749	0.1781381	0.0275472	0.0096198	0.0054093	0.012	0.0423138	0.0597231	0.0051753	0.003	0.0148098	0.0229851	1015.8784	0.0002496	0.1600521	58	0.000%
T6 CAIRP Class 4	Electricity	0	0	0	0	0	0.012	0.0211569	0.0331569	0	0.003	0.0074049	0.0104049	0	0	0	80	0.000%
T6 CAIRP Class 5	Diesel	0.0053867	0.1795849	0.0275971	0.009624	0.0054214	0.012	0.0423138	0.0597353	0.0051869	0.003	0.0148098	0.0229967	1016.3293	0.0002502	0.1601231	80	0.000%
T6 CAIRP Class 5	Electricity	0	0	0	0	0	0.012	0.0211569	0.0331569	0	0.003	0.0074049	0.0104049	0	0	0	110	0.000%
T6 CAIRP Class 6	Diesel	0.0053599	0.1787864	0.0274814	0.0096084	0.0054266	0.012	0.0423138	0.0597404	0.0051918	0.003	0.0148098	0.0230017	1014.6808	0.000249	0.1598634	208	0.001%
T6 CAIRP Class 6	Electricity	0	0	0	0	0	0.012	0.0211569	0.0331569	0	0.003	0.0074049	0.0104049	0	0	0	289	0.001%
T6 CAIRP Class 7	Diesel	0.0057742	0.1953994	0.0296042	0.0084859	0.0057515	0.012	0.0423138	0.0600653	0.0055027	0.003	0.0148098	0.0233125	896.13389	0.0002682	0.1411863	2,380	0.007%
T6 CAIRP Class 7	Electricity	0	0	0	0	0	0.012	0.0211569	0.0331569	0	0.003	0.0074049	0.0104049	0	0	0	739	0.002%
T6 Instate Delivery Class 4	Diesel	0.0061363	0.3699076	0.0540164	0.009945	0.001934	0.012	0.0475629	0.0614969	0.0018503	0.003	0.016647	0.0214973	1050.2269	0.000285	0.1654637	5,851	0.018%
T6 Instate Delivery Class 4	Electricity	0	0	0	0	0	0.012	0.0237815	0.0357815	0	0.003	0.0083235	0.0113235	0	0	0	6,073	0.019%
T6 Instate Delivery Class 4	Natural Gas	0.0124695	0.0603231	3.8169558	0	0.0020138	0.012	0.0475629	0.0615767	0.0018516	0.003	0.016647	0.0214986	1006.7448	0.8727229	0.2052315	78	0.000%
T6 Instate Delivery Class 5	Diesel	0.0061166	0.3654042	0.0537491	0.009968	0.0019263	0.012	0.0475629	0.0614892	0.001843	0.003	0.016647	0.02149	1052.6588	0.0002841	0.1658468	4,753	0.015%
T6 Instate Delivery Class 5	Electricity	0	0	0	0	0	0.012	0.0237815	0.0357815	0	0.003	0.0083235	0.0113235	0	0	0	4,940	0.015%
T6 Instate Delivery Class 5	Natural Gas	0.0124715	0.0600929	3.8175048	0	0.0020151	0.012	0.0475629	0.061578	0.0018528	0.003	0.016647	0.0214998	1005.8654	0.8728632	0.2050522	62	0.000%
T6 Instate Delivery Class 6	Diesel	0.0061745	0.3714455	0.0540212	0.0099553	0.0019403	0.012	0.0475629	0.0615032	0.0018564	0.003	0.016647	0.0215034	1051.3128	0.0002868	0.1656348	10,333	0.032%
T6 Instate Delivery Class 6	Electricity	0	0	0	0	0	0.012	0.0237815	0.0357815	0	0.003	0.0083235	0.0113235	0	0	0	10,742	0.033%

T6 Instate Delivery Class 6	Natural Gas	0.0124641	0.0609431	3.8154774	0	0.0020102	0.012	0.0475629	0.0615732	0.0018483	0.003	0.016647	0.0214954	1006.5513	0.8723451	0.2051921	137	0.000%
T6 Instate Delivery Class 7	Diesel	0.0108905	0.7861263	0.0815582	0.0101938	0.0029678	0.012	0.0475629	0.0625308	0.0028394	0.003	0.016647	0.0224865	1076.4958	0.0005058	0.1696023	2,172	0.007%
T6 Instate Delivery Class 7	Electricity	0	0	0	0	0	0.012	0.0237815	0.0357815	0	0.003	0.0083235	0.0113235	0	0	0	1,256	0.004%
T6 Instate Delivery Class 7	Natural Gas	0.0117678	0.1414364	3.6308079	0	0.0015519	0.012	0.0475629	0.0611148	0.0014269	0.003	0.016647	0.021074	1034.4348	0.8236124	0.2108763	45	0.000%
T6 Instate Other Class 4	Diesel	0.0055291	0.2765935	0.0427715	0.0096245	0.003152	0.012	0.0448637	0.0600158	0.0030157	0.003	0.0157023	0.021718	1016.3806	0.0002568	0.1601312	15,980	0.050%
T6 Instate Other Class 4	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	17,676	0.055%
T6 Instate Other Class 4	Natural Gas	0.009963	0.0520674	2.6717096	0	0.0015566	0.012	0.0448637	0.0584203	0.0014312	0.003	0.0157023	0.0201335	878.48354	0.6972956	0.1790846	218	0.001%
T6 Instate Other Class 5	Diesel	0.0055661	0.2756171	0.0427693	0.0096337	0.0031551	0.012	0.0448637	0.0600189	0.0030186	0.003	0.0157023	0.0217209	1017.3546	0.0002585	0.1602846	37,507	0.117%
T6 Instate Other Class 5	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	41,479	0.129%
T6 Instate Other Class 5	Natural Gas	0.0099593	0.0523903	2.6720042	0	0.0015547	0.012	0.0448637	0.0584184	0.0014295	0.003	0.0157023	0.0201318	877.19718	0.6970389	0.1788224	503	0.002%
T6 Instate Other Class 6	Diesel	0.005566	0.279844	0.0428505	0.0096279	0.0031701	0.012	0.0448637	0.0600339	0.003033	0.003	0.0157023	0.0217353	1016.7371	0.0002585	0.1601874	28,438	0.089%
T6 Instate Other Class 6	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	31,399	0.098%
T6 Instate Other Class 6	Natural Gas	0.0099606	0.0522803	2.6719038	0	0.0015553	0.012	0.0448637	0.0584191	0.0014301	0.003	0.0157023	0.0201324	877.20453	0.6971263	0.1788239	381	0.001%
T6 Instate Other Class 7	Diesel	0.0074317	0.4880791	0.0543921	0.0097581	0.0041265	0.012	0.0448637	0.0609903	0.003948	0.003	0.0157023	0.0226503	1030.4827	0.0003452	0.162353	22,177	0.069%
T6 Instate Other Class 7	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	15,181	0.047%
T6 Instate Other Class 7	Natural Gas	0.0094782	0.0957212	2.7201941	0	0.0013039	0.012	0.0448637	0.0581677	0.0011989	0.003	0.0157023	0.0199012	897.02735	0.6633665	0.1828649	471	0.001%
T6 Instate Tractor Class 6	Diesel	0.0054278	0.2695972	0.0419187	0.0096482	0.003114	0.012	0.0448637	0.0599777	0.0029792	0.003	0.0157023	0.0216816	1018.879	0.0002521	0.1605248	302	0.001%
T6 Instate Tractor Class 6	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	348	0.001%
T6 Instate Tractor Class 6	Natural Gas	0.0099615	0.0521973	2.6718281	0	0.0015558	0.012	0.0448637	0.0584196	0.0014305	0.003	0.0157023	0.0201328	878.52686	0.6971923	0.1790934	4	0.000%
T6 Instate Tractor Class 7	Diesel	0.0069236	0.4425969	0.051994	0.009013	0.0039106	0.012	0.0448637	0.0607744	0.0037414	0.003	0.0157023	0.0224438	951.79897	0.0003216	0.1499563	4,468	0.014%
T6 Instate Tractor Class 7	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	941	0.003%
T6 Instate Tractor Class 7	Natural Gas	0.0094882	0.0948277	2.7192419	0	0.0013091	0.012	0.0448637	0.0581729	0.0012037	0.003	0.0157023	0.019906	880.62758	0.6640646	0.1795217	93	0.000%
T6 OOS Class 4	Diesel	0.0052592	0.2221693	0.0269357	0.00903	0.0055842	0.012	0.0423138	0.0598981	0.0053427	0.003	0.0148098	0.0231525	953.60201	0.0002443	0.1502404	78	0.000%
T6 OOS Class 5	Diesel	0.005282	0.2246809	0.0270241	0.0090375	0.0056053	0.012	0.0423138	0.0599191	0.0053628	0.003	0.0148098	0.0231727	954.3897	0.0002453	0.1503645	107	0.000%
T6 OOS Class 6	Diesel	0.0052307	0.2194254	0.0268172	0.00901	0.0055584	0.012	0.0423138	0.0598722	0.0053179	0.003	0.0148098	0.0231278	951.48303	0.000243	0.1499065	280	0.001%
T6 OOS Class 7	Diesel	0.005648	0.2318964	0.0289595	0.0081202	0.0058938	0.012	0.0423138	0.0602076	0.0056388	0.003	0.0148098	0.0234487	857.52126	0.0002623	0.1351028	2,033	0.006%
T6 Public Class 4	Diesel	0.0160276	0.6653429	0.0660734	0.0103401	0.0046987	0.012	0.0461694	0.0628681	0.0044954	0.003	0.0161593	0.0236547	1091.948	0.0007444	0.1720369	1,647	0.005%
T6 Public Class 4	Electricity	0	0	0	0	0	0.012	0.0230847	0.0350847	0	0.003	0.0080796	0.0110796	0	0	0	1,490	0.005%
T6 Public Class 4	Natural Gas	0.0126218	0.0581353	3.0578162	0	0.0017947	0.012	0.0461694	0.0599641	0.0016502	0.003	0.0161593	0.0208094	977.0832	0.8833823	0.1991848	110	0.000%
T6 Public Class 5	Diesel	0.0138665	0.5547852	0.0622835	0.010391	0.003897	0.012	0.0461694	0.0620664	0.0037284	0.003	0.0161593	0.0228877	1097.3277	0.0006441	0.1728844	3,050	0.009%
T6 Public Class 5	Electricity	0	0	0	0	0	0.012	0.0230847	0.0350847	0	0.003	0.0080796	0.0110796	0	0	0	2,758	0.009%
T6 Public Class 5	Natural Gas	0.0125564	0.0689268	3.0613735	0	0.0017435	0.012	0.0461694	0.0599129	0.001603	0.003	0.0161593	0.0207623	990.74354	0.8788037	0.2019696	228	0.001%
T6 Public Class 6	Diesel	0.0120489	0.511168	0.0571533	0.0103544	0.0037824	0.012	0.0461694	0.0619518	0.0036188	0.003	0.0161593	0.0227781	1093.4552	0.0005596	0.1722743	2,749	0.009%
T6 Public Class 6	Electricity	0	0	0	0	0	0.012	0.0230847	0.0350847	0	0.003	0.0080796	0.0110796	0	0	0	2,466	0.008%
T6 Public Class 6	Natural Gas	0.0125868	0.0639127	3.0597747	0	0.0017673	0.012	0.0461694	0.0599367	0.0016249	0.003	0.0161593	0.0207842	980.7937	0.8809317	0.1999412	189	0.001%
T6 Public Class 7	Diesel	0.0109851	0.4817364	0.0538311	0.0102023	0.0035772	0.012	0.0461694	0.0617466	0.0034225	0.003	0.0161593	0.0225818	1077.398	0.0005102	0.1697445	5,641	0.018%
T6 Public Class 7	Electricity	0	0	0	0	0	0.012	0.0230847	0.0350847	0	0.003	0.0080796	0.0110796	0	0	0	4,133	0.013%
T6 Public Class 7	Natural Gas	0.0125886	0.0636114	3.0598609	0	0.0017687	0.012	0.0461694	0.0599381	0.0016262	0.003	0.0161593	0.0207855	980.74549	0.8810616	0.1999314	398	0.001%
T6 Utility Class 5	Diesel	0.0050943	0.192546	0.035576	0.0096326	0.0023182	0.012	0.0454967	0.0598149	0.0022179	0.003	0.0159238	0.0211418	1017.2384	0.0002366	0.1602663	1,193	0.004%
T6 Utility Class 5	Electricity	0	0	0	0	0	0.012	0.0227484	0.0347484	0	0.003	0.0079619	0.0109619	0	0	0	1,710	0.005%
T6 Utility Class 5	Natural Gas	0.0111369	0.0541674	2.7453396	0	0.0016363	0.012	0.0454967	0.059133	0.0015045	0.003	0.0159238	0.0204284	915.65481	0.7794545	0.1866622	10	0.000%
T6 Utility Class 6	Diesel	0.0050952	0.1883103	0.0355821	0.0096331	0.002301	0.012	0.0454967	0.0597977	0.0022015	0.003	0.0159238	0.0211253	1017.2872	0.0002367	0.160274	226	0.001%
T6 Utility Class 6	Electricity	0	0	0	0	0	0.012	0.0227484	0.0347484	0	0.003	0.0079619	0.0109619	0	0	0	323	0.001%
T6 Utility Class 6	Natural Gas	0.0111369	0.0541674	2.7453396	0	0.0016363	0.012	0.0454967	0.059133	0.0015045	0.003	0.0159238	0.0204284	915.6688	0.7794545	0.1866651	2	0.000%
T6 Utility Class 7	Diesel	0.0050452	0.1834542	0.0352327	0.0096392	0.0022884	0.012	0.0454967	0.0597851	0.0021894	0.003	0.0159238	0.0211132	1017.9341	0.0002343	0.1603759	309	0.001%
T6 Utility Class 7	Electricity	0	0	0	0	0	0.012	0.0227484	0.0347484	0	0.003	0.0079619	0.0109619	0	0	0	454	0.001%
T6 Utility Class 7	Natural Gas	0.0111369	0.0541674	2.7453396	0	0.0016363	0.012	0.0454967	0.059133	0.0015045	0.003	0.0159238	0.0204284	915.67231	0.7794545	0.1866658	3	0.000%
T6TS	Gasoline	0.0110763	0.0694032	0.1841074	0.0152225	0.0014928	0.012	0.0450174	0.0585102	0.0013726	0.003	0.0157561	0.0201287	1539.8019	0.0030193	0.0070168	25,161	0.078%
T6TS	Electricity	0	0	0	0	0	0.012	0.0225087	0.0345087	0	0.003	0.0078781	0.0108781	0	0	0	28,960	0.090%
T7 CAIRP Class 8	Diesel	0.0114677	1.2072941	0.0388014	0.0121027	0.0299	0.036	0.0818327	0.1477327	0.0286066	0.009	0.0286414	0.066248	1278.0825	0.0005326	0.2013624	138,534	0.431%
T7 CAIRP Class 8	Electricity	0	0	0	0	0	0.036	0.0409485	0.0769485	0	0.009	0.014332	0.023332	0	0	0	39,270	0.122%
T7 CAIRP Class 8	Natural Gas	0.0133626	0.1528523	2.8835663	0	0.0019662	0.036	0.0818259	0.1197921	0.0018078	0.009	0.0286391	0.0394469	1022.864	0.935233	0.2085175	254	0.001%
T7 NNOOS Class 8	Diesel	0.0111527	1.3309651	0.0377624	0.0115955	0.0295077	0.036	0.0818184	0.1473261	0.0282312	0.009	0.0286364	0.0658677	1224.5275	0.000518	0.1929248	211,410	0.658%
T7 NOOS Class 8	Diesel	0.0115072	1.3693581	0.0389311	0.0115877	0.0312467	0.036	0.0818402	0.1490869	0.029895	0.009	0.0286441	0.067539	1223.6993	0.0005345	0.1927943	76,819	0.239%
T7 Other Port Class 8	Diesel	0.0100333	1.2320039	0.0634813	0.0129867	0.0164234	0.036	0.0941574	0.1465807	0.0157129	0.009	0.0329551	0.057668	1371.4406	0.000466	0.216071	14,474	0.045%
T7 Other Port Class 8	Electricity	0	0	0	0	0	0.036	0.0470787	0.0830787	0	0.009	0.0164775	0.0254775	0	0	0	3,660	0.011%
T7 POAK Class 8	Diesel	0.0102352	1.2810158	0.0647593	0.0129436	0.0171345	0.036	0.0941574	0.1472919	0.0163933	0.009	0.0329551	0.0583484	1366.8905	0.0004754	0.2153542	50,375	0.157%
T7 POAK Class 8	Electricity	0	0	0	0	0	0.036	0.0470787	0.0830787	0	0.009	0.0164775	0.0254775	0	0	0	11,547	0.036%
T7 POAK Class 8	Natural Gas	0.0167608	0.1726945	4.9769136	0	0.0025243	0.036	0.0941574	0.1326817	0.002321	0.009	0.0329551	0.0442761	1151.7012	1.1730664	0.2347818	114	0.000%
T7 Public Class 8	Diesel	0.0302096	2.0716184	0.1510499	0.0153486	0.0106776	0.036	0.1073291	0.1540067	0.0102157	0.009	0.0375652	0.0567809	1620.8674	0.0014032	0.2553683	13,649	0.042%
T7 Public Class 8	Electricity	0	0	0	0	0	0.036	0.0542879	0.0902879	0	0.009	0.0190008	0.0280008	0	0	0	9,021	0.028%

T7 Public Class 8	Natural Gas	0.0243831	0.2685858	8.0817303	0	0.0032879	0.036	0.1062516	0.1455396	0.0030231	0.009	0.0371881	0.0492112	1461.5566	1.706541	0.2979479	106	0.000%
T7 Single Concrete/Transit Mix Class 8	Diesel	0.008628	0.8048666	0.0436795	0.0137139	0.0137111	0.036	0.0886278	0.1383389	0.013118	0.009	0.0310197	0.0531377	1448.2351	0.0004007	0.22817	2,613	0.008%
T7 Single Concrete/Transit Mix Class 8	Electricity	0	0	0	0	0	0.036	0.0443891	0.0803891	0	0.009	0.0155362	0.0245362	0	0	0	3,633	0.011%
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.015246	0.1639574	4.0448237	0	0.002255	0.036	0.0886293	0.1268844	0.0020734	0.009	0.0310203	0.0420937	1124.7242	1.0670505	0.2292824	161	0.001%
T7 Single Dump Class 8	Diesel	0.0105433	1.1094634	0.0569782	0.0141188	0.0175577	0.036	0.0869987	0.1405564	0.0167981	0.009	0.0304495	0.0562477	1490.9961	0.0004897	0.234907	18,391	0.057%
T7 Single Dump Class 8	Electricity	0	0	0	0	0	0.036	0.0443695	0.0803695	0	0.009	0.0155293	0.0245293	0	0	0	16,441	0.051%
T7 Single Dump Class 8	Natural Gas	0.0152311	0.2000811	4.5296567	0	0.0021757	0.036	0.0869649	0.1251406	0.0020005	0.009	0.0304377	0.0414382	1152.8841	1.0660067	0.235023	1,137	0.004%
T7 Single Other Class 8	Diesel	0.0096894	1.0087904	0.0502156	0.0139609	0.0166123	0.036	0.0872983	0.1399107	0.0158937	0.009	0.0305544	0.0554481	1474.3125	0.00045	0.2322785	22,936	0.071%
T7 Single Other Class 8	Electricity	0	0	0	0	0	0.036	0.0443738	0.0803738	0	0.009	0.0155308	0.0245308	0	0	0	22,563	0.070%
T7 Single Other Class 8	Natural Gas	0.015241	0.175851	4.2063555	0	0.0022287	0.036	0.0873358	0.1255644	0.0020492	0.009	0.0305675	0.0416167	1135.3124	1.0666967	0.2314409	1,403	0.004%
T7 SWCV Class 8	Diesel	0.03587	5.6393339	0.0923463	0.0374855	0.0149105	0.036	0.2100001	0.2609105	0.0142655	0.009	0.0735	0.0967655	3958.5925	0.0016661	0.6236779	1,867	0.006%
T7 SWCV Class 8	Electricity	0	0	0	0	0	0.036	0.105	0.141	0	0.009	0.03675	0.04575	0	0	0	11,286	0.035%
T7 SWCV Class 8	Natural Gas	0.0133996	0.3485691	10.97397	0	0.0012249	0.036	0.2100001	0.247225	0.0011263	0.009	0.0735	0.0836263	1338.2669	0.7141486	0.2728145	15,575	0.048%
T7 Tractor Class 8	Diesel	0.0103114	1.1909537	0.0483514	0.0121155	0.0219952	0.036	0.0856966	0.1436919	0.0210437	0.009	0.0299938	0.0600376	1279.4315	0.0004789	0.2015749	127,449	0.397%
T7 Tractor Class 8	Electricity	0	0	0	0	0	0.036	0.0432856	0.0792856	0	0.009	0.0151499	0.02415	0	0	0	26,092	0.081%
T7 Tractor Class 8	Natural Gas	0.0145704	0.1816585	3.9810527	0	0.0021165	0.036	0.0855105	0.1236271	0.0019461	0.009	0.0299287	0.0408748	1079.8052	1.0197621	0.2201253	11,110	0.035%
T7 Utility Class 8	Diesel	0.0111927	1.0682666	0.1023557	0.0146562	0.0072636	0.036	0.1010452	0.1443088	0.0069493	0.009	0.0353658	0.0513152	1547.7449	0.0005199	0.2438478	1,305	0.004%
T7 Utility Class 8	Electricity	0	0	0	0	0	0.036	0.0519352	0.0879352	0	0.009	0.0181773	0.0271773	0	0	0	995	0.003%
T7IS	Gasoline	0.4406703	2.1906501	30.050889	0.017883	0.0015577	0.02	0.0965067	0.1180644	0.0014323	0.005	0.0337773	0.0402096	1808.9207	0.095236	0.1015766	87	0.000%
T7IS	Electricity	0	0	0	0	0	0.02	0.0485262	0.0685262	0	0.005	0.0169842	0.0219842	0	0	0	93	0.000%
UBUS	Gasoline	0.0030949	0.0149761	0.5694445	0.0084046	0.0013024	0.008	0.091	0.1003024	0.0011975	0.002	0.03185	0.0350475	850.15021	0.00114	0.0024992	2,864	0.009%
UBUS	Electricity	0	0	0	0	0	0.0288654	0.055	0.0838654	0	0.0072163	0.01925	0.0264663	0	0	0	27,930	0.087%
																TOTAL VMT	32,117,502	100%

lbs/Mile														
ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX
1.06E-04	2.29E-03	3.87E-04	2.21E-05	2.93E-05	1.02E-04	2.93E-05	1.57E-04	6.61E-06	3.56E-05	2.80E-05	7.03E-05	2.33E+00	4.94E-06	3.67E-04
2.63E-05	2.34E-04	7.45E-03	0.00E+00	3.51E-06	1.02E-04	3.51E-06	1.32E-04	6.61E-06	3.56E-05	3.22E-06	4.54E-05	2.03E+00	1.84E-03	4.14E-04
6.17E-06	4.34E-05	1.01E-03	4.85E-06	1.09E-06	1.64E-05	1.09E-06	3.51E-05	4.41E-06	5.74E-06	1.00E-06	1.11E-05	4.91E-01	2.13E-06	7.07E-06
9.90E-06	4.09E-05	2.88E-04	3.81E-06	2.81E-06	1.65E-05	2.81E-06	3.69E-05	4.41E-06	5.76E-06	2.69E-06	1.29E-05	4.02E-01	4.60E-07	6.33E-05
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.69E-06	0.00E+00	2.73E-05	4.41E-06	3.39E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00
2.48E-06	5.83E-06	3.81E-04	2.45E-06	4.47E-07	8.81E-06	4.47E-07	2.69E-05	4.41E-06	3.08E-06	4.11E-07	7.90E-06	2.48E-01	7.55E-07	9.84E-07
6.88E-06	4.76E-05	1.08E-03	5.63E-06	1.20E-06	1.95E-05	1.20E-06	3.83E-05	4.41E-06	6.82E-06	1.10E-06	1.23E-05	5.69E-01	2.32E-06	7.46E-06
2.55E-05	5.90E-05	2.67E-04	7.03E-06	9.01E-06	1.93E-05	9.01E-06	4.59E-05	4.41E-06	6.75E-06	8.62E-06	1.98E-05	7.42E-01	1.18E-06	1.17E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.69E-06	0.00E+00	2.73E-05	4.41E-06	3.39E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00
2.47E-06	5.81E-06	3.80E-04	2.44E-06	4.30E-07	8.81E-06	4.30E-07	2.69E-05	4.41E-06	3.09E-06	3.95E-07	7.89E-06	2.47E-01	7.56E-07	9.90E-07
8.67E-06	5.07E-05	1.19E-03	5.84E-06	1.13E-06	1.93E-05	1.13E-06	3.81E-05	4.41E-06	6.76E-06	1.04E-06	1.22E-05	5.91E-01	2.87E-06	7.69E-06
2.55E-05	6.05E-05	2.69E-04	5.23E-06	9.06E-06	1.93E-05	9.06E-06	4.60E-05	4.41E-06	6.76E-06	8.67E-06	1.98E-05	5.52E-01	1.19E-06	8.70E-05
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.69E-06	0.00E+00	2.73E-05	4.41E-06	3.39E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00
2.47E-06	5.82E-06	3.81E-04	2.45E-06	4.39E-07	8.81E-06	4.39E-07	2.69E-05	4.41E-06	3.08E-06	4.04E-07	7.90E-06	2.47E-01	7.56E-07	9.88E-07
9.33E-06	4.84E-05	1.31E-03	1.64E-05	2.81E-06	1.72E-04	2.81E-06	1.92E-04	4.41E-06	6.02E-05	2.58E-06	6.72E-05	1.66E+00	2.77E-06	4.10E-06
2.01E-04	6.66E-04	5.21E-04	1.26E-05	4.33E-05	1.72E-04	4.33E-05	2.42E-04	6.61E-06	6.02E-05	4.15E-05	1.08E-04	1.33E+00	9.36E-06	2.10E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.60E-05	0.00E+00	1.04E-04	4.41E-06	3.01E-05	0.00E+00	3.45E-05	0.00E+00	0.00E+00	0.00E+00
7.94E-06	4.76E-05	1.33E-03	1.84E-05	2.77E-06	2.01E-04	2.77E-06	2.21E-04	4.41E-06	7.02E-05	2.55E-06	7.72E-05	1.86E+00	2.44E-06	4.80E-06
2.50E-04	9.50E-04	6.56E-04	1.48E-05	5.48E-05	2.01E-04	5.48E-05	2.82E-04	6.61E-06	7.02E-05	5.25E-05	1.29E-04	1.56E+00	1.16E-05	2.46E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-04	0.00E+00	1.18E-04	4.41E-06	3.51E-05	0.00E+00	3.95E-05	0.00E+00	0.00E+00	0.00E+00
1.72E-03	1.04E-03	2.17E-02	4.03E-06	4.67E-06	2.65E-05	4.67E-06	3.99E-05	2.20E-06	9.26E-06	4.36E-06	1.58E-05	4.07E-01	2.89E-04	7.82E-05
9.93E-06	5.95E-05	1.26E-03	7.11E-06	1.17E-06	1.96E-05	1.17E-06	3.85E-05	4.41E-06	6.88E-06	1.08E-06	1.24E-05	7.20E-01	3.14E-06	8.20E-06
9.76E-06	2.59E-05	3.01E-04	6.87E-06	2.46E-06	1.97E-05	2.46E-06	3.98E-05	4.41E-06	6.91E-06	2.35E-06	1.37E-05	7.25E-01	4.53E-07	1.14E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.70E-06	0.00E+00	2.73E-05	4.41E-06	3.40E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00
2.48E-06	5.82E-06	3.81E-04	2.45E-06	4.49E-07	8.82E-06	4.49E-07	2.69E-05	4.41E-06	3.09E-06	4.13E-07	7.91E-06	2.48E-01	7.53E-07	9.80E-07
2.53E-05	4.33E-04	3.49E-04	4.24E-05	3.25E-06	9.92E-05	3.25E-06	1.29E-04	6.61E-06	3.47E-05	2.99E-06	4.43E-05	4.29E+00	8.90E-06	4.00E-05
1.90E-04	5.68E-03	5.60E-04	2.27E-05	6.26E-05	9.87E-05	6.26E-05	1.97E-04	8.82E-06	3.46E-05	5.99E-05	1.03E-04	2.40E+00	8.83E-06	3.78E-04
2.32E-05	2.06E-03	7.92E-05	3.20E-05	5.22E-05	1.80E-04	5.22E-05	2.58E-04	6.61E-06	6.29E-05	4.99E-05	1.19E-04	3.38E+00	1.08E-06	5.32E-04
5.43E-05	6.12E-04	1.08E-03	3.35E-05	2.82E-06	9.88E-05	2.82E-06	1.28E-04	6.61E-06	3.46E-05	2.60E-06	4.38E-05	3.39E+00	1.21E-05	3.65E-05
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.94E-05	0.00E+00	7.58E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
3.25E-05	5.65E-03	4.03E-04	3.65E-05	8.98E-06	0.00E+00	8.98E-06	8.98E-06	0.00E+00	0.00E+00	8.59E-06	8.59E-06	3.86E+00	1.51E-06	6.08E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.85E-05	2.85E-04	4.28E-04	1.61E-05	2.71E-06	9.90E-05	2.71E-06	1.19E-04	4.41E-06	3.47E-05	2.49E-06	4.16E-05	1.62E+00	4.40E-06	2.68E-05
1.74E-05	9.48E-04	1.28E-04	2.21E-05	7.96E-06	9.90E-05	7.96E-06	1.33E-04	6.61E-06	3.47E-05	7.62E-06	4.89E-05	2.33E+00	8.06E-07	3.67E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.29E-05	5.86E-06	1.73E-05	0.00E+00	2.32E-05	0.00E+00	0.00E+00	0.00E+00
8.47E-05	6.54E-04	1.79E-02	0.00E+00	8.10E-06	9.90E-05	8.10E-06	1.34E-04	6.61E-06	3.47E-05	7.45E-06	4.87E-05	2.49E+00	5.93E-03	5.07E-04
1.18E-05	3.93E-04	6.07E-05	2.12E-05	1.19E-05	9.33E-05	1.19E-05	1.32E-04	6.61E-06	3.26E-05	1.14E-05	5.07E-05	2.24E+00	5.50E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-05	0.00E+00	7.31E-05	6.61E-06	1.63E-05	0.00E+00	2.29E-05	0.00E+00	0.00E+00	0.00E+00
1.19E-05	3.96E-04	6.08E-05	2.12E-05	1.20E-05	9.33E-05	1.20E-05	1.32E-04	6.61E-06	3.26E-05	1.14E-05	5.07E-05	2.24E+00	5.52E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-05	0.00E+00	7.31E-05	6.61E-06	1.63E-05	0.00E+00	2.29E-05	0.00E+00	0.00E+00	0.00E+00
1.18E-05	3.94E-04	6.06E-05	2.12E-05	1.20E-05	9.33E-05	1.20E-05	1.32E-04	6.61E-06	3.26E-05	1.14E-05	5.07E-05	2.24E+00	5.49E-07	3.52E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-05	0.00E+00	7.31E-05	6.61E-06	1.63E-05	0.00E+00	2.29E-05	0.00E+00	0.00E+00	0.00E+00
1.27E-05	4.31E-04	6.53E-05	1.87E-05	1.27E-05	9.33E-05	1.27E-05	1.32E-04	6.61E-06	3.26E-05	1.21E-05	5.14E-05	1.98E+00	5.91E-07	3.11E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-05	0.00E+00	7.31E-05	6.61E-06	1.63E-05	0.00E+00	2.29E-05	0.00E+00	0.00E+00	0.00E+00
1.35E-05	8.15E-04	1.19E-04	2.19E-05	4.26E-06	1.05E-04	4.26E-06	1.36E-04	6.61E-06	3.67E-05	4.08E-06	4.74E-05	2.32E+00	6.28E-07	3.65E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-05	0.00E+00	7.89E-05	6.61E-06	1.84E-05	0.00E+00	2.50E-05	0.00E+00	0.00E+00	0.00E+00
2.75E-05	1.33E-04	8.41E-03	0.00E+00	4.44E-06	1.05E-04	4.44E-06	1.36E-04	6.61E-06	3.67E-05	4.08E-06	4.74E-05	2.22E+00	1.92E-03	4.52E-04
1.35E-05	8.06E-04	1.18E-04	2.20E-05	4.25E-06	1.05E-04	4.25E-06	1.36E-04	6.61E-06	3.67E-05	4.06E-06	4.74E-05	2.32E+00	6.26E-07	3.66E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-05	0.00E+00	7.89E-05	6.61E-06	1.84E-05	0.00E+00	2.50E-05	0.00E+00	0.00E+00	0.00E+00
2.75E-05	1.32E-04	8.42E-03	0.00E+00	4.44E-06	1.05E-04	4.44E-06	1.36E-04	6.61E-06	3.67E-05	4.08E-06	4.74E-05	2.22E+00	1.92E-03	4.52E-04
1.36E-05	8.19E-04	1.19E-04	2.19E-05	4.28E-06	1.05E-04	4.28E-06	1.36E-04	6.61E-06	3.67E-05	4.09E-06	4.74E-05	2.32E+00	6.32E-07	3.65E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-05	0.00E+00	7.89E-05	6.61E-06	1.84E-05	0.00E+00	2.50E-05	0.00E+00	0.00E+00	0.00E+00

1.00E-06

2.75E-05	1.34E-04	8.41E-03	0.00E+00	4.43E-06	1.05E-04	4.43E-06	1.36E-04	6.61E-06	3.67E-05	4.07E-06	4.74E-05	2.22E+00	1.92E-03	4.52E-04
2.40E-05	1.73E-03	1.80E-04	2.25E-05	6.54E-06	1.05E-04	6.54E-06	1.38E-04	6.61E-06	3.67E-05	6.26E-06	4.96E-05	2.37E+00	1.12E-06	3.74E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-05	0.00E+00	7.89E-05	6.61E-06	1.84E-05	0.00E+00	2.50E-05	0.00E+00	0.00E+00	0.00E+00
2.59E-05	3.12E-04	8.00E-03	0.00E+00	3.42E-06	1.05E-04	3.42E-06	1.35E-04	6.61E-06	3.67E-05	3.15E-06	4.65E-05	2.28E+00	1.82E-03	4.65E-04
1.22E-05	6.10E-04	9.43E-05	2.12E-05	6.95E-06	9.89E-05	6.95E-06	1.32E-04	6.61E-06	3.46E-05	6.65E-06	4.79E-05	2.24E+00	5.66E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.20E-05	1.15E-04	5.89E-03	0.00E+00	3.43E-06	9.89E-05	3.43E-06	1.29E-04	6.61E-06	3.46E-05	3.16E-06	4.44E-05	1.94E+00	1.54E-03	3.95E-04
1.23E-05	6.08E-04	9.43E-05	2.12E-05	6.96E-06	9.89E-05	6.96E-06	1.32E-04	6.61E-06	3.46E-05	6.65E-06	4.79E-05	2.24E+00	5.70E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.20E-05	1.15E-04	5.89E-03	0.00E+00	3.43E-06	9.89E-05	3.43E-06	1.29E-04	6.61E-06	3.46E-05	3.15E-06	4.44E-05	1.93E+00	1.54E-03	3.94E-04
1.23E-05	6.17E-04	9.45E-05	2.12E-05	6.99E-06	9.89E-05	6.99E-06	1.32E-04	6.61E-06	3.46E-05	6.69E-06	4.79E-05	2.24E+00	5.70E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.20E-05	1.15E-04	5.89E-03	0.00E+00	3.43E-06	9.89E-05	3.43E-06	1.29E-04	6.61E-06	3.46E-05	3.15E-06	4.44E-05	1.93E+00	1.54E-03	3.94E-04
1.64E-05	1.08E-03	1.20E-04	2.15E-05	9.10E-06	9.89E-05	9.10E-06	1.34E-04	6.61E-06	3.46E-05	8.70E-06	4.99E-05	2.27E+00	7.61E-07	3.58E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.09E-05	2.11E-04	6.00E-03	0.00E+00	2.87E-06	9.89E-05	2.87E-06	1.28E-04	6.61E-06	3.46E-05	2.64E-06	4.39E-05	1.98E+00	1.46E-03	4.03E-04
1.20E-05	5.94E-04	9.24E-05	2.13E-05	6.87E-06	9.89E-05	6.87E-06	1.32E-04	6.61E-06	3.46E-05	6.57E-06	4.78E-05	2.25E+00	5.56E-07	3.54E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.20E-05	1.15E-04	5.89E-03	0.00E+00	3.43E-06	9.89E-05	3.43E-06	1.29E-04	6.61E-06	3.46E-05	3.15E-06	4.44E-05	1.94E+00	1.54E-03	3.95E-04
1.53E-05	9.76E-04	1.15E-04	1.99E-05	8.62E-06	9.89E-05	8.62E-06	1.34E-04	6.61E-06	3.46E-05	8.25E-06	4.95E-05	2.10E+00	7.09E-07	3.31E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.09E-05	2.09E-04	5.99E-03	0.00E+00	2.89E-06	9.89E-05	2.89E-06	1.28E-04	6.61E-06	3.46E-05	2.65E-06	4.39E-05	1.94E+00	1.46E-03	3.96E-04
1.16E-05	4.90E-04	5.94E-05	1.99E-05	1.23E-05	9.33E-05	1.23E-05	1.32E-04	6.61E-06	3.26E-05	1.18E-05	5.10E-05	2.10E+00	5.39E-07	3.31E-04
1.16E-05	4.95E-04	5.96E-05	1.99E-05	1.24E-05	9.33E-05	1.24E-05	1.32E-04	6.61E-06	3.26E-05	1.18E-05	5.11E-05	2.10E+00	5.41E-07	3.31E-04
1.15E-05	4.84E-04	5.91E-05	1.99E-05	1.23E-05	9.33E-05	1.23E-05	1.32E-04	6.61E-06	3.26E-05	1.17E-05	5.10E-05	2.10E+00	5.36E-07	3.30E-04
1.25E-05	5.11E-04	6.38E-05	1.79E-05	1.30E-05	9.33E-05	1.30E-05	1.33E-04	6.61E-06	3.26E-05	1.24E-05	5.17E-05	1.89E+00	5.78E-07	2.98E-04
3.53E-05	1.47E-03	1.46E-04	2.28E-05	1.04E-05	1.02E-04	1.04E-05	1.39E-04	6.61E-06	3.56E-05	9.91E-06	5.21E-05	2.41E+00	1.64E-06	3.79E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05	0.00E+00	7.73E-05	6.61E-06	1.78E-05	0.00E+00	2.44E-05	0.00E+00	0.00E+00	0.00E+00
2.78E-05	1.28E-04	6.74E-03	0.00E+00	3.96E-06	1.02E-04	3.96E-06	1.32E-04	6.61E-06	3.56E-05	3.64E-06	4.59E-05	2.15E+00	1.95E-03	4.39E-04
3.06E-05	1.22E-03	1.37E-04	2.29E-05	8.59E-06	1.02E-04	8.59E-06	1.37E-04	6.61E-06	3.56E-05	8.22E-06	5.05E-05	2.42E+00	1.42E-06	3.81E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05	0.00E+00	7.73E-05	6.61E-06	1.78E-05	0.00E+00	2.44E-05	0.00E+00	0.00E+00	0.00E+00
2.77E-05	1.52E-04	6.75E-03	0.00E+00	3.84E-06	1.02E-04	3.84E-06	1.32E-04	6.61E-06	3.56E-05	3.53E-06	4.58E-05	2.18E+00	1.94E-03	4.45E-04
2.66E-05	1.13E-03	1.26E-04	2.28E-05	8.34E-06	1.02E-04	8.34E-06	1.37E-04	6.61E-06	3.56E-05	7.98E-06	5.02E-05	2.41E+00	1.23E-06	3.80E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05	0.00E+00	7.73E-05	6.61E-06	1.78E-05	0.00E+00	2.44E-05	0.00E+00	0.00E+00	0.00E+00
2.77E-05	1.41E-04	6.75E-03	0.00E+00	3.90E-06	1.02E-04	3.90E-06	1.32E-04	6.61E-06	3.56E-05	3.58E-06	4.58E-05	2.16E+00	1.94E-03	4.41E-04
2.42E-05	1.06E-03	1.19E-04	2.25E-05	7.89E-06	1.02E-04	7.89E-06	1.36E-04	6.61E-06	3.56E-05	7.55E-06	4.98E-05	2.38E+00	1.12E-06	3.74E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05	0.00E+00	7.73E-05	6.61E-06	1.78E-05	0.00E+00	2.44E-05	0.00E+00	0.00E+00	0.00E+00
2.78E-05	1.40E-04	6.75E-03	0.00E+00	3.90E-06	1.02E-04	3.90E-06	1.32E-04	6.61E-06	3.56E-05	3.59E-06	4.58E-05	2.16E+00	1.94E-03	4.41E-04
1.12E-05	4.24E-04	7.84E-05	2.12E-05	5.11E-06	1.00E-04	5.11E-06	1.32E-04	6.61E-06	3.51E-05	4.89E-06	4.66E-05	2.24E+00	5.22E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.02E-05	0.00E+00	7.66E-05	6.61E-06	1.76E-05	0.00E+00	2.42E-05	0.00E+00	0.00E+00	0.00E+00
2.46E-05	1.19E-04	6.05E-03	0.00E+00	3.61E-06	1.00E-04	3.61E-06	1.30E-04	6.61E-06	3.51E-05	3.32E-06	4.50E-05	2.02E+00	1.72E-03	4.12E-04
1.12E-05	4.15E-04	7.84E-05	2.12E-05	5.07E-06	1.00E-04	5.07E-06	1.32E-04	6.61E-06	3.51E-05	4.85E-06	4.66E-05	2.24E+00	5.22E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.02E-05	0.00E+00	7.66E-05	6.61E-06	1.76E-05	0.00E+00	2.42E-05	0.00E+00	0.00E+00	0.00E+00
2.46E-05	1.19E-04	6.05E-03	0.00E+00	3.61E-06	1.00E-04	3.61E-06	1.30E-04	6.61E-06	3.51E-05	3.32E-06	4.50E-05	2.02E+00	1.72E-03	4.12E-04
1.11E-05	4.04E-04	7.77E-05	2.13E-05	5.04E-06	1.00E-04	5.04E-06	1.32E-04	6.61E-06	3.51E-05	4.83E-06	4.65E-05	2.24E+00	5.17E-07	3.54E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.02E-05	0.00E+00	7.66E-05	6.61E-06	1.76E-05	0.00E+00	2.42E-05	0.00E+00	0.00E+00	0.00E+00
2.46E-05	1.19E-04	6.05E-03	0.00E+00	3.61E-06	1.00E-04	3.61E-06	1.30E-04	6.61E-06	3.51E-05	3.32E-06	4.50E-05	2.02E+00	1.72E-03	4.12E-04
2.44E-05	1.53E-04	4.06E-04	3.36E-05	3.29E-06	9.92E-05	3.29E-06	1.29E-04	6.61E-06	3.47E-05	3.03E-06	4.44E-05	3.39E+00	6.66E-06	1.55E-05
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.96E-05	0.00E+00	7.61E-05	6.61E-06	1.74E-05	0.00E+00	2.40E-05	0.00E+00	0.00E+00	0.00E+00
2.53E-05	2.66E-03	8.55E-05	2.67E-05	6.59E-05	1.80E-04	6.59E-05	3.26E-04	1.98E-05	6.31E-05	6.31E-05	1.46E-04	2.82E+00	1.17E-06	4.44E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.03E-05	0.00E+00	1.70E-04	1.98E-05	3.16E-05	0.00E+00	5.14E-05	0.00E+00	0.00E+00	0.00E+00
2.95E-05	3.37E-04	6.36E-03	0.00E+00	4.33E-06	1.80E-04	4.33E-06	2.64E-04	1.98E-05	6.31E-05	3.99E-06	8.70E-05	2.26E+00	2.06E-03	4.60E-04
2.46E-05	2.93E-03	8.33E-05	2.56E-05	6.51E-05	1.80E-04	6.51E-05	3.25E-04	1.98E-05	6.31E-05	6.22E-05	1.45E-04	2.70E+00	1.14E-06	4.25E-04
2.54E-05	3.02E-03	8.58E-05	2.55E-05	6.89E-05	1.80E-04	6.89E-05	3.29E-04	1.98E-05	6.31E-05	6.59E-05	1.49E-04	2.70E+00	1.18E-06	4.25E-04
2.21E-05	2.72E-03	1.40E-04	2.86E-05	3.62E-05	2.08E-04	3.62E-05	3.23E-04	1.98E-05	7.27E-05	3.46E-05	1.27E-04	3.02E+00	1.03E-06	4.76E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-04	0.00E+00	1.83E-04	1.98E-05	3.63E-05	0.00E+00	5.62E-05	0.00E+00	0.00E+00	0.00E+00
2.26E-05	2.82E-03	1.43E-04	2.85E-05	3.78E-05	2.08E-04	3.78E-05	3.25E-04	1.98E-05	7.27E-05	3.61E-05	1.29E-04	3.01E+00	1.05E-06	4.75E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-04	0.00E+00	1.83E-04	1.98E-05	3.63E-05	0.00E+00	5.62E-05	0.00E+00	0.00E+00	0.00E+00
3.70E-05	3.81E-04	1.10E-02	0.00E+00	5.57E-06	2.08E-04	5.57E-06	2.93E-04	1.98E-05	7.27E-05	5.12E-06	9.76E-05	2.54E+00	2.59E-03	5.18E-04
6.66E-05	4.57E-03	3.33E-04	3.38E-05	2.35E-05	2.37E-04	2.35E-05	3.40E-04	1.98E-05	8.28E-05	2.25E-05	1.25E-04	3.57E+00	3.09E-06	5.63E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-04	0.00E+00	1.99E-04	1.98E-05	4.19E-05	0.00E+00	6.17E-05	0.00E+00	0.00E+00	0.00E+00

5.38E-05	5.92E-04	1.78E-02	0.00E+00	7.25E-06	2.34E-04	7.25E-06	3.21E-04	1.98E-05	8.20E-05	6.66E-06	1.08E-04	3.22E+00	3.76E-03	6.57E-04
1.90E-05	1.77E-03	9.63E-05	3.02E-05	3.02E-05	1.95E-04	3.02E-05	3.05E-04	1.98E-05	6.84E-05	2.89E-05	1.17E-04	3.19E+00	8.83E-07	5.03E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.79E-05	0.00E+00	1.77E-04	1.98E-05	3.43E-05	0.00E+00	5.41E-05	0.00E+00	0.00E+00	0.00E+00
3.36E-05	3.61E-04	8.92E-03	0.00E+00	4.97E-06	1.95E-04	4.97E-06	2.80E-04	1.98E-05	6.84E-05	4.57E-06	9.28E-05	2.48E+00	2.35E-03	5.05E-04
2.32E-05	2.45E-03	1.26E-04	3.11E-05	3.87E-05	1.92E-04	3.87E-05	3.10E-04	1.98E-05	6.71E-05	3.70E-05	1.24E-04	3.29E+00	1.08E-06	5.18E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.78E-05	0.00E+00	1.77E-04	1.98E-05	3.42E-05	0.00E+00	5.41E-05	0.00E+00	0.00E+00	0.00E+00
3.36E-05	4.41E-04	9.99E-03	0.00E+00	4.80E-06	1.92E-04	4.80E-06	2.76E-04	1.98E-05	6.71E-05	4.41E-06	9.14E-05	2.54E+00	2.35E-03	5.18E-04
2.14E-05	2.22E-03	1.11E-04	3.08E-05	3.66E-05	1.92E-04	3.66E-05	3.08E-04	1.98E-05	6.74E-05	3.50E-05	1.22E-04	3.25E+00	9.92E-07	5.12E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.78E-05	0.00E+00	1.77E-04	1.98E-05	3.42E-05	0.00E+00	5.41E-05	0.00E+00	0.00E+00	0.00E+00
3.36E-05	3.88E-04	9.27E-03	0.00E+00	4.91E-06	1.93E-04	4.91E-06	2.77E-04	1.98E-05	6.74E-05	4.52E-06	9.17E-05	2.50E+00	2.35E-03	5.10E-04
7.91E-05	1.24E-02	2.04E-04	8.26E-05	3.29E-05	4.63E-04	3.29E-05	5.75E-04	1.98E-05	1.62E-04	3.14E-05	2.13E-04	8.73E+00	3.67E-06	1.37E-03
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-04	0.00E+00	3.11E-04	1.98E-05	8.10E-05	0.00E+00	1.01E-04	0.00E+00	0.00E+00	0.00E+00
2.95E-05	7.68E-04	2.42E-02	0.00E+00	2.70E-06	4.63E-04	2.70E-06	5.45E-04	1.98E-05	1.62E-04	2.48E-06	1.84E-04	2.95E+00	1.57E-03	6.01E-04
2.27E-05	2.63E-03	1.07E-04	2.67E-05	4.85E-05	1.89E-04	4.85E-05	3.17E-04	1.98E-05	6.61E-05	4.64E-05	1.32E-04	2.82E+00	1.06E-06	4.44E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.54E-05	0.00E+00	1.75E-04	1.98E-05	3.34E-05	0.00E+00	5.32E-05	0.00E+00	0.00E+00	0.00E+00
3.21E-05	4.00E-04	8.78E-03	0.00E+00	4.67E-06	1.89E-04	4.67E-06	2.73E-04	1.98E-05	6.60E-05	4.29E-06	9.01E-05	2.38E+00	2.25E-03	4.85E-04
2.47E-05	2.36E-03	2.26E-04	3.23E-05	1.60E-05	2.23E-04	1.60E-05	3.18E-04	1.98E-05	7.80E-05	1.53E-05	1.13E-04	3.41E+00	1.15E-06	5.38E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-04	0.00E+00	1.94E-04	1.98E-05	4.01E-05	0.00E+00	5.99E-05	0.00E+00	0.00E+00	0.00E+00
9.72E-04	4.83E-03	6.63E-02	3.94E-05	3.43E-06	2.13E-04	3.43E-06	2.60E-04	1.10E-05	7.45E-05	3.16E-06	8.86E-05	3.99E+00	2.10E-04	2.24E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-04	0.00E+00	1.51E-04	1.10E-05	3.74E-05	0.00E+00	4.85E-05	0.00E+00	0.00E+00	0.00E+00
6.82E-06	3.30E-05	1.26E-03	1.85E-05	2.87E-06	2.01E-04	2.87E-06	2.21E-04	4.41E-06	7.02E-05	2.64E-06	7.73E-05	1.87E+00	2.51E-06	5.51E-06
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-04	0.00E+00	1.85E-04	1.59E-05	4.24E-05	0.00E+00	5.83E-05	0.00E+00	0.00E+00	0.00E+00

MTens/Mile														
ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX
4.82E-08	1.04E-06	1.75E-07	1.00E-08	1.20E-08	4.61E-08	1.33E-08	7.14E-08	3.00E-09	1.61E-08	1.27E-08	3.19E-08	1.06E-03	2.24E-09	1.66E-07
1.19E-08	1.06E-07	3.38E-06	0.00E+00	1.20E-08	4.61E-08	1.59E-09	5.97E-08	3.00E-09	1.61E-08	1.46E-09	2.06E-08	9.21E-04	8.36E-07	1.88E-07
2.80E-09	1.97E-08	4.59E-07	2.20E-09	8.00E-09	7.43E-09	4.94E-10	1.59E-08	2.00E-09	2.60E-09	4.54E-10	5.06E-09	2.23E-04	9.65E-10	3.21E-09
4.49E-09	1.86E-08	1.31E-07	1.73E-09	8.00E-09	7.46E-09	1.28E-09	1.67E-08	2.00E-09	2.61E-09	1.22E-09	5.83E-09	1.82E-04	2.09E-10	2.87E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.39E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00
1.12E-09	2.64E-09	1.73E-07	1.11E-09	8.00E-09	4.00E-09	2.03E-10	1.22E-08	2.00E-09	1.40E-09	1.86E-10	3.58E-09	1.12E-04	3.42E-10	4.46E-10
3.12E-09	2.16E-08	4.92E-07	2.55E-09	8.00E-09	8.83E-09	5.45E-10	1.74E-08	2.00E-09	3.09E-09	5.01E-10	5.59E-09	2.58E-04	1.05E-09	3.38E-09
1.15E-08	2.68E-08	1.21E-07	3.19E-09	8.00E-09	8.75E-09	4.09E-09	2.08E-08	2.00E-09	3.06E-09	3.91E-09	8.98E-09	3.37E-04	5.36E-10	5.30E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.39E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00
1.12E-09	2.63E-09	1.72E-07	1.11E-09	8.00E-09	4.00E-09	1.95E-10	1.22E-08	2.00E-09	1.40E-09	1.79E-10	3.58E-09	1.12E-04	3.43E-10	4.49E-10
3.93E-09	2.30E-08	5.42E-07	2.65E-09	8.00E-09	8.76E-09	5.14E-10	1.73E-08	2.00E-09	3.07E-09	4.72E-10	5.54E-09	2.68E-04	1.30E-09	3.49E-09
1.16E-08	2.74E-08	1.22E-07	2.37E-09	8.00E-09	8.76E-09	4.11E-09	2.09E-08	2.00E-09	3.07E-09	3.93E-09	9.00E-09	2.51E-04	5.38E-10	3.95E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.39E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00
1.12E-09	2.64E-09	1.73E-07	1.11E-09	8.00E-09	4.00E-09	1.99E-10	1.22E-08	2.00E-09	1.40E-09	1.83E-10	3.58E-09	1.12E-04	3.43E-10	4.48E-10
4.23E-09	2.20E-08	5.94E-07	7.45E-09	8.00E-09	7.80E-08	1.27E-09	8.73E-08	2.00E-09	2.73E-08	1.17E-09	3.05E-08	7.54E-04	1.26E-09	1.86E-09
9.14E-08	3.02E-07	2.36E-07	5.73E-09	1.20E-08	7.80E-08	1.97E-08	1.10E-07	3.00E-09	2.73E-08	1.88E-08	4.91E-08	6.05E-04	4.24E-09	9.53E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	3.90E-08	0.00E+00	4.70E-08	2.00E-09	1.37E-08	0.00E+00	1.57E-08	0.00E+00	0.00E+00	0.00E+00
3.60E-09	2.16E-08	6.03E-07	8.36E-09	8.00E-09	9.10E-08	1.26E-09	1.00E-07	2.00E-09	3.19E-08	1.16E-09	3.50E-08	8.45E-04	1.11E-09	2.18E-09
1.13E-07	4.31E-07	2.98E-07	6.70E-09	1.20E-08	9.10E-08	2.49E-08	1.28E-07	3.00E-09	3.19E-08	2.38E-08	5.86E-08	7.07E-04	5.26E-09	1.11E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.55E-08	0.00E+00	5.35E-08	2.00E-09	1.59E-08	0.00E+00	1.79E-08	0.00E+00	0.00E+00	0.00E+00
7.80E-07	4.71E-07	9.83E-06	1.83E-09	4.00E-09	1.20E-08	2.12E-09	1.81E-08	1.00E-09	4.20E-09	1.98E-09	7.18E-09	1.85E-04	1.31E-07	3.55E-08
4.50E-09	2.70E-08	5.74E-07	3.23E-09	8.00E-09	8.91E-09	5.31E-10	1.74E-08	2.00E-09	3.12E-09	4.88E-10	5.61E-09	3.26E-04	1.43E-09	3.72E-09
4.43E-09	1.17E-08	1.37E-07	3.12E-09	8.00E-09	8.95E-09	1.11E-09	1.81E-08	2.00E-09	3.13E-09	1.07E-09	6.20E-09	3.29E-04	2.06E-10	5.18E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.40E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00
1.12E-09	2.64E-09	1.73E-07	1.11E-09	8.00E-09	4.00E-09	2.04E-10	1.22E-08	2.00E-09	1.40E-09	1.87E-10	3.59E-09	1.12E-04	3.42E-10	4.44E-10
1.15E-08	1.96E-07	1.59E-07	1.92E-08	1.20E-08	4.50E-08	1.47E-09	5.85E-08	3.00E-09	1.58E-08	1.35E-09	2.01E-08	1.94E-03	4.04E-09	1.81E-08
8.62E-08	2.58E-06	2.54E-07	1.03E-08	1.60E-08	4.48E-08	2.84E-08	8.92E-08	4.00E-09	1.57E-08	2.72E-08	4.68E-08	1.09E-03	4.00E-09	1.71E-07
1.05E-08	9.33E-07	3.59E-08	1.45E-08	1.20E-08	8.15E-08	2.37E-08	1.17E-07	3.00E-09	2.85E-08	2.26E-08	5.42E-08	1.53E-03	4.89E-10	2.41E-07
2.46E-08	2.78E-07	4.90E-07	1.52E-08	1.20E-08	4.48E-08	1.28E-09	5.81E-08	3.00E-09	1.57E-08	1.18E-09	1.99E-08	1.54E-03	5.50E-09	1.66E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.84E-09	0.00E+00	1.08E-08	0.00E+00	0.00E+00	0.00E+00
1.48E-08	2.56E-06	1.83E-07	1.66E-08	0.00E+00	0.00E+00	4.07E-09	4.07E-09	0.00E+00	0.00E+00	3.90E-09	3.90E-09	1.75E-03	6.86E-10	2.76E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.38E-09	1.29E-07	1.94E-07	7.29E-09	8.00E-09	4.49E-08	1.23E-09	5.41E-08	2.00E-09	1.57E-08	1.13E-09	1.89E-08	7.37E-04	1.99E-09	1.22E-08
7.87E-09	4.30E-07	5.81E-08	1.00E-08	1.20E-08	4.49E-08	3.61E-09	6.05E-08	3.00E-09	1.57E-08	3.46E-09	2.22E-08	1.06E-03	3.66E-10	1.66E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-08	2.25E-08	0.00E+00	3.31E-08	2.66E-09	7.86E-09	0.00E+00	1.05E-08	0.00E+00	0.00E+00	0.00E+00
3.84E-08	2.96E-07	8.14E-06	0.00E+00	1.20E-08	4.49E-08	3.67E-09	6.06E-08	3.00E-09	1.57E-08	3.38E-09	2.21E-08	1.13E-03	2.69E-06	2.30E-07
5.37E-09	1.78E-07	2.75E-08	9.62E-09	1.20E-08	4.23E-08	5.41E-09	5.97E-08	3.00E-09	1.48E-08	5.18E-09	2.30E-08	1.02E-03	2.50E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.12E-08	0.00E+00	3.32E-08	3.00E-09	7.40E-09	0.00E+00	1.04E-08	0.00E+00	0.00E+00	0.00E+00
5.39E-09	1.80E-07	2.76E-08	9.62E-09	1.20E-08	4.23E-08	5.42E-09	5.97E-08	3.00E-09	1.48E-08	5.19E-09	2.30E-08	1.02E-03	2.50E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.12E-08	0.00E+00	3.32E-08	3.00E-09	7.40E-09	0.00E+00	1.04E-08	0.00E+00	0.00E+00	0.00E+00
5.36E-09	1.79E-07	2.75E-08	9.61E-09	1.20E-08	4.23E-08	5.43E-09	5.97E-08	3.00E-09	1.48E-08	5.19E-09	2.30E-08	1.01E-03	2.49E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.12E-08	0.00E+00	3.32E-08	3.00E-09	7.40E-09	0.00E+00	1.04E-08	0.00E+00	0.00E+00	0.00E+00
5.77E-09	1.95E-07	2.96E-08	8.49E-09	1.20E-08	4.23E-08	5.75E-09	6.01E-08	3.00E-09	1.48E-08	5.50E-09	2.33E-08	8.96E-04	2.68E-10	1.41E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.12E-08	0.00E+00	3.32E-08	3.00E-09	7.40E-09	0.00E+00	1.04E-08	0.00E+00	0.00E+00	0.00E+00
6.14E-09	3.70E-07	5.40E-08	9.95E-09	1.20E-08	4.76E-08	1.93E-09	6.15E-08	3.00E-09	1.66E-08	1.85E-09	2.15E-08	1.05E-03	2.85E-10	1.65E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.38E-08	0.00E+00	3.58E-08	3.00E-09	8.32E-09	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00
1.25E-08	6.03E-08	3.82E-06	0.00E+00	1.20E-08	4.76E-08	2.01E-09	6.16E-08	3.00E-09	1.66E-08	1.85E-09	2.15E-08	1.01E-03	8.73E-07	2.05E-07
6.12E-09	3.65E-07	5.37E-08	9.97E-09	1.20E-08	4.76E-08	1.93E-09	6.15E-08	3.00E-09	1.66E-08	1.84E-09	2.15E-08	1.05E-03	2.84E-10	1.66E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.38E-08	0.00E+00	3.58E-08	3.00E-09	8.32E-09	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00
1.25E-08	6.01E-08	3.82E-06	0.00E+00	1.20E-08	4.76E-08	2.02E-09	6.16E-08	3.00E-09	1.66E-08	1.85E-09	2.15E-08	1.01E-03	8.73E-07	2.05E-07
6.17E-09	3.71E-07	5.40E-08	9.96E-09	1.20E-08	4.76E-08	1.94E-09	6.15E-08	3.00E-09	1.66E-08	1.86E-09	2.15E-08	1.05E-03	2.87E-10	1.66E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.38E-08	0.00E+00	3.58E-08	3.00E-09	8.32E-09	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00

1.25E-08	6.09E-08	3.82E-06	0.00E+00	1.20E-08	4.76E-08	2.01E-09	6.16E-08	3.00E-09	1.66E-08	1.85E-09	2.15E-08	1.01E-03	8.72E-07	2.05E-07
1.09E-08	7.86E-07	8.16E-08	1.02E-08	1.20E-08	4.76E-08	2.97E-09	6.25E-08	3.00E-09	1.66E-08	2.84E-09	2.25E-08	1.08E-03	5.06E-10	1.70E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.38E-08	0.00E+00	3.58E-08	3.00E-09	8.32E-09	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00
1.18E-08	1.41E-07	3.63E-06	0.00E+00	1.20E-08	4.76E-08	1.55E-09	6.11E-08	3.00E-09	1.66E-08	1.43E-09	2.11E-08	1.03E-03	8.24E-07	2.11E-07
5.53E-09	2.77E-07	4.28E-08	9.62E-09	1.20E-08	4.49E-08	3.15E-09	6.00E-08	3.00E-09	1.57E-08	3.02E-09	2.17E-08	1.02E-03	2.57E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.96E-09	5.21E-08	2.67E-06	0.00E+00	1.20E-08	4.49E-08	1.56E-09	5.84E-08	3.00E-09	1.57E-08	1.43E-09	2.01E-08	8.78E-04	6.97E-07	1.79E-07
5.57E-09	2.76E-07	4.28E-08	9.63E-09	1.20E-08	4.49E-08	3.16E-09	6.00E-08	3.00E-09	1.57E-08	3.02E-09	2.17E-08	1.02E-03	2.59E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.96E-09	5.24E-08	2.67E-06	0.00E+00	1.20E-08	4.49E-08	1.55E-09	5.84E-08	3.00E-09	1.57E-08	1.43E-09	2.01E-08	8.77E-04	6.97E-07	1.79E-07
5.57E-09	2.80E-07	4.29E-08	9.63E-09	1.20E-08	4.49E-08	3.17E-09	6.00E-08	3.00E-09	1.57E-08	3.03E-09	2.17E-08	1.02E-03	2.59E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.96E-09	5.23E-08	2.67E-06	0.00E+00	1.20E-08	4.49E-08	1.56E-09	5.84E-08	3.00E-09	1.57E-08	1.43E-09	2.01E-08	8.77E-04	6.97E-07	1.79E-07
7.43E-09	4.88E-07	5.44E-08	9.76E-09	1.20E-08	4.49E-08	4.13E-09	6.10E-08	3.00E-09	1.57E-08	3.95E-09	2.27E-08	1.03E-03	3.45E-10	1.62E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.48E-09	9.57E-08	2.72E-06	0.00E+00	1.20E-08	4.49E-08	1.30E-09	5.82E-08	3.00E-09	1.57E-08	1.20E-09	1.99E-08	8.97E-04	6.63E-07	1.83E-07
5.43E-09	2.70E-07	4.19E-08	9.65E-09	1.20E-08	4.49E-08	3.11E-09	6.00E-08	3.00E-09	1.57E-08	2.98E-09	2.17E-08	1.02E-03	2.52E-10	1.61E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.96E-09	5.22E-08	2.67E-06	0.00E+00	1.20E-08	4.49E-08	1.56E-09	5.84E-08	3.00E-09	1.57E-08	1.43E-09	2.01E-08	8.79E-04	6.97E-07	1.79E-07
6.92E-09	4.43E-07	5.20E-08	9.01E-09	1.20E-08	4.49E-08	3.91E-09	6.08E-08	3.00E-09	1.57E-08	3.74E-09	2.24E-08	9.52E-04	3.22E-10	1.50E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.49E-09	9.48E-08	2.72E-06	0.00E+00	1.20E-08	4.49E-08	1.31E-09	5.82E-08	3.00E-09	1.57E-08	1.20E-09	1.99E-08	8.81E-04	6.64E-07	1.80E-07
5.26E-09	2.22E-07	2.69E-08	9.03E-09	1.20E-08	4.23E-08	5.58E-09	5.99E-08	3.00E-09	1.48E-08	5.34E-09	2.32E-08	9.54E-04	2.44E-10	1.50E-07
5.28E-09	2.25E-07	2.70E-08	9.04E-09	1.20E-08	4.23E-08	5.61E-09	5.99E-08	3.00E-09	1.48E-08	5.36E-09	2.32E-08	9.54E-04	2.45E-10	1.50E-07
5.23E-09	2.19E-07	2.68E-08	9.01E-09	1.20E-08	4.23E-08	5.56E-09	5.99E-08	3.00E-09	1.48E-08	5.32E-09	2.31E-08	9.51E-04	2.43E-10	1.50E-07
5.65E-09	2.32E-07	2.90E-08	8.12E-09	1.20E-08	4.23E-08	5.89E-09	6.02E-08	3.00E-09	1.48E-08	5.64E-09	2.34E-08	8.58E-04	2.62E-10	1.35E-07
1.60E-08	6.65E-07	6.61E-08	1.03E-08	1.20E-08	4.62E-08	4.70E-09	6.29E-08	3.00E-09	1.62E-08	4.50E-09	2.37E-08	1.09E-03	7.44E-10	1.72E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.31E-08	0.00E+00	3.51E-08	3.00E-09	8.08E-09	0.00E+00	1.11E-08	0.00E+00	0.00E+00	0.00E+00
1.26E-08	5.81E-08	3.06E-06	0.00E+00	1.20E-08	4.62E-08	1.79E-09	6.00E-08	3.00E-09	1.62E-08	1.65E-09	2.08E-08	9.77E-04	8.83E-07	1.99E-07
1.39E-08	5.55E-07	6.23E-08	1.04E-08	1.20E-08	4.62E-08	3.90E-09	6.21E-08	3.00E-09	1.62E-08	3.73E-09	2.29E-08	1.10E-03	6.44E-10	1.73E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.31E-08	0.00E+00	3.51E-08	3.00E-09	8.08E-09	0.00E+00	1.11E-08	0.00E+00	0.00E+00	0.00E+00
1.26E-08	6.89E-08	3.06E-06	0.00E+00	1.20E-08	4.62E-08	1.74E-09	5.99E-08	3.00E-09	1.62E-08	1.60E-09	2.08E-08	9.91E-04	8.79E-07	2.02E-07
1.20E-08	5.11E-07	5.72E-08	1.04E-08	1.20E-08	4.62E-08	3.78E-09	6.20E-08	3.00E-09	1.62E-08	3.62E-09	2.28E-08	1.09E-03	5.60E-10	1.72E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.31E-08	0.00E+00	3.51E-08	3.00E-09	8.08E-09	0.00E+00	1.11E-08	0.00E+00	0.00E+00	0.00E+00
1.26E-08	6.39E-08	3.06E-06	0.00E+00	1.20E-08	4.62E-08	1.77E-09	5.99E-08	3.00E-09	1.62E-08	1.62E-09	2.08E-08	9.81E-04	8.81E-07	2.00E-07
1.10E-08	4.82E-07	5.38E-08	1.02E-08	1.20E-08	4.62E-08	3.58E-09	6.17E-08	3.00E-09	1.62E-08	3.42E-09	2.26E-08	1.08E-03	5.10E-10	1.70E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.31E-08	0.00E+00	3.51E-08	3.00E-09	8.08E-09	0.00E+00	1.11E-08	0.00E+00	0.00E+00	0.00E+00
1.26E-08	6.36E-08	3.06E-06	0.00E+00	1.20E-08	4.62E-08	1.77E-09	5.99E-08	3.00E-09	1.62E-08	1.63E-09	2.08E-08	9.81E-04	8.81E-07	2.00E-07
5.09E-09	1.93E-07	3.56E-08	9.63E-09	1.20E-08	4.55E-08	2.32E-09	5.98E-08	3.00E-09	1.59E-08	2.22E-09	2.11E-08	1.02E-03	2.37E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.27E-08	0.00E+00	3.47E-08	3.00E-09	7.96E-09	0.00E+00	1.10E-08	0.00E+00	0.00E+00	0.00E+00
1.11E-08	5.42E-08	2.75E-06	0.00E+00	1.20E-08	4.55E-08	1.64E-09	5.91E-08	3.00E-09	1.59E-08	1.50E-09	2.04E-08	9.16E-04	7.79E-07	1.87E-07
5.10E-09	1.88E-07	3.56E-08	9.63E-09	1.20E-08	4.55E-08	2.30E-09	5.98E-08	3.00E-09	1.59E-08	2.20E-09	2.11E-08	1.02E-03	2.37E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.27E-08	0.00E+00	3.47E-08	3.00E-09	7.96E-09	0.00E+00	1.10E-08	0.00E+00	0.00E+00	0.00E+00
1.11E-08	5.42E-08	2.75E-06	0.00E+00	1.20E-08	4.55E-08	1.64E-09	5.91E-08	3.00E-09	1.59E-08	1.50E-09	2.04E-08	9.16E-04	7.79E-07	1.87E-07
5.05E-09	1.83E-07	3.52E-08	9.64E-09	1.20E-08	4.55E-08	2.29E-09	5.98E-08	3.00E-09	1.59E-08	2.19E-09	2.11E-08	1.02E-03	2.34E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.27E-08	0.00E+00	3.47E-08	3.00E-09	7.96E-09	0.00E+00	1.10E-08	0.00E+00	0.00E+00	0.00E+00
1.11E-08	5.42E-08	2.75E-06	0.00E+00	1.20E-08	4.55E-08	1.64E-09	5.91E-08	3.00E-09	1.59E-08	1.50E-09	2.04E-08	9.16E-04	7.79E-07	1.87E-07
1.11E-08	6.94E-08	1.84E-07	1.52E-08	1.20E-08	4.50E-08	1.49E-09	5.85E-08	3.00E-09	1.58E-08	1.37E-09	2.01E-08	1.54E-03	3.02E-09	7.02E-09
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.25E-08	0.00E+00	3.45E-08	3.00E-09	7.88E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
1.15E-08	1.21E-06	3.88E-08	1.21E-08	3.60E-08	8.18E-08	2.99E-08	1.48E-07	9.00E-09	2.86E-08	2.86E-08	6.62E-08	1.28E-03	5.33E-10	2.01E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	4.09E-08	0.00E+00	7.69E-08	9.00E-09	1.43E-08	0.00E+00	2.33E-08	0.00E+00	0.00E+00	0.00E+00
1.34E-08	1.53E-07	2.88E-06	0.00E+00	3.60E-08	8.18E-08	1.97E-09	1.20E-07	9.00E-09	2.86E-08	1.81E-09	3.94E-08	1.02E-03	9.35E-07	2.09E-07
1.12E-08	1.33E-06	3.78E-08	1.16E-08	3.60E-08	8.18E-08	2.95E-08	1.47E-07	9.00E-09	2.86E-08	2.82E-08	6.59E-08	1.22E-03	5.18E-10	1.93E-07
1.15E-08	1.37E-06	3.89E-08	1.16E-08	3.60E-08	8.18E-08	3.12E-08	1.49E-07	9.00E-09	2.86E-08	2.99E-08	6.75E-08	1.22E-03	5.34E-10	1.93E-07
1.00E-08	1.23E-06	6.35E-08	1.30E-08	3.60E-08	9.42E-08	1.64E-08	1.47E-07	9.00E-09	3.30E-08	1.57E-08	5.77E-08	1.37E-03	4.66E-10	2.16E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	4.71E-08	0.00E+00	8.31E-08	9.00E-09	1.65E-08	0.00E+00	2.55E-08	0.00E+00	0.00E+00	0.00E+00
1.02E-08	1.28E-06	6.48E-08	1.29E-08	3.60E-08	9.42E-08	1.71E-08	1.47E-07	9.00E-09	3.30E-08	1.64E-08	5.83E-08	1.37E-03	4.75E-10	2.15E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	4.71E-08	0.00E+00	8.31E-08	9.00E-09	1.65E-08	0.00E+00	2.55E-08	0.00E+00	0.00E+00	0.00E+00
1.68E-08	1.73E-07	4.98E-06	0.00E+00	3.60E-08	9.42E-08	2.52E-09	1.33E-07	9.00E-09	3.30E-08	2.32E-09	4.43E-08	1.15E-03	1.17E-06	2.35E-07
3.02E-08	2.07E-06	1.51E-07	1.53E-08	3.60E-08	1.07E-07	1.07E-08	1.54E-07	9.00E-09	3.76E-08	1.02E-08	5.68E-08	1.62E-03	1.40E-09	2.55E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	5.43E-08	0.00E+00	9.03E-08	9.00E-09	1.90E-08	0.00E+00	2.80E-08	0.00E+00	0.00E+00	0.00E+00

2.44E-08	2.69E-07	8.08E-06	0.00E+00	3.60E-08	1.06E-07	3.29E-09	1.46E-07	9.00E-09	3.72E-08	3.02E-09	4.92E-08	1.46E-03	1.71E-06	2.98E-07
8.63E-09	8.05E-07	4.37E-08	1.37E-08	3.60E-08	8.86E-08	1.37E-08	1.38E-07	9.00E-09	3.10E-08	1.31E-08	5.31E-08	1.45E-03	4.01E-10	2.28E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	4.44E-08	0.00E+00	8.04E-08	9.00E-09	1.55E-08	0.00E+00	2.45E-08	0.00E+00	0.00E+00	0.00E+00
1.52E-08	1.64E-07	4.04E-06	0.00E+00	3.60E-08	8.86E-08	2.26E-09	1.27E-07	9.00E-09	3.10E-08	2.07E-09	4.21E-08	1.12E-03	1.07E-06	2.29E-07
1.05E-08	1.11E-06	5.70E-08	1.41E-08	3.60E-08	8.70E-08	1.76E-08	1.41E-07	9.00E-09	3.04E-08	1.68E-08	5.62E-08	1.49E-03	4.90E-10	2.35E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	4.44E-08	0.00E+00	8.04E-08	9.00E-09	1.55E-08	0.00E+00	2.45E-08	0.00E+00	0.00E+00	0.00E+00
1.52E-08	2.00E-07	4.53E-06	0.00E+00	3.60E-08	8.70E-08	2.18E-09	1.25E-07	9.00E-09	3.04E-08	2.00E-09	4.14E-08	1.15E-03	1.07E-06	2.35E-07
9.69E-09	1.01E-06	5.02E-08	1.40E-08	3.60E-08	8.73E-08	1.66E-08	1.40E-07	9.00E-09	3.06E-08	1.59E-08	5.54E-08	1.47E-03	4.50E-10	2.32E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	4.44E-08	0.00E+00	8.04E-08	9.00E-09	1.55E-08	0.00E+00	2.45E-08	0.00E+00	0.00E+00	0.00E+00
1.52E-08	1.76E-07	4.21E-06	0.00E+00	3.60E-08	8.73E-08	2.23E-09	1.26E-07	9.00E-09	3.06E-08	2.05E-09	4.16E-08	1.14E-03	1.07E-06	2.31E-07
3.59E-08	5.64E-06	9.23E-08	3.75E-08	3.60E-08	2.10E-07	1.49E-08	2.61E-07	9.00E-09	7.35E-08	1.43E-08	9.68E-08	3.96E-03	1.67E-09	6.24E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	1.05E-07	0.00E+00	1.41E-07	9.00E-09	3.68E-08	0.00E+00	4.58E-08	0.00E+00	0.00E+00	0.00E+00
1.34E-08	3.49E-07	1.10E-05	0.00E+00	3.60E-08	2.10E-07	1.22E-09	2.47E-07	9.00E-09	7.35E-08	1.13E-09	8.36E-08	1.34E-03	7.14E-07	2.73E-07
1.03E-08	1.19E-06	4.84E-08	1.21E-08	3.60E-08	8.57E-08	2.20E-08	1.44E-07	9.00E-09	3.00E-08	2.10E-08	6.00E-08	1.28E-03	4.79E-10	2.02E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	4.33E-08	0.00E+00	7.93E-08	9.00E-09	1.51E-08	0.00E+00	2.41E-08	0.00E+00	0.00E+00	0.00E+00
1.46E-08	1.82E-07	3.98E-06	0.00E+00	3.60E-08	8.55E-08	2.12E-09	1.24E-07	9.00E-09	2.99E-08	1.95E-09	4.09E-08	1.08E-03	1.02E-06	2.20E-07
1.12E-08	1.07E-06	1.02E-07	1.47E-08	3.60E-08	1.01E-07	7.26E-09	1.44E-07	9.00E-09	3.54E-08	6.95E-09	5.13E-08	1.55E-03	5.20E-10	2.44E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.60E-08	5.19E-08	0.00E+00	8.79E-08	9.00E-09	1.82E-08	0.00E+00	2.72E-08	0.00E+00	0.00E+00	0.00E+00
4.41E-07	2.19E-06	3.01E-05	1.79E-08	2.00E-08	9.65E-08	1.56E-09	1.18E-07	5.00E-09	3.38E-08	1.43E-09	4.02E-08	1.81E-03	9.52E-08	1.02E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E-08	4.85E-08	0.00E+00	6.85E-08	5.00E-09	1.70E-08	0.00E+00	2.20E-08	0.00E+00	0.00E+00	0.00E+00
3.09E-09	1.50E-08	5.69E-07	8.40E-09	8.00E-09	9.10E-08	1.30E-09	1.00E-07	2.00E-09	3.19E-08	1.20E-09	3.50E-08	8.50E-04	1.14E-09	2.50E-09
0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.89E-08	5.50E-08	0.00E+00	8.39E-08	7.22E-09	1.93E-08	0.00E+00	2.65E-08	0.00E+00	0.00E+00	0.00E+00

State reduction scenario

VMT Type	2019	2030	2040	2045
Light-duty gasoline	1,029,579,767	1,134,641,091	1,191,874,813	1,228,502,857
Light-duty diesel	6,439,790	4,696,735	3,795,249	3,789,535
Light-duty CNG	0	0	0	0
Light-duty electricity	18,031,951	94,466,147	130,043,877	138,533,717
Heavy-duty gasoline	26,084,563	26,198,224	19,728,553	17,706,810
Heavy-duty diesel	55,689,893	59,320,637	53,452,166	53,160,903
Heavy-duty CNG	1,070,505	1,881,874	1,664,144	1,534,115
Heavy-duty electricity	14,621	6,764,503	30,401,259	39,227,543

After Strategy 9 (VMT reductions distributed proportionately by type)

VMT Type	2019	2030	2040	2045
Light-duty gasoline	1,029,579,767	1,089,828,607	1,111,050,306	1,101,656,807
Light-duty diesel	6,439,790	4,511,238	3,537,882	3,398,255
Light-duty CNG	0	0	0	0
Light-duty electricity	18,031,951	90,735,220	121,225,222	124,229,758
Heavy-duty gasoline	26,084,563	25,163,529	18,390,703	15,878,537
Heavy-duty diesel	55,689,893	56,977,777	49,827,418	47,671,904
Heavy-duty CNG	1,070,505	1,807,549	1,551,294	1,375,714
Heavy-duty electricity	14,621	6,497,340	28,339,661	35,177,199

After Strategy 10 (EV conversions distributed proportionately by type)

VMT Type	2019	2030	2040	2045
Light-duty gasoline	1,029,579,767	768,136,085	435,088,238	192,431,446
Light-duty diesel	6,439,790	3,179,623	1,385,437	593,589
Light-duty CNG	0	0	0	0
Light-duty electricity	18,031,951	413,759,356	799,339,734	1,036,259,785
Heavy-duty gasoline	26,084,563	24,368,590	18,081,620	6,361,852
Heavy-duty diesel	55,689,893	55,177,797	48,989,995	19,100,097
Heavy-duty CNG	1,070,505	1,750,447	1,525,222	551,190
Heavy-duty electricity	14,621	9,149,361	29,512,238	74,090,216

Vehicle fuel usage

Fuel Type	Existing Baseline Year 2019	Project Year 2045	Net Change from Existing Baseline
Gasoline			
VMT	1,055,664,330	198,793,298	-856,871,032
Gallons	46,151,714	6,219,583	-39,932,132
Miles per gallon	22.87	31.96	9.09
Diesel			
VMT	62,129,682	19,693,685	-42,435,997
Gallons	7,412,023	2,129,844	-5,282,178
Miles per gallon	8.38	9.25	0.86
Compressed Natural Gas			
VMT	1,070,505	551,190	-519,316
Gallons	213,066	95,605	-117,461
Miles per gallon	5.02	5.77	0.74
Electricity			
VMT	18,046,572	1,110,350,001	1,092,303,429
kWh	6,503,224	539,203,303	532,700,078
Miles per kWh	2.78	2.06	-0.72
Total VMT	**1,136,911,090**	**1,329,388,174**	**192,477,084**

We Can Model Regional Emissions, But Are the Results Meaningful for CEQA?

Authors: AEP Climate Change Committee (Michael Hendrix, Dave Mitchell, Haseeb Qureshi, Jennifer Reed, Brian Schuster, Nicole Vermilion, and Rich Walters)

On December 24, 2018, the California Supreme Court, *Sierra Club v. County of Fresno (Friant Ranch, L.P.] (2018) 6 Cal.5th 502, Case No. S219783 (Friant Ranch*), held that simply identifying that a project exceeds an emissions threshold is not sufficient to identify a project's significant effect on the environment relative to the health effects of project emissions. The Court found that an EIR should make a reasonable effort to substantively connect a project's criteria pollutant emissions to likely health consequences, or explain why it is not currently feasible to provide such an analysis. In 2019, there were several CEQA documents that included health effects modeling to provide additional analysis for projects with criteria air pollutant emissions that exceed a significance threshold. While it is technically possible to conduct this modeling, we argue that this additional layer of quantitative analysis may not always provide decision-makers and the public with additional meaningful information. It is the air districts that are best suited to provide frameworks for how to identify health effects of regional criteria pollutant emissions under CEQA.

Introduction

Significance thresholds for regional criteria pollutants used by California air districts and lead agencies represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable national or state ambient air quality standard (AAQS). By analyzing the project's emissions against these thresholds, the CEQA document assesses whether these emissions directly contribute to any regional or local exceedances of the applicable AAQS and exposure levels. The basis of the ruling in Friant Ranch was that the EIR did not provide a meaningful analysis of the adverse health effects that would be associated with the project's criteria pollutant emissions, which were identified as being far above the relevant thresholds. The discussion of the adverse health effects in the EIR was general in nature and did not connect the levels of the pollutants that would be emitted by the project to adverse health effects.

The process of correlating project-related criteria pollutant emissions to health-based consequences is called a health impact assessment (HIA). An HIA involves two steps: 1) running a regional photochemical grid model (PGM) to estimate the small increases in concentrations of ozone and particulate matter (PM) in the region as a result of a project's emissions of criteria and precursor pollutants; and 2) running the U.S. EPA Benefits Mapping and Analysis Program (BenMAP) to estimate the resulting health impacts from these increases in concentrations of ozone and PM.

Limitations of Regional-Scale Dispersion Models

It is technically feasible to conduct regional-scale criteria pollutant modeling for a development project. Particulate matter (PM) can be divided into two categories: directly emitted PM and secondary PM. Secondary PM, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur oxides (SO_x) and NO_x, Ozone (O_3) is a secondary pollutant formed from the oxidation of reactive organic gases (ROGs) and nitrogen oxides (NOx) in the presence of sunlight. Rates of ozone formation are a function of a variety of complex physical factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns.. Secondary formation of PM and ozone can occur far from the original emissions source from regional transport due to wind and topography (e.g. low-level jet stream). As such, modeling concentrations of secondary PM and ozone require photochemical grid models (PGMs), such as CMAQ and CAMx. These models have a much larger "grid" system and much lower resolution than localized dispersion modeling (e.g., AERMOD). For example, common grid cells in PGMs are 4x4 kilometers, while AERMOD can identify concentrations at the meter-level.

Photochemical modeling also depends on all emission sources in the entire domain. Low resolution and spatial averaging produces "noise" and model uncertainty that can exceed a project's specific emissions. Additionally, regional-scale models are highly contingent upon background concentrations. Factors such as meteorology and topography greatly affect the certainty levels of predicted concentrations at receptor points. As a result, there are statistical ranges of uncertainty through all the modeling steps. Due to these factors, it is difficult to predict ground-level secondary PM and ozone concentrations associated with relatively small emission sources with a high degree of certainty. While it is possible to use a regional-scale model to predict these regional concentrations, when a project's emissions are less than the regional model's resolution, the resultant ambient air quality concentrations will be within the margin of uncertainty. In CEQA terms, this would fit the definition of "speculative". Only when the scale of emissions would result in changes in ambient air quality beyond the model margin of uncertainty would the results not be "speculative" as defined by CEQA.

Identifying Health Effects due to Ambient Air Quality Changes

BenMap is a model developed by the USEPA to understand the health effects from changes in ozone and PM concentrations. If there is an acceptable level of confidence that the results provided by the regional dispersion modeling are valid, then these concentrations can be translated into health outcomes using BenMap. The health outcomes in BenMap are based on changes in ambient air concentrations and the population exposed to these changes. Data provided by this analysis may indicate increased number of workdays lost to illness, hospital admissions (respiratory), emergency room visits (asthma), or mortality, among other health effects. These are called "health incidences."

Translating the incremental increase in PM and ozone concentrations to specific health effects is also subject to uncertainty. For example, regional models assign the same toxicity to PM regardless of the source of PM (such as road dust as exhaust), and thus potentially overpredict adverse health effects of PM. BenMap also assumes that health effects can occur at any concentration, including small incremental concentrations, and assumes that impacts seen at large concentration differences can be linearly scaled down to small increases in concentration, with no consideration of potential thresholds below which health impacts may not occur. Additionally, BenMap is used for assessing impacts over large areas and populations and was not intended to be used for individual projects. For health incidences, the number of hospitalizations or increase in morbidity predicted by BenMap is greatly affected by the population characteristics.[1] Small increases in emissions in an area with a high population have a much greater affect than large increases in emissions over an area with a small population. As a result, the same amount of emissions generated in an urban area could result in greater health consequences than if the same emissions occurred on the urban periphery, where fewer people may be affected. This will also depend on other factors including meteorology and photochemistry, as discussed above. Emissions in areas with conditions that favor high air dispersion or unfavorable ozone formation will likely have relatively lower effects on ambient air quality and health outcomes.

While BenMap provides additional statistical information about health consequences requested by the Court in the Friant Ranch decision, this information is only meaningful when presented with the full health context of the region or locality at hand. For example, if the BenMap analysis says that the project would result in two additional hospital admissions, this result alone is not useful unless one identifies how many hospital admissions are caused by poor air quality now (without the project) and how many hospital admissions occur

[1] BenMap assigns prevalence rate for asthma and other health effects based on indicators such as gender, race, age, ethnicity, etc. The BenMap user manual specifically states that there are a wide range of variables that can be included in the health effect function. The health effect function was developed based on epidemiological studies, and specifically states that "there are a number of issues that arise when deriving and choosing between health effect functions that go well beyond this user manual. Hence, it is important to have a trained health researcher assist in developing the impact function data file."

overall (due to air quality and other causes). Because health is not solely influenced by ambient air quality, and has many factors that are highly variable across geographies and populations, there is an added level of uncertainty in using a generalized identification of health effects due to air quality conditions overlaid onto a specific diverse set of health conditions and other factors. Regardless of the uncertainty levels, if regional health effects are identified for a project, then the CEQA analysis needs to provide a full health baseline for decision-makers and the public to be able to understand the marginal change due to project criteria pollutant emissions. Given the margin of uncertainty at each step in the process (regional scale modeling, existing ambient air quality effects on health, population health conditions vulnerability, and marginal health effects of air pollution), the identification of marginal health effects due to individual projects using regional air quality modelling and tools such as BenMap are likely to be within the level of uncertainty and thus defined as "speculative" per CEQA.

The Role of Air Districts

Regional, community, multiscale air quality modeling conducted by the air districts for each individual air basin or locality within the air basin would be the most appropriate indictor of health effects for projects. The AQMPs provide a forecast of regional emissions based on regional dispersion modeling for all sources within the air basin. Regional-scale models attempt to account for all emissions sources within an air basin.

The regional scale model requires inputs such as existing and future regional sources of pollutants and global meteorological data, which are generally not accessible by CEQA practitioners. Modeling of future years should consider future concentrations of air pollutants based on regional growth projections and existing programs, rules, and regulations adopted by Federal, State, and local air districts. In general, air pollution in California is decreasing as a result of Federal and State laws. Based on the air quality management plans (AQMPs) required for air districts in a nonattainment area, air quality in the air basins are anticipated to improve despite an increase in population and employment growth. Air districts are charged with assessing programs, rules, and regulations so that the increase in population and employment does not conflict with the mandate to achieve the AAQS. Because emissions forecasting and health outcomes based on the regional growth projections to achieve the AAQS is under the purview of the air districts, it should also fall on the air districts to identify the potential health outcomes associated with individual project's criteria pollutant emissions.

The South Coast Air Quality Management District (South Coast AQMD) and the Sacramento Metropolitan Air Quality Management District (Sacramento Metropolitan AQMD) are exploring concepts for project-level analysis in light of Friant Ranch to assist local lead agencies.

» South Coast AQMD is looking at the largest land use development project they have had in the air basin and doing a sensitivity analysis (using CAMx for photochemical grid modeling and BenMap for health outcomes) to see how locating a very large project in different parts of the air basin (Los Angeles, Inland Empire, v. Orange County) would affect the health incidence.

» Sacramento Metropolitan AQMD is also looking at a screening process. Rather than looking at the upper end (i.e., largest project in the air basin), Sacramento Metropolitan AQMD is starting at the smallest project that exceeds the regional significance threshold and running CAMx and BenMap at different locations in the air basin to see how it affects regional health incidences.

Guidance from Air Districts would be the most effective way to incorporate meaningful information concerning regional health effects of project criteria pollutants in CEQA analyses, including guidance as to when modelling is and is not useful and meaningful, how modelling should be conducted, and how to best present additional information to inform decision-makers and the public about a project's impacts.

So…until air districts do their part, what should we do?

PROJECTS WITH CRITERIA POLLUTANT EMISSIONS BELOW AIR DISTRICT THRESHOLDS

The Friant Ranch ruling was about providing disclosure of health effects of project emissions that were well over the significance thresholds. Since the air district thresholds are tied to a level the air districts find to not have a significant effect on ambient air quality, there should be no need to discuss the health effects of criteria pollutant emissions that are less than the significance thresholds.

PROJECTS WITH CRITERIA POLLUTANT EMISSIONS ABOVE AIR DISTRICT THRESHOLDS

Pursuant to Section 15125 of the CEQA Guidelines, the environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. For CEQA, the health effects associated with buildout of a project would occur at the project's horizon year. Because CEQA requires an analysis of the change from existing conditions, the change in effects would be associated with changes in ambient air quality and associated health outcomes between existing conditions and the project's horizon year. Therefore, in order to show how a project affects health outcomes in an air basin, the CEQA documents will need to qualitatively or quantitatively address: (1) existing ambient criteria pollutant concentrations, health incidences due to existing air quality, and health incidences overall; 2) future (without project) ambient criteria pollutant concentrations and health incidences, and 3) future (with project) ambient criteria pollutant concentrations and health incidences.

Projects with significant criteria pollutant emissions could use regional modelling and BenMap to identify health effects of project emissions, but it is likely that many (or most) projects that are not regionally substantial in scale will be shown to have minimal regional changes in PM and ozone concentrations and therefore minimal changes in associated health effects. In addition, many projects may have emissions that are less than the uncertainty level of regional air quality models and BenMap health effects modeling; in these cases, quantitative results will not be meaningful. Thus, absent better direction from air districts, CEQA lead agencies will have to determine on a case by case basis whether a qualitative discussion of health effects will suffice, or whether regional modeling, despite its limitations, should be conducted for the project.

Where a project has substantial criteria pollutant emissions when considered on a regional scale, and there is reason to believe that the modeling of ambient air quality and regional health effects would produce non-speculative results when considering modeling uncertainties, then CEQA lead agencies should use regional modelling.

Conclusion

The purpose of CEQA is to inform the public as to the potential for a project to result in one or more significant adverse effects on the environment (including health effects). A CEQA document must provide an understandable and clear environmental analysis and provide an adequate basis for decision making and public disclosure. Regional dispersion modeling of criteria pollutants and secondary pollutants like PM and ozone can provide additional information, but that information may be within the margin of modelling uncertainty and/or may not be meaningful for the public and decision-makers unless a full health context is presented in the CEQA document. Simply providing health outcomes based on use of a regional-scale model and BenMap may not satisfy the goal to provide decision-makers and the public with information that would assist in weighting the environmental consequences of a project. A CEQA document must provide an analysis that is understandable for decision making and public disclosure. Regional scale modeling may provide a technical method for this type of analysis, but it does not necessarily provide a meaningful way to connect the magnitude of a project's criteria pollutant emissions to health effects without speculation.

In order to accurately connect the dots, we urge California air districts to provide more guidance on how to identify and describe the health effects of exceeding regional criteria pollutant thresholds. The air districts are the primary agency responsible for ensuring that the air basins attain the AAQS and ensure the health and welfare of its residents relative to air quality. Because emissions forecasting and health outcomes are based on the regional growth projections to achieve the AAQS is under the purview of the air districts, it should fall on the air districts to identify the potential health outcomes associated with exceeding the CEQA thresholds for projects. The air districts should provide lead agencies with a consistent, reliable, and meaningful analytical approach to correlate specific health effects that may result from a project's criteria pollutant emissions.

Glossary

AAQS – Ambient Air Quality Standards

BenMap – Benefits Mapping and Analysis Program

CAMx – Comprehensive Air Quality Model with extensions

CMAQ – Community Multiscale Air Quality

NOx – Nitrogen Oxides

PM – Particulate Matter

SOx – Sulfur Oxides

State – California

USEPA – United States Environmental Protection Agency

S219783

IN THE SUPREME COURT OF C ALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

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Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*

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TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE SUPREME COURT:

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this amicus brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed amicus brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?
2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review de novo.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

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BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, "[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 ["*Laurel Heights I*"]) Accordingly, "an agency must use its best efforts to find out and disclose all that it reasonably can." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)[1].). However, "[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project's pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

[1] The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq.*

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality

management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "chapter 7" hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Executive Summary" hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called "criteria" document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called "criteria pollutants." EPA must then establish "national ambient air quality standards" at levels "requisite to protect public health",

allowing "an adequate margin of safety." (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), http://www.epa.gov/air/criteria.html (last updated Oct. 21, 2014).)[2]

Under the Clean Air Act, EPA sets emission standards for motor vehicles and "nonroad engines" (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as "stationary sources." The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified "major" stationary sources use technology to achieve the "lowest achievable emission rate," and to control minor stationary sources as

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[2] Particulate matter (PM) is further divided into two categories: fine particulate or $PM_{2.5}$ (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM_{10}) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), http://www.epa.gov/airquality/particlepollution/ (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called "hazardous air pollutants" calling for EPA to establish "maximum achievable control technology" (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as "toxic air contaminants" (TACs) which are subject to two state-required programs. The first program requires "air toxics control measures" for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare "health risk assessments" for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as "significant," the facility must implement a "risk reduction plan" to bring its risk levels below "significant" levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv; then follow "Rule 1401" hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the "lead agency" that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called "responsible" agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to "trustee agencies" and agencies "with jurisdiction by law" including "authority over resources which may be affected by the project." (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.[3]

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[3] The SCAQMD's CEQA program for its rules is a "Certified Regulatory Program" under which it prepares a "functionally equivalent" document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.[4] SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a "responsible agency" for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii; then follow "Rule 1303" hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with "jurisdiction by law" over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

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[4] The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015; then follow "16. Lead Agency Projects and Environmental Documents Received by SCAQMD" hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, http://www.arb.ca.gov/regact/diesltac/diesltac.htm; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, supra, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT'S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR's conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1, supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must "draw[] a line that divides *sufficient* discussions from those that are *insufficient*." (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that "[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis." (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." Case law reflects this: "Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible." (*Association of Irritated Residents v. County of Madera, supra,* 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be "feasible"; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a "health risk assessment" before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the "maximally exposed individual" (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it

is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588), pp. 11-16*; (last visited Apr. 1, 2015) http://www.aqmd.gov/home/library/documents-support-material; "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, http://www.aqmd.gov/home/forms ; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from

the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants[5], such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, http://www.epa.gov/airquality/ozonepollution/ (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, http://www.epa.gov/ttnamti1/archive/cpreldoc.html (last visited Apr. 1, 2015).) NO_x and VOC are known as "precursors" of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population,* Figure 9, http://www.epa.gov/apti/ozonehealth/population.html#levels (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP (February 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Appendix V: Modeling & Attainment Demonstrations" hyperlink,

[5] See discussion of types of pollutants, supra, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts "internal bank" of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.[6] The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).[7] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6*)* at p. 4.1-35, Table 4.1-29.)

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[6] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6,* http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011; the follow "26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System" (last visited April 1, 2015).)

[7] The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; https://www.epa.gov/ttnamti1/archive/cpreldoc.html; then search "Guideline on Ozone Monitoring Site Selection" click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA "significance" threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook; then follow "SCAQMD Air Quality Significance Thresholds" hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a "major" stationary source for "extreme" ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA "significance" finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD's thresholds of significance may determine

that many projects have "significant" air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter ($PM_{2.5}$)[8], another "criteria" pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of $PM_{2.5}$. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional $PM_{2.5}$ in the District, up to 2.82 tons/day (5,650 lbs/day of $PM_{2.5}$, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this $PM_{2.5}$ health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties.[9] (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

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[8] SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for "$PM_{2.5}$" or particulate matter less than 2.5 microns in diameter.

[9] Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011; then follow "Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project" hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small $PM_{2.5}$ increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated $PM_{2.5}$ emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the "normal" "existing conditions" CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.[10]

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[10] Whether a particular study would result in "informational value" is a part of deciding whether it is "feasible." CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.[11] Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

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technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

[11] In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, "a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (*Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency's action de novo under the "independent judgment" test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby "accord[ing] greater deference to the agency's substantive factual conclusions." (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project's impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR's analysis is sufficient to meet CEQA's informational purposes,[12] while Friant Ranch contends that the substantial evidence standard applies to this question.

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[12] Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,[13] containing two levels of inquiry that should be judged by different standards.[14]

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

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[13] Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

[14] Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document.*" (*Laurel Heights I, supra,* 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses "in sufficient detail to enable meaningful participation and criticism by the public. '[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.'" (*Laurel Heights I, supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, *supra*, 57 Cal.4th 439, 448, 457:

whether "existing conditions" baseline would be misleading or uninformative judged by substantial evidence standard.[15])

If the lead agency's determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA's information disclosure provisions, since it would be infeasible to provide additional information. This Court's decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency's finding that "the precise parameters of future herbicide use could not be predicted." *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact "substantial". (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

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[15] The substantial evidence standard recognizes that the courts "have neither the resources nor the scientific expertise" to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra,* 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra,* 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.[16]

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[16] We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield, supra,* 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project. " *Bakersfield, supra,* 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra,* 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra,* at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR . . . ." (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra,* at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra*, at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, "Environmental Checklist Form."[17]) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency's noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts' proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA's prohibition on courts interpreting its provisions "in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines." (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra,* at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project's significant impacts on human health. However, except in certain particular circumstances,[18] neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law's requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe "health and safety problems caused by {a project's} physical changes"].) Accordingly, courts must interpret CEQA as a whole to

[17] Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

[18] E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.[19] Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck,* 198 Cal.App.4th at p. 959 (citations omitted).[20]

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[19] We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131) , or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

[20] Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta,* (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)[21]

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districts should be considered "state agencies" for purposes of the requirement to consult with "trustee agencies" as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere "local agencies" whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

[21] In *Schenck,* the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck,* 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district's published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district's published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay, supra,* 91 Cal.App.4th 1344, 1369-1371.)

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guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra,* 70 Cal.App.4th 482, 492.

CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is "sufficient as an informational document" is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

Respectfully submitted,

DATED: April 3, 2015

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CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015 Respectfully submitted,

Barbara Baird

Barbara Baird

PROOF OF SERVICE

I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

BY MAIL: I enclosed the document(s) in a sealed envelope or package addressed to the persons at the addresses listed in the Service List and placed the envelope for collection and mailing following our ordinary business practices. I am readily familiar with this District's practice for collection and processing of correspondence for mailing. Under that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid at Diamond Bar, California, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 3, 2015 at Diamond Bar, California.

Patricia Anderson

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SUPREME COURT COPY

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

SUPREME COURT
FILED
APR 13 2015
Frank A. McGuire Clerk
Deputy

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent cfforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

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[2] *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

[3] Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

[4] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

[5] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

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[6] CEQA does not require speculation. *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

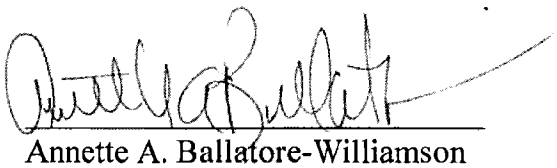
Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



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I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

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[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).

[6] *Id.*

[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).

[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule2201041l.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club*, *supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

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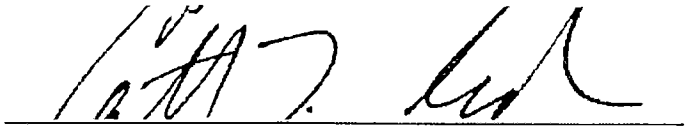
[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015



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Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

( ) **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.

( ) **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.

Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

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Appendix 5.4-1 Contra Costa County General Plan Update: Biological Resources Existing Conditions Report

Appendices

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DRAFT

CONTRA COSTA COUNTY GENERAL PLAN UPDATE: BIOLOGICAL RESOURCES EXISTING CONDITIONS REPORT

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JANUARY 2019

ICF. 2019. *Contra Costa County General Plan Update: Biological Resources Existing Conditions Report*. Draft. January. (ICF 671.18.) San Jose, CA. Prepared for Contra Costa County Department of Conservation and Development, Martinez, CA.

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Abbreviations and Acronyms

BPPA	Botanical Priority Protection Area
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
Conservancy	East Contra Costa County Habitat Conservancy
Delta	Sacramento River–San Joaquin River Delta
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Parks District
Existing Conditions Report	Contra Costa County General Plan Update: Biological Resources Existing Conditions Report
2005–2020 General Plan	Contra Costa County General Plan 2005–2020
HCP/NCCP or Plan	East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan
USFWS	U.S. Fish and Wildlife Service

Chapter 1
Introduction

This *Contra Costa County General Plan Update: Biological Resources Existing Conditions Report* (Existing Conditions Report) describes and maps existing biological resources conditions in Contra Costa County. The county covers 516,187 acres and includes 19 incorporated cities and towns.

This Existing Conditions Report documents the following:

- Regulatory jurisdictions,
- Protected areas,
- Ecoregions,
- Watersheds,
- Natural communities and land cover types,
- Special-status species,
- Wildlife corridors, and
- Sensitive habitats.

This report is intended to support both preparation of the *Contra Costa County General Plan Update*, which will include a comprehensive review of and update to *Contra Costa County General Plan 2005–2020* (2005–2020 General Plan), and analysis of impacts on existing biological resources within the General Plan 2020 Environmental Impact Report. In addition to describing existing biological resources within the county, this report also provides an overview of the regulatory context for the General Plan 2020 planning area.

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Chapter 2
Open Space

This chapter describes existing conditions within the county's open space lands. Open space lands are classified natural or semi-developed areas that are at least partially open to recreation. This chapter also describes open space land in terms of protected areas and land ownership as well as the ecoregions, watersheds, and vegetation communities therein.

Natural Environment

The county is a unique area where the greater San Francisco Bay Area, Sacramento River–San Joaquin River Delta (Delta), and Central Valley meet. Elevations range from at or below sea level (e.g., in the marshes adjacent to the Delta) to 3,849 feet at the peak of Mount Diablo, the highest point in the county. The physiography of the county is dominated by Mount Diablo and its surrounding hill slopes/valleys, which generally trend northwest/southeast according to local structure/faulting; lower valleys; and plains that transition to the San Francisco Bay/Delta zones.

Urban development is dense in the western and northern portions of the county, especially adjacent to San Francisco Bay, while the eastern and southern portions of the county are made up of unincorporated rural (i.e., sparser) developments. The unincorporated areas of the county are primarily rural agricultural and public lands and used principally for grazing, open space, and watershed protection (Jones & Stokes 2006). The rural lands are the focus of this chapter.

Regulatory Jurisdictions

The three main levels of regulatory jurisdiction that own and manage the approximately 150,000 acres of rural lands across the county are local, state, and federal (Figure 2-1).

Local

There are 35 landowners at the local level. Landowners include special districts, such as the East Bay Regional Parks District (EBRPD), East Bay Municipal Utility District (EBMUD), and Contra Costa Water District; counties; cities; non-profit organizations, such as Save Mount Diablo, Port Costa Conservation Society, and John Muir Land Trust; and school districts. Most of these landowners manage lands that function as parks and open spaces, but locally owned land also includes semi-developed areas such as dog parks, swim centers, horticultural gardens, and track and field complexes (California Protected Areas Database 2018). Approximately 115,925 acres of land in the county is locally owned.

The three landowners that own the most land in the county are the EBRPD, EBMUD and the Contra Costa Water District. EBRPD land comprises the majority of recreational open space within the county. The EBRPD manages approximately 121,397 acres of regional parkland across both East San Francisco Bay counties (i.e., Contra Costa County and Alameda County) (East Bay Regional Parks District 2018a), of which 57,185 acres are in Contra Costa County (California Protected Areas Database 2018). The parks differ in type, from regional parks to regional trails, regional preserves,

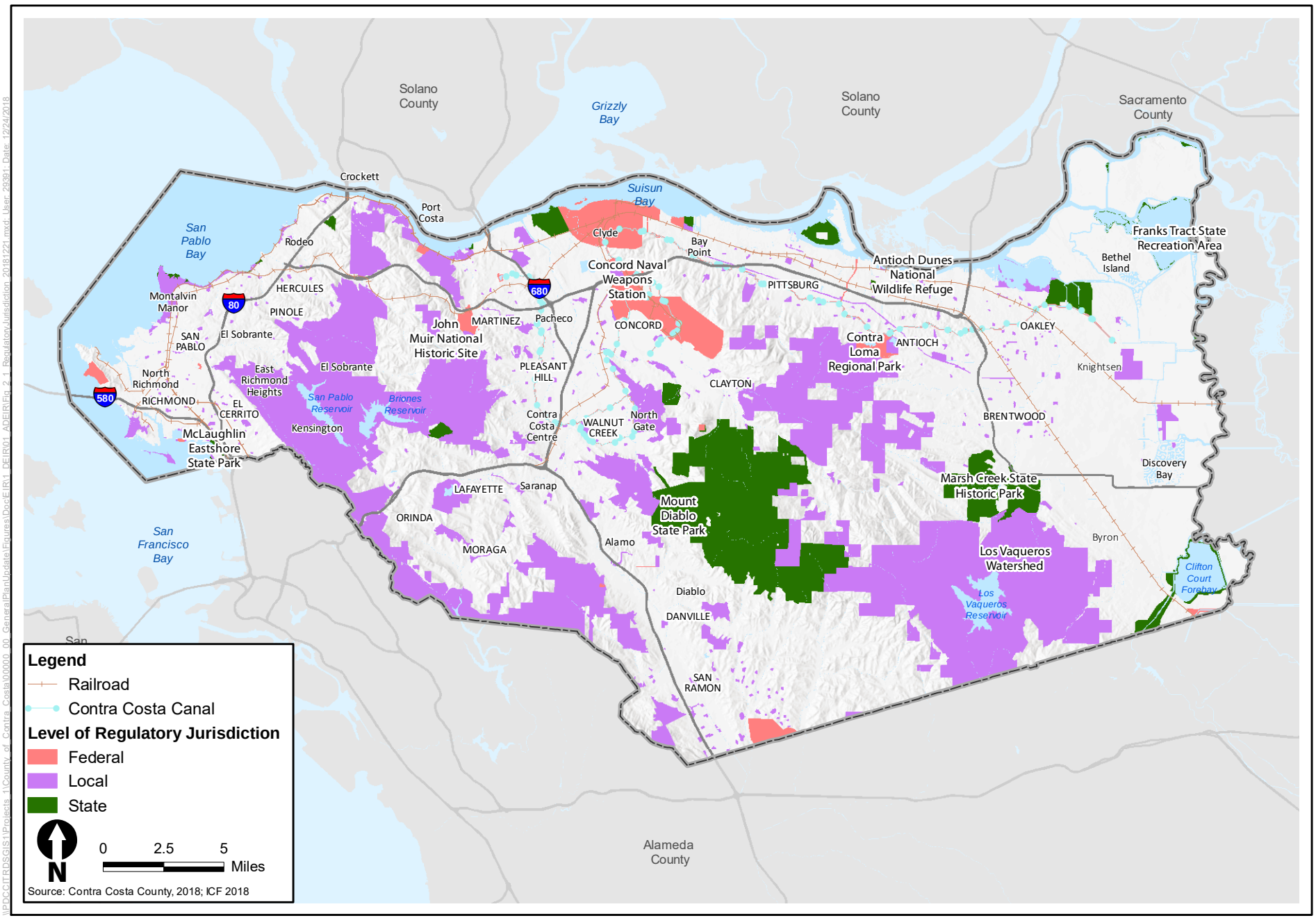

Figure 2-1
Regulatory Jurisdiction

regional recreation areas, regional shorelines, regional wilderness areas, and regional open spaces (Contra Costa County Department of Conservation and Development 2005). The EBRPD maintains internal trail systems in addition to the parks and open spaces within or partially within the county.

The EBMUD is a water district that, similar to the EBRPD, services both Contra Costa and Alameda Counties. The EBMUD owns and operates 26,758 acres of land in the county. Much of the EBMUD land is open to recreation, such as Lafayette Reservoir, Briones Reservoir, or the San Pablo Reservoir Recreation Area. It also includes the Delta De Anza Regional Trail and Mokelumne Trail (California Protected Areas Database 2018). The Contra Costa Water District owns and manages the Los Vaqueros Watershed, which is an approximately 20,000-acre open space area surrounding the 1,500-acre Los Vaqueros Reservoir in the eastern portion of the county (Contra Costa Water District 2018).

State

State-level landowners include the California Department of Parks and Recreation, California State Lands Commission, California Department of Fish and Wildlife (CDFW), University of California, and California Department of Water Resources. The California Department of Parks and Recreation manages five parks within the county. The 20,000-acre Mount Diablo State Park, with its isolated peak at 3,849 feet, is the most well-known state park (California Department of Parks and Recreation 2018), but the smaller Marsh Creek State Historic Park (approximately 3,500 acres), Point Isabel Lighthouse State Historic Site, (51 acres), and Franks Tract State Recreation Area (approximately 3,500 acres) are also within the county (California Protected Areas Database 2018). A small portion of McLaughlin Eastshore State Park (27 acres), which extends 8.5 miles along the East Bay shoreline from the Bay Bridge to Richmond, is also in the county (East Bay Regional Parks District 2018b). The four other owners of state land in the county are listed in Table 2-1. Approximately 31,690 acres of land in the county is state land.

Table 2-1. State Land Ownership in Contra Costa County

Site Name	Acres
California Department of Parks and Recreation	
Mount Diablo State Park	18,822
Marsh Creek Historic Site	3,679
Franks Tract State Recreation Area	2,388
McLaughlin Eastshore State Park	27
Point Isabel Lighthouse State Historic Site	51
California Department of Fish and Wildlife	
Delta Islands	88
Rhode Island Wildlife Area	8
California Department of Water Resources	
Bethany Reservoir State Recreation Area	229
Clifton Court Forebay	3,333
Dutch Slough	1,185

Site Name	Acres
California State Lands Commission	
Bay Point Regional Shoreline	87
Browns Island Regional Shoreline	601
Carquinez Strait	39
Crockett Hills Regional Park	9
Point Edith Wildlife Area	727
Point Pinole Regional Shoreline	112
San Pablo Bay Regional Shoreline	58
University of California	
Russell Research Station	247
Total	**31,690**

California Protected Areas Database, 2018.

Federal

Federal landowners include the U.S. Fish and Wildlife Service, Bureau of Recreation, National Parks Service, U.S. Navy, Bureau of Land Management, and Union Pacific Railroad, as shown in Table 2-2. Federal land is located mainly in the northern portion of the county. Approximately 6,261 acres of land in the county is federal land.

Table 2-2. Federal Land Ownership in Contra Costa County

Site Name	Acres
Bureau of Land Management	
BLM	7
Mount Diablo State Park	41
U.S. Bureau of Reclamation	
Black Diamond Mines	705
Contra Loma Regional Park	62
U.S. Fish and Wildlife Service	
Antioch Dunes National Wildlife Refuge	56
National Park Service	
Eugene O'Neill Historic Site	13
John Muir National Historic Site	9
Mt. Wanda	340
U.S. Navy	
Concord Naval Weapons Station	5,028
Total	**6,261**
Union Pacific Railroad	
Railroad	50 (approximate miles)

California Protected Areas Database, 2018; Surface Management Area, 2018.

Protected Areas

The county contains 145,855 acres of protected areas (28% of the county), comprising land protected in fee title[1] only (136,318acres), through conservation easement[2] only (8,321 acres), or both (1,216 acres) (Figure 2-2). Protected areas are defined as open space reserves that are managed primarily for their ecological functions and values. Lands within the county that fit this definition are owned by the EBRPD, EBMUD, Contra Costa Water District (i.e., Los Vaqueros Watershed), and state (see the *Regulatory Jurisdiction* section, above). Protected areas vary according to the mechanisms by which the land is protected (fee title or conservation easement) and the degree to which land is protected for its ecological values. For example, EBRPD land that is managed in partnership with the East Contra Costa County Habitat Conservancy (Conservancy) (see *East Contra Coast County Habitat Conservation Plan/Natural Community Conservation Plan,* below) is protected under a conservation easement, while EBRPD lands outside the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Inventory Area are protected under a fee title. Some lands are protected primarily for the conservation of natural resources (e.g., wildlife refuges, wilderness areas, conservation and mitigation banks). Other lands are protected for multiple uses, including conservation, light-use recreation (e.g., hiking, wildlife viewing), or more intensive recreation (e.g., off-highway vehicle recreation).

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

The East Contra Costa County Habitat Conservation Plan Association developed the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP or Plan), which provides regional conservation and development guidelines to protect natural resources, including wetlands, while improving and streamlining the permit process for take[3] of state and federally listed species. The 30-year Plan was approved at the local level in 2006 and 2007, and permits were issued by the CDFW and the U.S. Fish and Wildlife Service (USFWS) in 2007. The Plan allows Contra Costa County; the Contra Costa County Flood Control and Water Conservation District; the EBRPD; the Cities of Brentwood, Clayton, Oakley, and Pittsburg; and the Conservancy—a group collectively referred to as the *Permittees*—to authorize endangered species permitting for activities and projects in the region, performed or approved by the Permittees, while providing comprehensive species, wetlands, and ecosystem conservation and contributing to the recovery of endangered species in Northern California. The Plan implements a conservation strategy designed to achieve a comprehensive set of biological goals and objectives. Furthermore, as a Natural Community Conservation Plan, the Plan provides for broad-based planning to preserve natural communities at the ecosystem scale (East Contra Costa Habitat Conservancy 2018).

Within the 174,018-acre Plan Inventory Area, the issued permits provide take authorization under the California Natural Community Conservation Planning Act and federal Endangered Species Act for 8,670 to 11,853 acres of urban development and 1,126 acres of rural infrastructure projects. The

[1] Type of land ownership that allows the land owner to use the property in any manner, consistent with local, state, and federal laws and ordinances.

[2] A permanent agreement that restricts the use of land in order to protect its ecological functions and values.

[3] Take, as defined by the Endangered Species Act, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The state's definition of take is to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

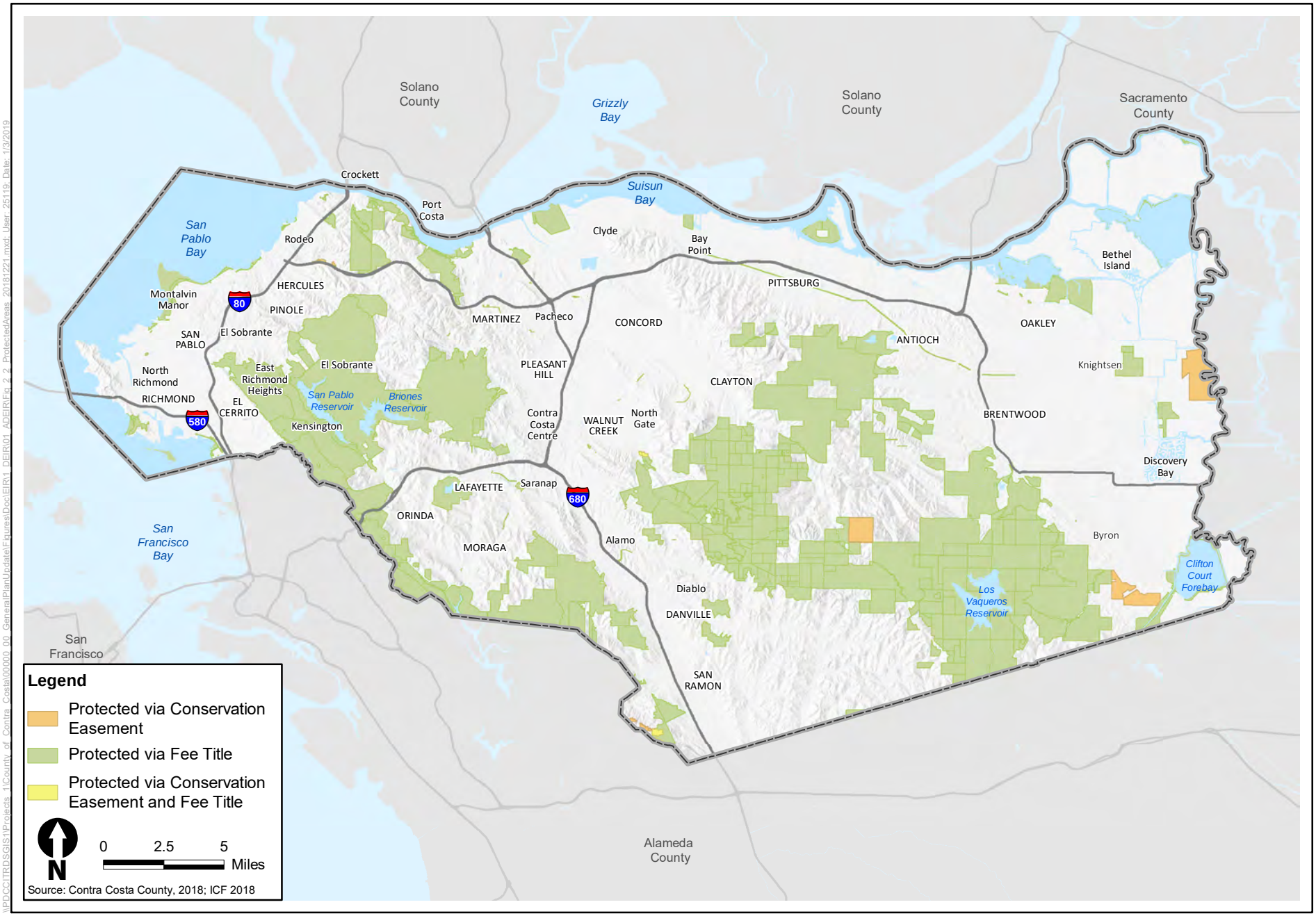

Figure 2-2
Protected Areas

primary means for offsetting these impacts is to conserve and restore lands in a Preserve System, which is land within the Plan Inventory Area that is protected in perpetuity. The Preserve System will ultimately encompass between 23,800 and 30,300 acres of land that will be acquired and managed to benefit the covered species as well as the natural communities that they, and hundreds of other species, depend on for habitat. In areas with active cropland or irrigated pasture, emphasis will be given to acquiring land suitable for restoration of riparian woodland/scrub, while outside of these land uses, emphasis will be given to acquiring property to ensure full protection of resource values and land uses that are compatible with HCP/NCCP biological goals and objectives. During the first 10 years of implementation of the Plan, 36 properties were acquired for the Preserve System, totaling more than 13,809 acres (Figure 2-3). All but one of the acquisitions have been completed in partnership with the EBRPD, which owns these properties and, together with the Conservancy, manages the Preserve System lands (East Contra Costa Habitat Conservancy 2018).

The Plan addresses 28 listed and non-listed species, as shown in Table 2-3. The species were identified on the basis of an initial assessment of the effect of proposed activities and conservation measures on listed species or species that could become listed during the Plan term. The 154 special-status species with the potential to occur in the Plan Inventory Area were evaluated for coverage in the Plan and screened according to specific criteria (see Chapter 3, *Physical and Biological Resources*, Section 3.3.7, *Covered Species*, in the East Contra Costa County HCP/NCCP for additional detail). The Plan includes conservation measures to protect all 28 covered species, whether or not they are currently listed (East Contra Costa Habitat Conservancy 2018).

Ecoregions

Ecoregions are areas of general similarity in ecosystems, based on major terrain features, such as a desert, plateau, valley, mountain range, or a combination thereof (McNab et. al. 2007). Identification is based on patterns of biotic and abiotic phenomena, including geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology. North America is divided into different ecological units, from coarsest to finest (ecoregions [i.e., provinces], subregions [i.e., sections], landscapes, and land units). Three ecoregions overlap the county: the California Coastal Chaparral Forest and Shrub Province, the California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province, and the California Dry Steppe Province (Figure 2-4). Within each ecoregion is one subregion, with the same boundaries as the previously listed ecoregions (i.e., the Central California Coast Section, the Central California Coast Ranges Section, and the Great Valley Section, respectively). The acreages for each ecoregion are shown in Table 2-4.

California Coastal Chaparral Forest and Shrub Province

The California Coastal Chaparral Forest and Shrub Province overlaps the western and north-central portion of the county. There are 293,887 acres of the California Coastal Chaparral Forest and Shrub Province in the county, covering the western and central portions (see Table 2-4). This province encompasses much of the California coast, from San Francisco to Baja. The primary distinguishing characteristic of this ecoregion is its Mediterranean climate, with hot, dry summers and cool, moist winters. The associated vegetative cover comprises primarily chaparral and woodlands. The landscape is composed of coastal plains and high hills. Large areas of ranchland are grazed by domestic livestock. Relatively little land has been cultivated. The Central California Coast Section, discussed below, occurs within the California Coastal Chaparral Forest and Shrub Province.

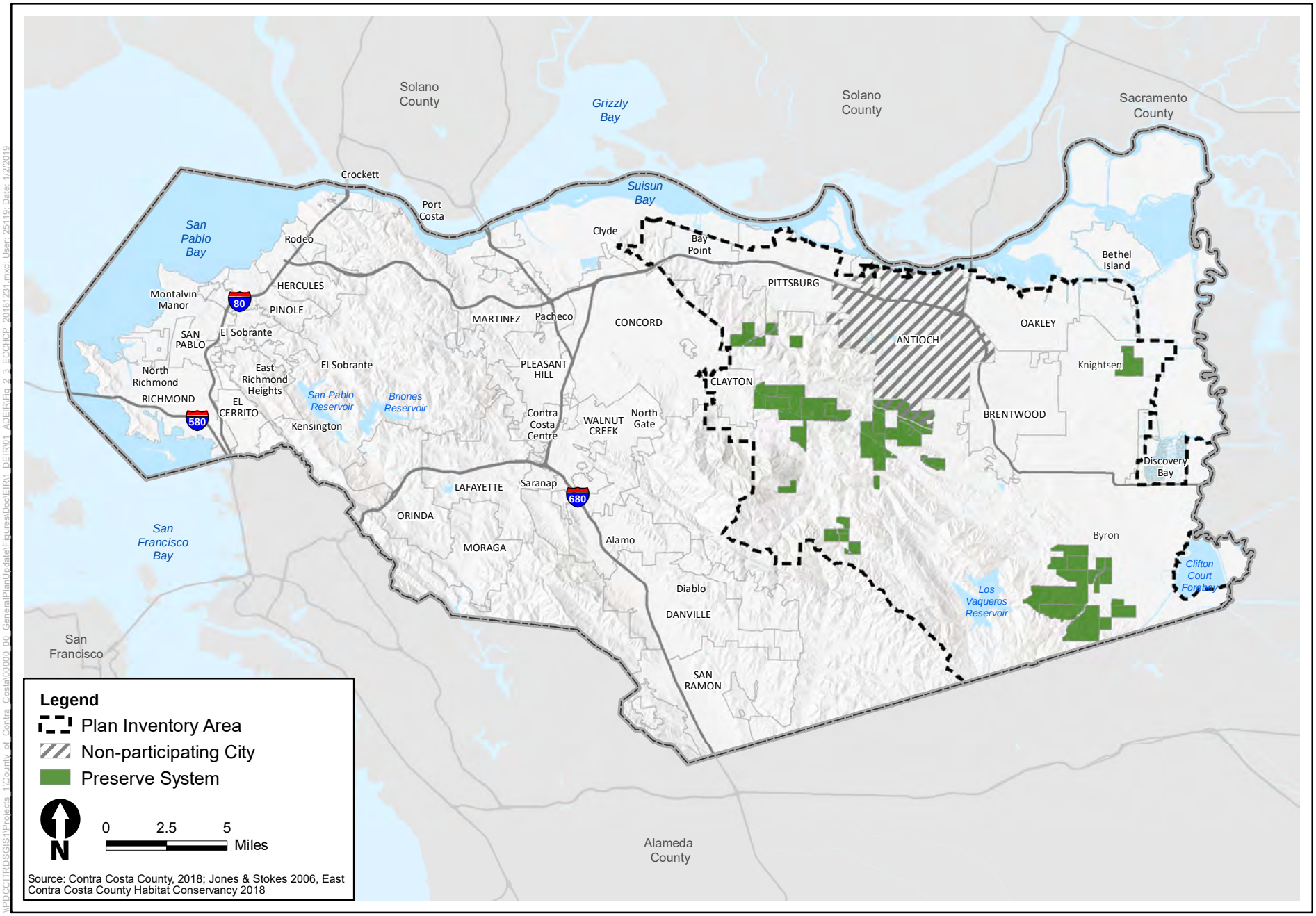

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Figure 2-3

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

Table 2-3. Special-Status Species Covered by the East Contra Costa County HCP/NCCP

		Status[1]	
Common Name	**Scientific Name**	**State**	**Federal**
Mammals			
Townsend's big-eared bat	*Corynorhinus townsendii*	CSC	–
San Joaquin kit fox	*Vulpes macrotis mutica*	ST	FE
Birds			
Tricolored blackbird	*Agelaius tricolor*	CE, CSC-1	–
Golden eagle	*Aquila chrysaetos*	FP	BGPA
Western burrowing owl	*Athene cunicularia hypugea*	CSC-1	–
Swainson's hawk	*Buteo swainsoni*	ST	–
Reptiles			
Northern California legless lizard	*Anniella pulchra*	CSC	–
Alameda whipsnake	*Masticophis lateralis euryxanthus*	ST	FT
Giant garter snake	*Thamnophis gigas*	ST	FT
Western pond turtle	*Emys marmorata*	CSC	–
Amphibians			
California tiger salamander	*Ambystoma californiense*	ST	FT
California red-legged frog	*Rana draytonii*	CSC	FT
Foothill yellow-legged frog	*Rana boylii*	CT, CSC	–
Invertebrates			
Longhorn fairy shrimp	*Brachinecta longiantenna*	–	FE
Vernal pool fairy shrimp	*Brachinecta lynchi*	–	FT
Midvalley fairy shrimp	*Brachinecta mesovallensis*	–	–
Vernal pool tadpole shrimp	*Lepidurus packardi*	–	FE
Plants		**CNPS**	
Mount Diablo manzanita	*Arctostaphylos auriculata*	1B	–
Brittlescale	*Atriplex depressa*	1B	–
Big tarplant	*Blepharizonia plumosa*	1B	–
Round-leaved filaree	*California macrophylla*	–	–
Mount Diablo fairy lantern	*Calochortus pulchellus*	1B	–
Recurved larkspur	*Delphinium recurvatum*	1B	–
San Joaquin spearscale	*Extriplex joanquiniana*	1B	–
Diablo helianthella	*Helianthella castanea*	1B	–
Brewer's dwarf flax	*Hesperolinon breweri*	1B	–
Showy madia	*Madia radiata*	1B	–
Adobe navarretia	*Navarretia nigelliformis* ssp. *nigelliformis*	4.2	–

[1] Status:

Federal

FE Federally Endangered
FT Federally Threatened
BGPA Bald and Golden Eagle Protection Act

State

ST State Listed as Threatened

Common Name	Scientific Name	Status[1] State	Status[1] Federal
CSC	California Special Concern Species		
CSC-1	Bird Species of Special Concern; First Priority		
FP	Fully Protected		
CE	Candidate Protected		
CT	Candidate Threatened		
California Native Plant Society			
1B	Rare, Threatened, or Endangered in California and Elsewhere		
4.2	Limited Distribution; Moderately Threatened in California		

Jones & Stokes, 2006.

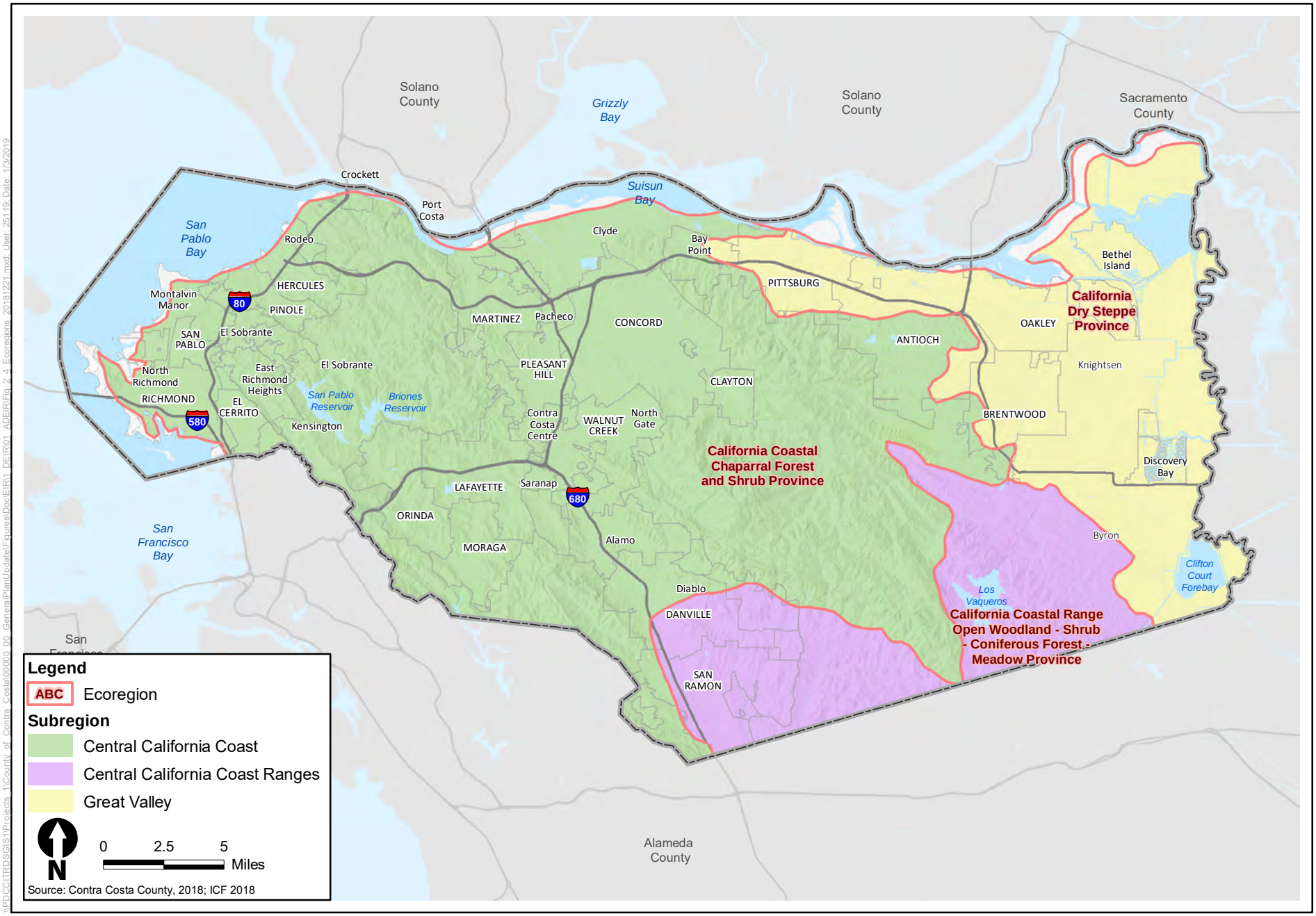

Figure 2-4
Ecoregions and Subregions

Table 2-4. Ecoregions in Contra Costa County

Name	Acres in County
California Coastal Chaparral Forest and Shrub Province	293,887
California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province	67,863
California Dry Steppe Province	104,890

McNab et. al., 2007.

Central California Coast Section

The Central California Coast Section in the county has low to moderate elevations. The bedrock is composed of sedimentary, granitic, and ultramafic formations. The vegetation is a mixture of western hardwoods, chaparral, and California annual grassland land cover types.

California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province

The California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province overlaps the southeastern portion of the county. There are 67,863 acres of California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province in the county, covering the southern portion (see Table 2-4). This province encompasses much of California, from San Francisco to Baja. The ecoregion has a Mediterranean climate, with hot, dry summers and cool, moist winters. Most of the precipitation is rain. The associated vegetative cover comprises evergreen shrubland, with lesser areas of woodland, consisting of broadleaf species, some of which are drought-deciduous. The Central California Coast Ranges Section occurs within the California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province.

Central California Coast Ranges Section

The Central California Coast Ranges Section comprises low-elevation parallel ranges. Rock formations are of marine and non-marine sedimentary origins. The vegetation is western hardwoods, annual grassland, and chaparral.

California Dry Steppe Province

The California Dry Steppe Province overlaps the northeastern corner of the county. There are 104,890 acres of California Dry Steppe Province in the county, covering the eastern portion (see Table 2-4). This province encompasses California's Central Valley, from Redding to Bakersfield. The ecoregion has a Mediterranean climate, with hot, dry summers and mild winters. Most of the precipitation is rain, which falls during the winter. The landscape, with its low hills, is typical of an alluvial plain. The associated vegetative cover was historically herbaceous but is now largely irrigated to support agricultural crops. The Great Valley Section occurs within the California Dry Steppe Province.

Great Valley Section

The Great Valley Section's low-elevation fluvial plain formed on non-marine sedimentary rocks. The land cover has been converted to agricultural, but small areas of natural cover remain, with patches of annual grasses, western hardwoods, and wet grasslands.

Watersheds

Fifteen major watersheds[4] cover approximately 464,660 acres and overlap or occur completely within the county (Figure 2-5). The largest watershed in the county is the Walnut Creek-Frontal Suisun Bay Estuaries. This watershed contains nine San Francisco Bay Area cities: Orinda, Moraga, Danville, San Ramon, Lafayette, Walnut Creek, Pleasant Hill, Concord, and a portion of Martinez. Other sizeable watersheds in the county include the Kellogg Creek-Big Break, San Pablo Creek-Frontal Estuaries, Mount Diablo Creek-Frontal Suisun Bay Estuaries, and Marsh Creek. These watersheds catch precipitation and runoff from storm drains, then carry the water to the San Francisco Bay/Delta system. Water from the urbanized western portion of the county drains directly to San Francisco Bay or San Pablo Bay, while the northern and eastern portions of the county drain into Suisun Bay and the Delta river channels, eventually flowing into San Francisco Bay or San Pablo Bay. The south-central portion of the county is within the Alameda Creek drainage basin; this area's water drains south to Alameda Creek, then west to San Francisco Bay (Contra Costa County 2005).

Because of the Mediterranean climate and its characteristic lack of rainfall during the summer months, ephemeral and intermittent streams are the dominant hydrologic features within the county watersheds. The range of precipitation reflects variations in elevation and proximity to the coast. Surface flow in ephemeral streams is generally supplied by rainfall; these streams flow only during and immediately following rain events. Surface flow in intermittent or seasonal streams is supplied by a combination of rainfall runoff and groundwater; accordingly, these streams generally flow throughout the rainy season and into the late spring or early summer. Perennial streams in the county are also supported by rainfall runoff and groundwater, but unlike seasonal streams, they run year-round, with major dry-season inputs from both natural and artificial sources (e.g., upwelling springs and surface or subsurface flows from local irrigation, respectively) (Jones & Stokes 2006). The major watersheds in the county and the major creeks within each watershed are listed in Table 2-5.

The natural hydrology of many of the major creeks and streams in the urban areas has been altered to control flooding or convey irrigation water. Channels were made wider and deeper and lined with concrete or riprap. Creeks and streams were relocated and realigned to accommodate increased flows, then placed in conduits and culverts (Contra Costa County 2005). Most creeks and streams have been disconnected from their historic floodplains by levees and channelization. Many of these streams are maintained as flood control channels, which support little or no riparian vegetation. Outside the urbanized areas, most drainages remain relatively natural and occupy at least a portion of their historic floodplains. Most of these features are ephemeral or intermittent, however, and generally support narrow floodplains with limited riparian habitat (Jones & Stokes 2006).

[4] Major watersheds are identified at the level of the U.S. Geological Survey's 10-digit Hydrologic Unit Code (HUC 10).

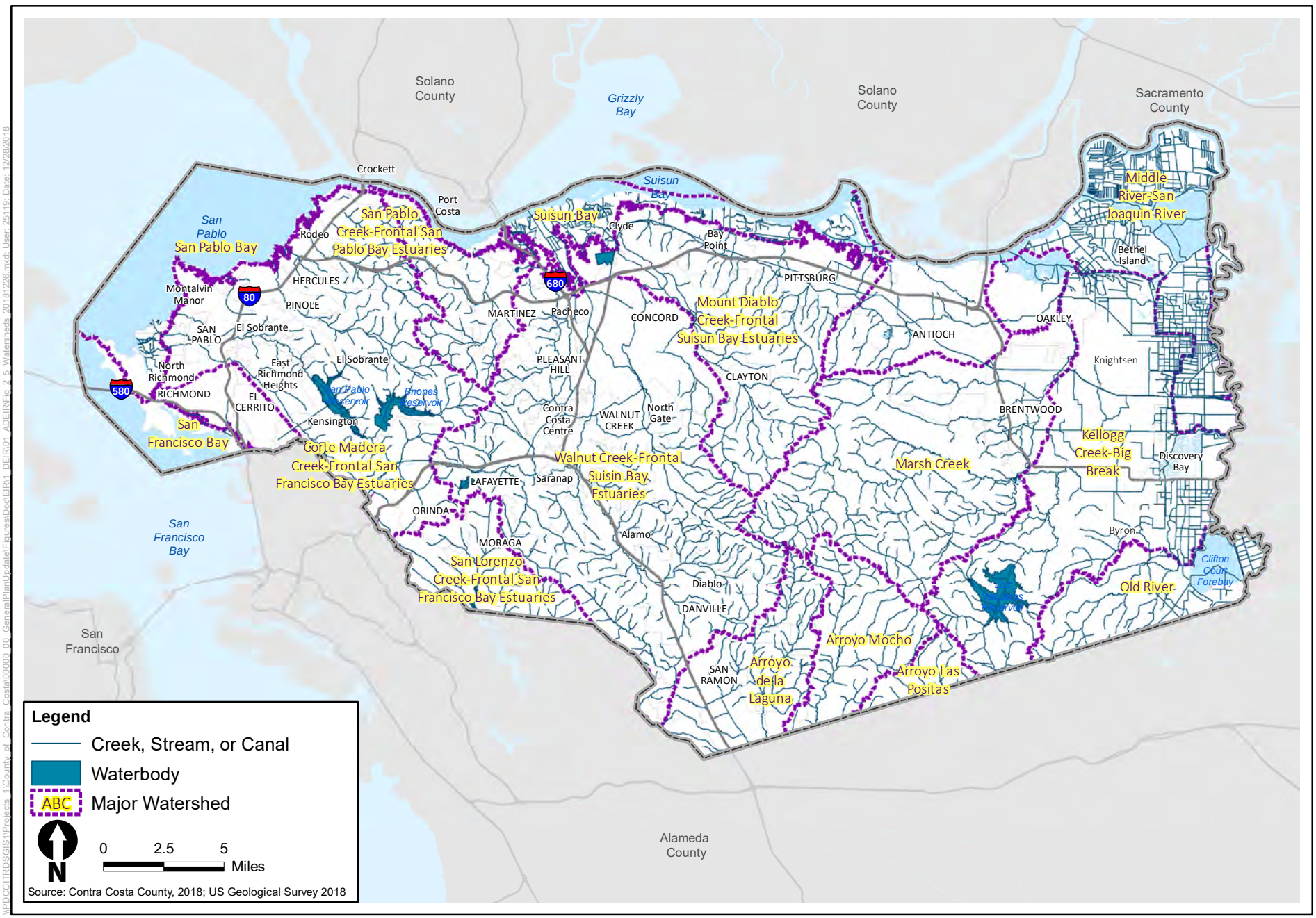

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Figure 2-5
Major Watersheds

Table 2-5. Watersheds in Contra Costa County

Watershed Name	Area of Entire Watershed (acres)	Acres in the County	Major Creeks in Watershed[a] (length in miles)
San Francisco Bay	69,482	9,509	Alameda Creek (1.4) Coyote Hills Slough (0.6) Mount Eden Creek (3.2) Plummer Creek (0.93)
Old River	155,405	1,9195	Brushy Creek (9.9) Mountain House Creek (7.2) Patterson Run (5.5)
San Pablo Bay	146,699	2,5770	Garrity Creek (0.5) Pinole Creek (0.5) Rodeo Creek (0.4) Wildcat Creek (0.4)
Middle River-San Joaquin River	135,876	49,109	San Joaquin River (336)
Suisun Bay	108,281	16,989	Hastings Slough (0.5) Kirker Creek (0.3) Mount Diablo Creek (0.6) Seal Creek (1.6)
San Lorenzo Creek-Frontal San Francisco Bay Estuaries	10,6303	13,151	San Leandro Creek (13.3) San Lorenzo Creek (9.3) Crow Creek (8.5) Cull Creek (7.5)
Walnut Creek-Frontal Suisun Bay Estuaries	92,389	92,317	Las Trampas Creek (11.9) Pine Creek (13.1) San Ramon Creek (12.0) Walnut Creek (7.8)
Kellogg Creek-Big Break	65,833	64,889	Kellogg Creek (13.1)
Arroyo Mocho	62,188	15,917	Arroyo Las Positas (0.9) Arroyo Mocho (24.5) Tarraville Creek (3.9) Tassajara Creek (13.0)
San Pablo Creek-Frontal San Pablo Bay Estuaries	62,108	61,917	Pinole Creek (10.0) Rodeo Creek (7.8) San Pablo Creek (12.7) Wildcat Creek (10.7)
Corte Madera Creek-Frontal San Francisco Bay Estuaries	61,759	6,747	Cerrito Creek (1.6) Claremont Creek (2.0) Codornices Creek (1.3) Temescal Creek (1.6)

Watershed Name	Area of Entire Watershed (acres)	Acres in the County	Major Creeks in Watershed[a] (length in miles)
Mount Diablo Creek-Frontal Suisun Bay Estuaries	58,880	58,873	Donner Creek (3.9) Franklin Creek (4.8) Kirker Creek (8.3) Mount Diablo Creek (13.4)
Marsh Creek	55,881	55,874	Deer Creek (8.3) Marsh Creek (31.0) Sand Creek (11.8) Sycamore Creek (3.7)
Arroyo Las Positas	51,852	4,504	Arroyo Las Positas (5.5) Arroyo Seco (9.9) Cayetano Creek (6.8) Cottonwood Creek (5.2)
Arroyo de la Laguna	47,079	19,009	Alamo Creek (10.0) Arroyo de la Laguna (6.3) Sinbad Creek (7.3) West Branch Alamo Creek (7.8)
Total	**1,280,014**	**464,660[b]**	**—**

a. Includes up to four of the longest creeks in each watershed; this is not a comprehensive list of all creeks in each watershed.

b. The total does not equal the size of the county because the county boundary extends into San Francisco Bay and the Delta.

U.S. Geological Survey, 2018.

Natural Communities and Land Cover Types

The county contains a diverse range of flora, from montane plant communities atop Mount Diablo to the saline plant communities of the San Francisco Bay estuaries. Natural communities are the assemblage of species that co-occur in the same habitat or area and interact through trophic and spatial relationships. Natural communities are defined by the land cover types, which are typically characterized one or more dominant species. A total of nine natural communities and 41 land cover types are found in the county (Figures 2-6 and 2-7).

The size of each natural community and land cover type is listed in Table 2-6. Excluding urban development, the predominant land cover type in the county is California annual grassland, which is abundant in the unincorporated portions of the eastern county.

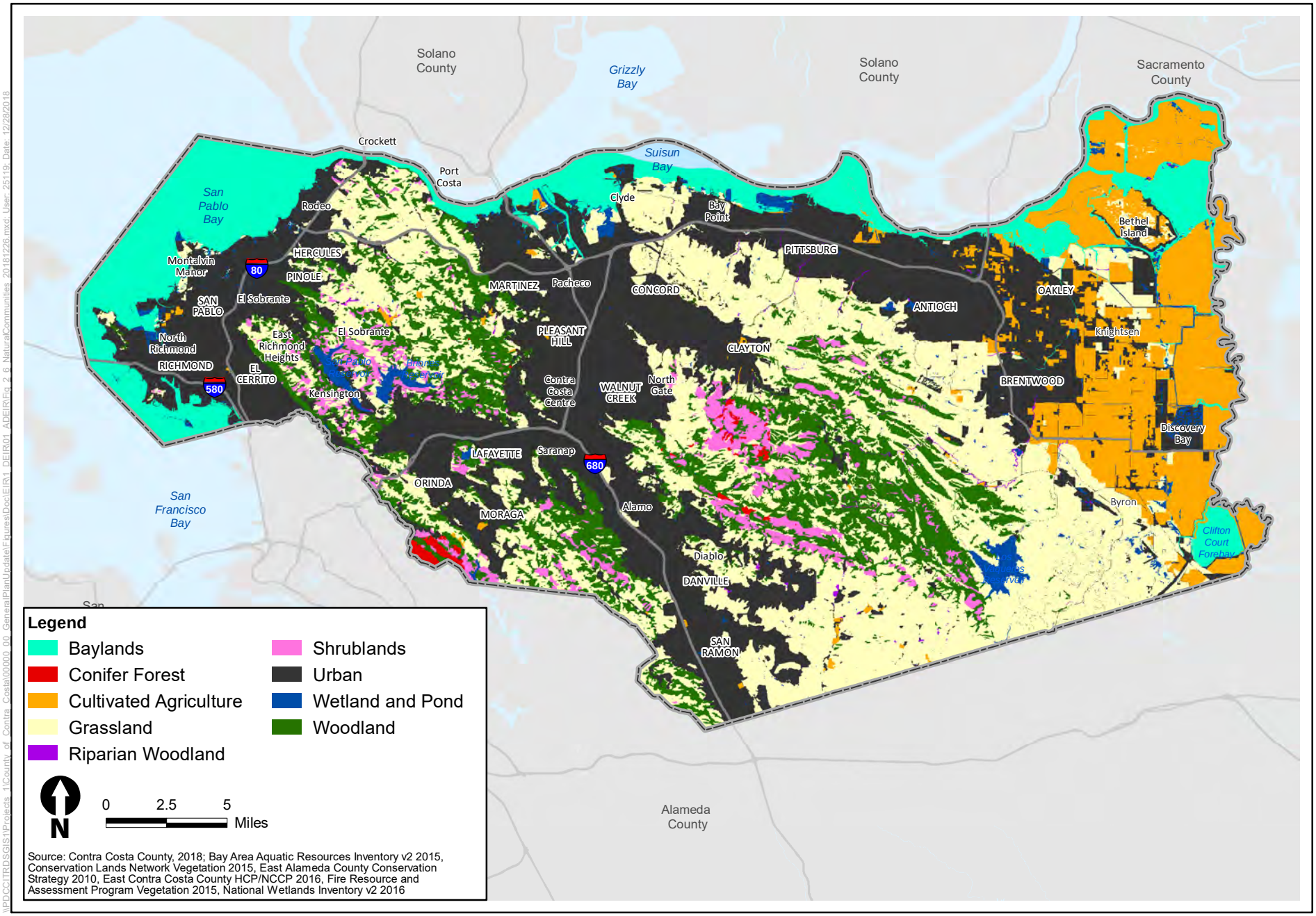

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Figure 2-6
Natural Communities

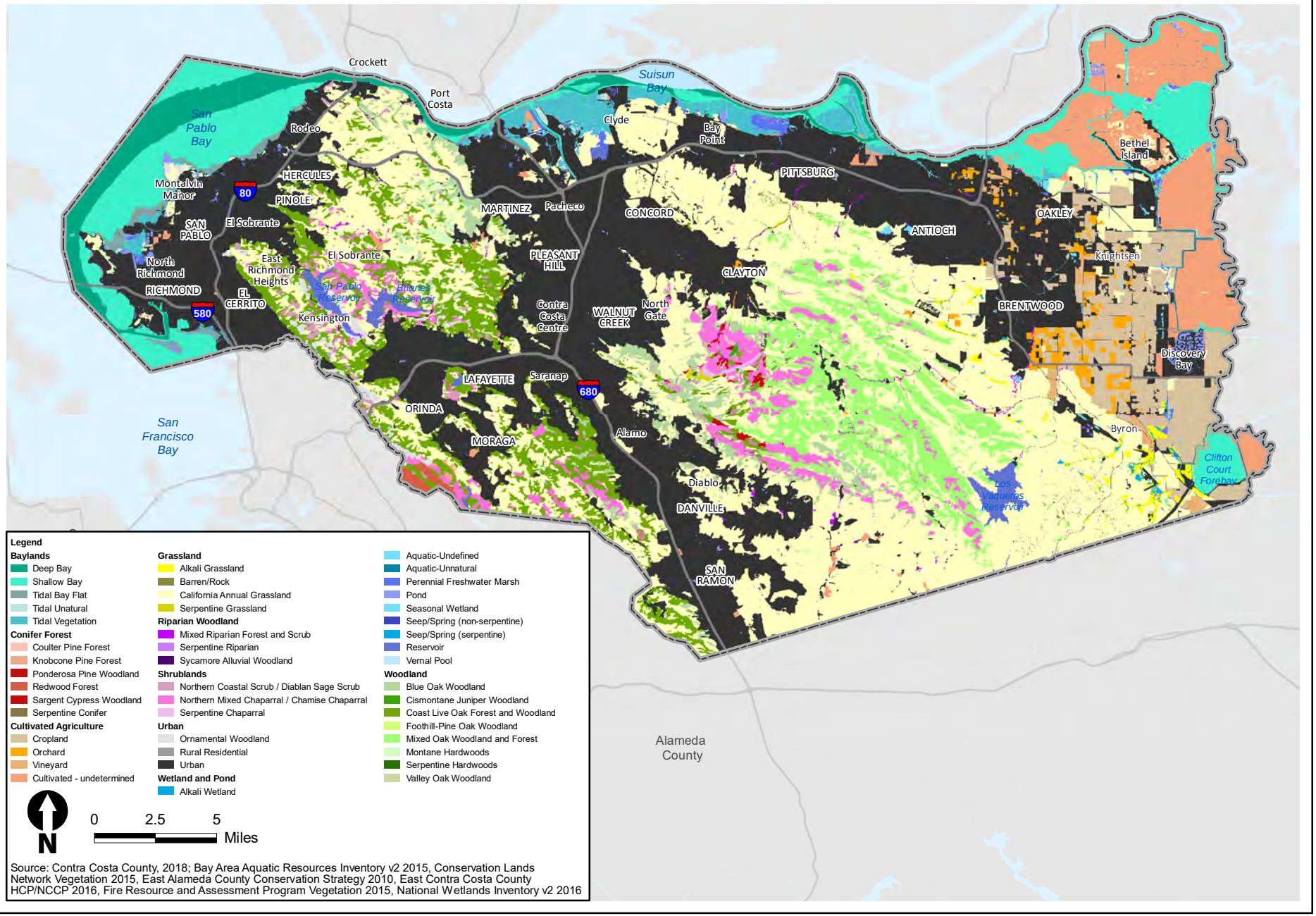

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Figure 2-7
Land Cover

Table 2-6. Extent of Natural Communities and Land Cover Types in Contra Costa County

Land Cover Type	Acres in the County	Percent of County
Grassland	**148,477**	**28.76%**
Alkali grassland*	2,164	0.42%
Barren/ rock	288	0.06%
California annual grassland	145,865	28.26%
Serpentine grassland*	160	0.03%
Shrublands	**14,661**	**2.84%**
Northern mixed chaparral/chamise chaparral*	12,112	2.35%
Northern coastal scrub/ Diablan sage scrub*	2,257	0.44%
Serpentine chaparral*	292	0.06%
Woodland	**61,464**	**11.91%**
Blue oak woodland	9,520	1.84%
Cismontane juniper woodland*	67	0.01%
Coast live oak forest and woodland	25,167	4.88%
Mixed-oak woodland and forest	24,781	4.80%
Montane hardwood*	1,595	0.31%
Serpentine hardwood*	78	0.02%
Valley oak woodland*	256	0.05%
Conifer Forest	**1,531**	**0.30%**
Coulter pine forest*	68	0.01%
Knobcone pine forest*	80	0.02%
Ponderosa pine woodland*	544	0.11%
Redwood forest*	818	0.16%
Serpentine conifer*	21	< 0.01%
Riparian Woodland	**811**	**0.16%**
Mixed riparian forest and scrub*	811	0.16%
Wetland and Pond	**9,492**	**1.84%**
Alkali wetland*	413	0.08%
Aquatic-undefined	435	0.08%
Aquatic-unnatural	590	0.11%
Perennial freshwater marsh*	1,705	0.33%
Pond*	2,257	0.44%
Spring/seep (non-serpentine)*	161	0.03%
Seasonal wetland*	267	0.05%
Reservoir	3,662	0.71%
Vernal pool*	2	< 0.01%
Baylands	**57,557**	**11.15%**
Deep bay	13,284	2.57%
Shallow bay	33,471	6.48%
Tidal bay flat*	2,190	0.42%
Tidal unnatural	1,121	0.22%
Tidal vegetation*	7,491	1.45%

Land Cover Type	Acres in the County	Percent of County
Cultivated Agriculture	**52,261**	**10.12%**
Cropland	20,348	3.94%
Orchard	3,821	0.74%
Vineyard	1,915	0.37%
Cultivated-undetermined	26,177	5.07%
Urban	**167,516**	**32.45%**
Ornamental woodland	2,329	0.45%
Rural residential	14	< 0.01%
Urban	165,174	32.00%
Unmapped	**2,418**	**0.47%**
Total	**516,187**	**100%**

* Identified as a rare land cover type.

Bay Area Aquatic Resources Inventory v2, 2015; Conservation Lands Network Vegetation, 2015; East Alameda County Conservation Strategy, 2010; East Contra Costa County HCP/NCCP, 2016; Fire Resource and Assessment Program Vegetation, 2015; National Wetlands Inventory v2, 2016.

Grassland

The grassland natural community consists of herbaceous vegetation dominated by grasses and forbs. Grasslands are found in upland topographic locations, generally irrespective of landscape position, slope, and aspect. Grassland provides many ecosystem services, such as carbon sequestration, nutrient cycling, and agricultural benefits (Jones and Donnelly 2004). Areas devoid of vegetation but located within grasslands are also included in this natural community as individual land cover types.

Shrublands

The shrublands natural community is composed of two distinct vegetation communities, chaparral and scrub land cover types. Chaparral occurs on rocky, porous, nutrient-deficient soils on steep slopes up to 2,000 meters in elevation (Keeley 2000). These communities are dominated by densely packed and nearly impenetrable drought-adapted evergreen woody shrubs with small, thick, leathery sclerophyllous leaves (Hanes 1988; Keeley 2000). In comparison, the scrub land cover types generally consist of low “soft” shrubs in open to dense shrublands, interspersed with grassy openings or little to no herbaceous layer. Shrublands provide many ecosystem services, such as carbon sequestration, nutrient cycling, forage for wildlife, and passive recreational open space values (Garnache et al. 2018).

Woodland

The woodland natural community is an upland vegetation community dominated by hardwood tree species and characterized by a prevalence of various species of oaks (*Quercus* spp.). The composition of this natural community can range from open savannas with grassy understories to dense woodlands with persistent leaf litter that precludes much herbaceous understory or shrubby understories. The canopy can vary from pure stands of oak trees to stands intermixed with other

broadleaf and coniferous trees. Woodlands provide many ecosystem services, such as carbon sequestration, nutrient cycling, erosion control, forage for wildlife, and passive open space values (U.S. Department of Agriculture 2018).

Conifer Forest

The conifer forest natural community is an upland vegetation community dominated by cone-bearing, needle-leaved or scale-leaved evergreen trees. The canopy can range from open to continuous with one or two tiers. Shrub layers are sparse to continuous, and herbaceous cover can be sparse to abundant. Landforms associated with conifer forest include slopes, ridges, headlands, maritime terraces, rocky ridges, and sand dunes. The conifer forest provides many ecosystem services, such as carbon sequestration, nutrient cycling, erosion control, forage for wildlife, and passive recreational open space values (U.S. Department of Agriculture 2018).

Riparian Woodland

The riparian woodland natural community is dominated by trees and an understory of shrubs and forbs associated with riverine water sources. From the foothills to the valley floor, riparian woodland land cover types thrive along streambanks and floodplains. Riparian woodlands provide many ecosystem services, such as improved water quality, erosion control, flood management, forage for wildlife, movement corridors for fish and wildlife, and passive open space values (U.S. Department of Agriculture 2018).

Wetland and Pond

The wetland and pond natural community includes open water and aquatic habitats that are subject to seasonal or perennial flooding or ponding and may have hydrophytic herbaceous vegetation. Wetlands and ponds generally differ in their surface-area-to-volume ratio, water-level fluctuations, and vegetation cover. Wetlands typically support emergent vegetation, while ponds do not. Wetlands and ponds provide ecosystem services, such as improved water quality, flood management, and forage for wildlife (Mitsch et al. 2015).

Baylands

The baylands natural community consists of tidally influenced wetland and open water habitats as well as diked areas that are no longer under tidal influence. Tidally influenced areas may be natural or muted because of constructed structures such as levees, tidal gates, or culverts (San Francisco Estuary Institute 2011). Baylands provide ecosystem services such as improved water quality, flood management, and forage, resting, and nesting habitat for wildlife (Mitsch et al. 2015). The baylands natural community is located primarily along the western and northern perimeter of the county.

Cultivated Agriculture

The cultivated agriculture natural community consists of cultivated row crops, vineyards, orchards, and other crops that require soil tillage. This land cover provides agricultural value as an ecosystem service to the region (U.S. Department of Agriculture 2018) and contributes to the local economy, tourism, food-shed, and culture. Depending on the crop, cultivated agriculture can provide foraging habitat for birds such as Swainson's hawk and tricolored blackbird. Cultivated agriculture is located primarily in the northeast portion of the county.

Urban

The urban natural community consists of areas where native vegetation has been replaced with residential, commercial, and industrial development; transportation infrastructure; other structures; paved and impermeable surfaces; or horticultural plantings, turf areas, and lawns.

Chapter 3
Conservation

This chapter describes biological resources of conservation concern. Specifically, this chapter discusses special-status plant and wildlife species as well as the sensitive natural communities within the county.

Special-Status Species

Bordered by the Pacific Ocean, including San Francisco Bay, and expanding eastward into the Sacramento and San Joaquin Valleys, the Bay Area is one of only six hot spots[5] with respect to species rarity in the United States (Myers et al. 2000). The varied topography of the county, from estuarine habitat and coastal salt marsh to freshwater marsh and upland areas of grassland, chaparral, and oak woodland, provides habitat for a multitude of different species. The Bay Area is the most densely populated area in California outside the Southern California metropolitan region. As such, many species occurring within the area are designated special-status species (e.g., species of concern) because of habitat loss, degradation, or fragmentation of habitats (California Department of Fish and Wildlife 2015).

Plants

The county contains 72 special-status plant species (California Department of Fish and Wildlife 2018a). These species are found across the diverse and, in some cases, specialized habitats in the county. Special-status plants are more abundant in the eastern portions of the county, which retains a rural lifestyle that is compatible with the habitat needs of many of the special-status plant species. Table 3-1 lists all of the special-status plant species in the county that have been documented in the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife 2018a). Figure 3-1 identifies the locations for the occurrences of the special-status plant species.

Table 3-1. Special-Status Plant Species in Contra Costa County

Scientific Name	Common Name	Federal	State	Global	CRPR
Amsinckia grandiflora	Large flowered fiddleneck	E	E	G1	1B.1
Amsinckia lunaris	Bent-flowered fiddleneck	–	–	G2?	1B.2
Anomobryum julaceum	Silver slender moss	–	–	G5?	4.2
Arctostaphylos auriculata	Mount Diablo manzanita	–	–	G2	1B.3
Arctostaphylos manzanita subsp. *laevigata*	Contra Costa manzanita	–	–	G5T2	1B.2
Arctostaphylos pallida	Pallid manzanita	T	E	G1	1B.1
Astragalus tener var. *tener*	Alkali milk-vetch	–	–	G2T2	1B.2
Atriplex cordulata	Heartscale	–	–	G3T2	1B.2
Atriplex depressa	Brittlescale	–	–	G2Q	1B.2

[5] Hot spots must have at least 1,500 endemic plant species and a 75% loss of native vegetation.

Scientific Name	Common Name	Federal	State	Global	CRPR
Blepharizonia plumosa	Big tarplant	–	–	G2	1B.1
California macrophylla	Round-leaved filaree	–	–	G2	–
Calochortus pulchellus	Mount Diablo fairy lantern	–	–	G2	1B.2
Calystegia purpurata ssp. *saxicola*	Coastal bluff morning-glory	–	–	G4T2T3	1B.2
Campanula exigua	Chaparral harebell	–	–	G2	1B.2
Carex comosa	Bristly sedge	–	–	G5	2B.1
Centromadia parryi subsp. *congdonii*	Congdon's tarplant	–	–	G3T2	1B.2
Chloropyron molle subsp. *molle*	Soft bird's-beak	E	R	G2T1	1B.2
Cicuta maculata var. *bolanderi*	Bolander's water-hemlock	–	–	G5T4	2B.1
Cirsium andrewsii	Franciscan thistle	–	–	G3	1B.2
Cordylanthus nidularis	Mount Diablo bird's-beak	–	R	G1	1B.1
Delphinium californicum subsp. *interius*	Hospital Canyon larkspur	–	–	G3T3	1B.2
Delphinium recurvatum	Recurved larkspur	–	–	G3	1B.2
Dirca occidentalis	Western leatherwood	–	–	G2	1B.2
Eriastrum ertterae	Lime Ridge eriastrum	–	–	G2	1B.1
Eriogonum nudum var. *psychicola*	Antioch Dunes buckwheat	–	–	G5T1	1B.1
Eriogonum truncatum	Mount Diablo buckwheat	–	–	G2	1B.1
Eryngium jepsonii	Jepson's coyote-thistle	–	–	G2	1B.2
Eryngium racemosum	Delta coyote-thistle	–	E	G1Q	1B.1
Eryngium spinosepalum	Spiny-sepaled button-celery	–	–	G2	1B.2
Erysimum capitatum var. *angustatum*	Contra Costa wallflower	E	E	G5T1	1B.1
Eschscholzia rhombipetala	Diamond-petaled California poppy	–	–	G1	1B.1
Extriplex joaquiniana	San Joaquin spearscale = San Joaquin saltbush	–	–	G2	1B.2
Fritillaria agrestis	Stinkbells	–	–	G3	4.2
Fritillaria liliacea	Fragrant fritillary	–	–	G2	1B.2
Gillia millefoliata	Dark-eyed gillia	–	–	G2	1B.2
Grimmia torenii	Toren's grimmia	–	–	G2	1B.3
Helianthella castanea	Diablo helianthella	–	–	G2	1B.2
Hesperolinon breweri	Brewer's western flax	–	–	G2	1B.2
Hibiscus lasiocarpos var. *occidentalis*	Woolly rose-mallow	–	–	G5T2	1B.2
Hoita strobilina	Loma Prieta hoita	–	–	G2	1B.1
Holocarpha macradenia	Santa Cruz tarplant	T	E	G1	1B.1
Isocoma arguta	Carquinez goldenbush	–	–	G1	1B.1
Juglans hindsii	Northern California black walnut	–	–	G1	1B.1

Scientific Name	Common Name	Federal	State	Global	CRPR
Lasthenia conjugens	Contra Costa goldfields	E	–	G1	1B.1
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	–	–	G5T2	1B.2
Lilaeopsis masonii	Mason's lilaeopsis	–	R	G2	1B.1
Limosella australis	Delta mudwort	–	–	G4G5	2B.1
Madia radiata	Showy madia	–	–	G2	1B.1
Malacothamnus hallii	Hall's bush mallow	–	–	G2	1B.2
Meconella oregana	Oregon meconella	–	–	G2G3	1B.1
Monolopia gracilens	Woodland woollythreads	–	–	G3	1B.2
Navarretia gowenii	Lime ridge navarretia	–	–	G1	1B.1
Navarretia nigelliformis subsp. *nigelliformis*	Adobe navarretia	–	–	G4T3	4.2
Navarretia nigelliformis subsp. *radians*	Shining navarretia	–	–	G4T2	1B.2
Oenothera deltoides subsp. *howellii*	Antioch Dunes evening primrose	E	E	G5T1	1B.1
Phacelia phacelioides	Mount Diablo phacelia	–	–	G2	1B.2
Polygonum marinense	Marin knotweed	–	–	G2Q	3.1
Potamogeton zosteriformis	Eel-grass pondweed	–	–	G5	2B.2
Puccinellia simplex	California alkali grass	–	–	G3	1B.2
Sanicula saxatilis	Rock sanicle	–	R	G2	1B.2
Scutellaria galericulata	Marsh skullcap	–	–	G5	2B.2
Senecio aphanactis	Chaparral ragwort	–	–	G3	2B.2
Sperguglaria macrotheca var. *longistyla*	Long-styled sand-spurrey	–	–	G5T2	1B.2
Streptanthus albidus subsp. peramoenus	Most beautiful jewelflower	–	–	G2T2	1B.2
Streptanthus hispidus	Mount Diablo jewelflower	–	–	G2	1B.3
Stuckenia filiformis ssp. *alpina*	Slender-leaved pondweed	–	–	G5T5	2B.2
Suaeda californica	California seablight	E	–	G1	1B.1
Symphyotrichum lentum	Suisun Marsh aster	–	–	G2	1B.2
Trifolium hydrophilum	Saline clover	–	–	G2	1B.2
Triquetrella californica	Coastal triquetrella	–	–	G2	1B.2
Tropidocarpum capparideum	Caper-fruited tropidocarpum	–	–	G1	1B.1
Viburnum ellipticum	Oval-leaved viburnum	–	–	G4G5	2B.3

KEY

Federal: California Department of Fish and Wildlife. 2018c. *Special Animals List.* Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406.

E = Listed as endangered under the federal Endangered Species Act.

T = Listed as threatened under the federal Endangered Species Act.

– = No listing.

State: California Department of Fish and Wildlife. 2018c. *Special Animals List.* Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406.

E = Listed as endangered under the California Endangered Species Act.

T = Listed as threatened under the California Endangered Species Act.

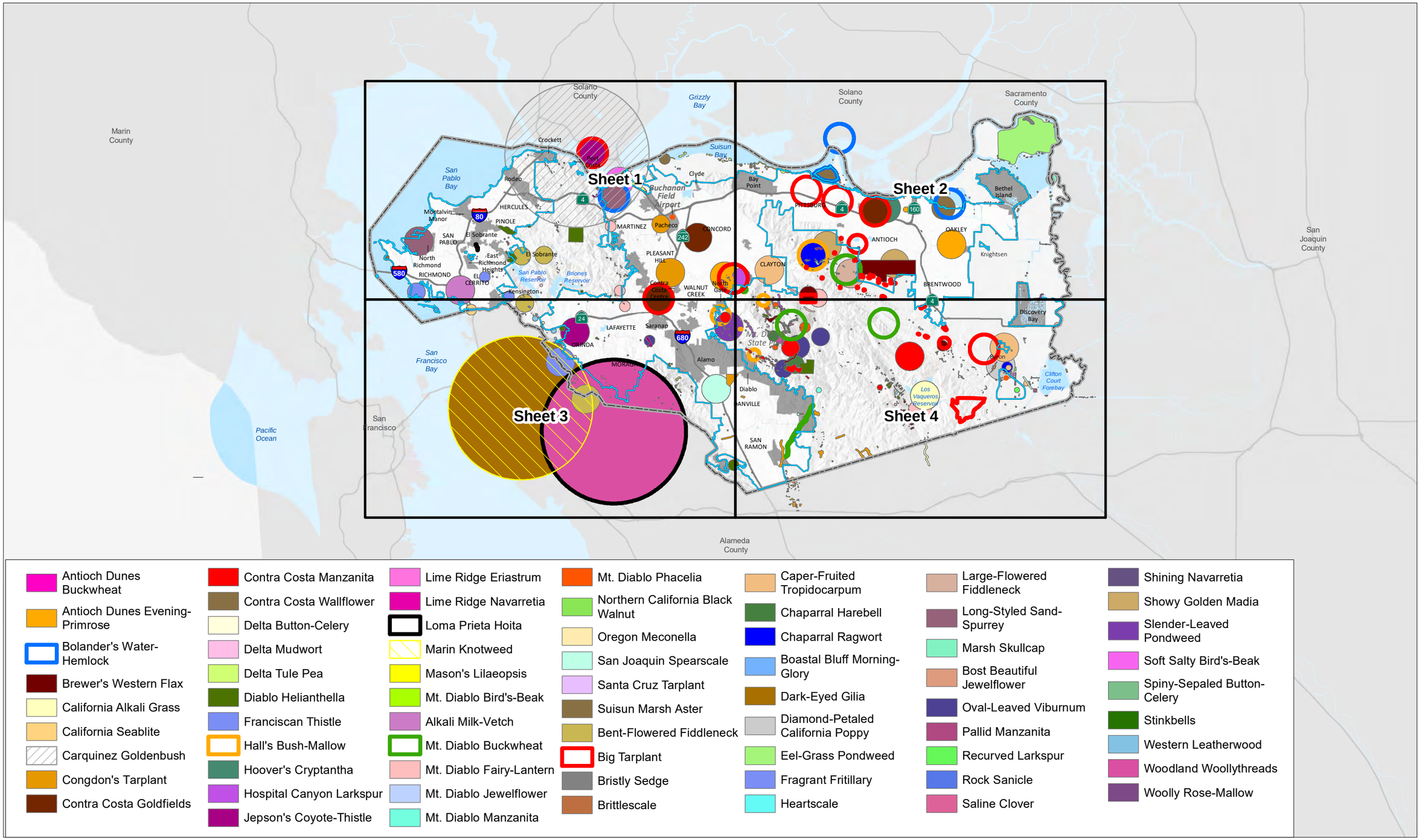
Scientific Name	Common Name	Federal	State	Global	CRPR

R = Listed as rare under the California Endangered Species Act
– = No listing.
Global: NatureServe. 2018. *Global Conservation Status Definitions*. Available: http://explorer.natureserve.org/granks.htm.
G1 = Critically imperiled; at very high risk for extinction.
G2 = Imperiled; at high risk for extinction.
G3 = Vulnerable; at moderate risk for extinction.
G4 = Apparently secure; uncommon but not rare.
G5 = Secure; common, widespread, and abundant.
G#G# = Range rank; numeric range rank (e.g., G2G3) is used to indicate the range of uncertainty in the status of a species or community.
T# = Infraspecific taxon; status of infraspecific taxa (subspecies or varieties) indicated by a "T-rank" following the species' global rank.
? = inexact numeric rank
Q = Questionable taxonomy; taxonomic distinctiveness of this entity at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid.
Rules for assigning T-ranks follow the same principles outlined above for global conservation status ranks. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1.
California Rare Plant Rank (CRPR): California Native Plant Society. 2018. *Rare Plants*. Available: http://www.cnps.org/cnps/rareplants/ranking.php.
1B = Plants rare, threatened, or endangered in California and elsewhere.
0.1 = Seriously threatened in California (more than 80% of occurrences threatened/high degree and immediacy of threat)
0.2 = Moderately threatened in California (20%–80% of occurrences threatened/moderate degree of immediacy of threat)

Wildlife

The county has a rich landscape that is home to a number of rare wildlife and fish species, including an endemic butterfly, the Lange's metalmark butterfly (*Apodemia mormo langei*), found only at the Antioch Dunes National Wildlife Refuge. A total of 84 special-status wildlife species are known to occur in the county, including the San Joaquin kit fox (*Vulpes macrotus mutica*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), western burrowing owl (*Athene cunicularia hypugea*), and vernal pool fairy shrimp (*Brachinecta lynchi*) (California Department of Fish and Wildlife 2018a). Often, these special-status wildlife species occur in protected areas, such as Mount Diablo State Park or Los Vaqueros Reservoir, or in various East Bay regional parks.

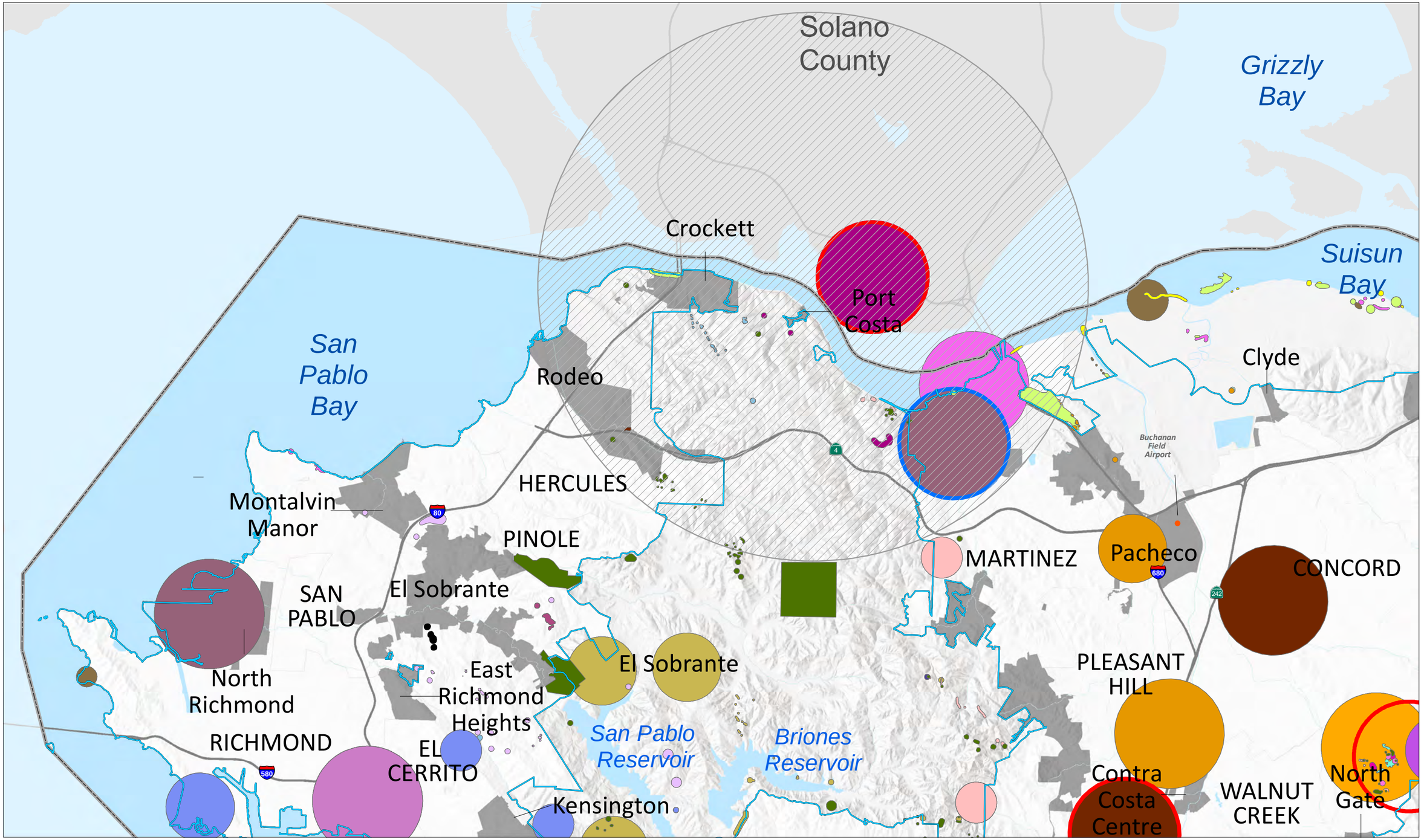
Similar to its benefits for special-status plant species, the rural grassland of the eastern portion of the county provides some of the best remaining undeveloped habitat for special-status wildlife species. For example, vernal pools, which provide essential habitat for special-status wildlife species such as California tiger salamander and fairy shrimp, are restricted to the Livermore Vernal Pool Region, which overlaps the eastern portion of the county. The Livermore Vernal Pool Region contains the Altamont Hills Core Area, with specific sites that are necessary for recovering endangered or threatened species or conserving species of concern. The Altamont Hills Core Area contains five distinct core area polygons near the Contra Costa County-Alameda County boundary (two in Alameda County and three in Contra Costa County), with the largest core area in the Bryon Hills/Vasco Caves region of Contra Costa County. Figures 3-2, 3-3, and 3-4 identify the locations for occurrences of special-status wildlife, insect, and fish species, respectively. Table 3-2 lists all of the special-status wildlife, insect, and fish species in the county that have been documented in the CNDDB (California Department of Fish and Wildlife 2018a).



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: The following sheets provide a detailed map of each quadrant of the County.

Figure 3-1
Overview Map
Special-Status Plant Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

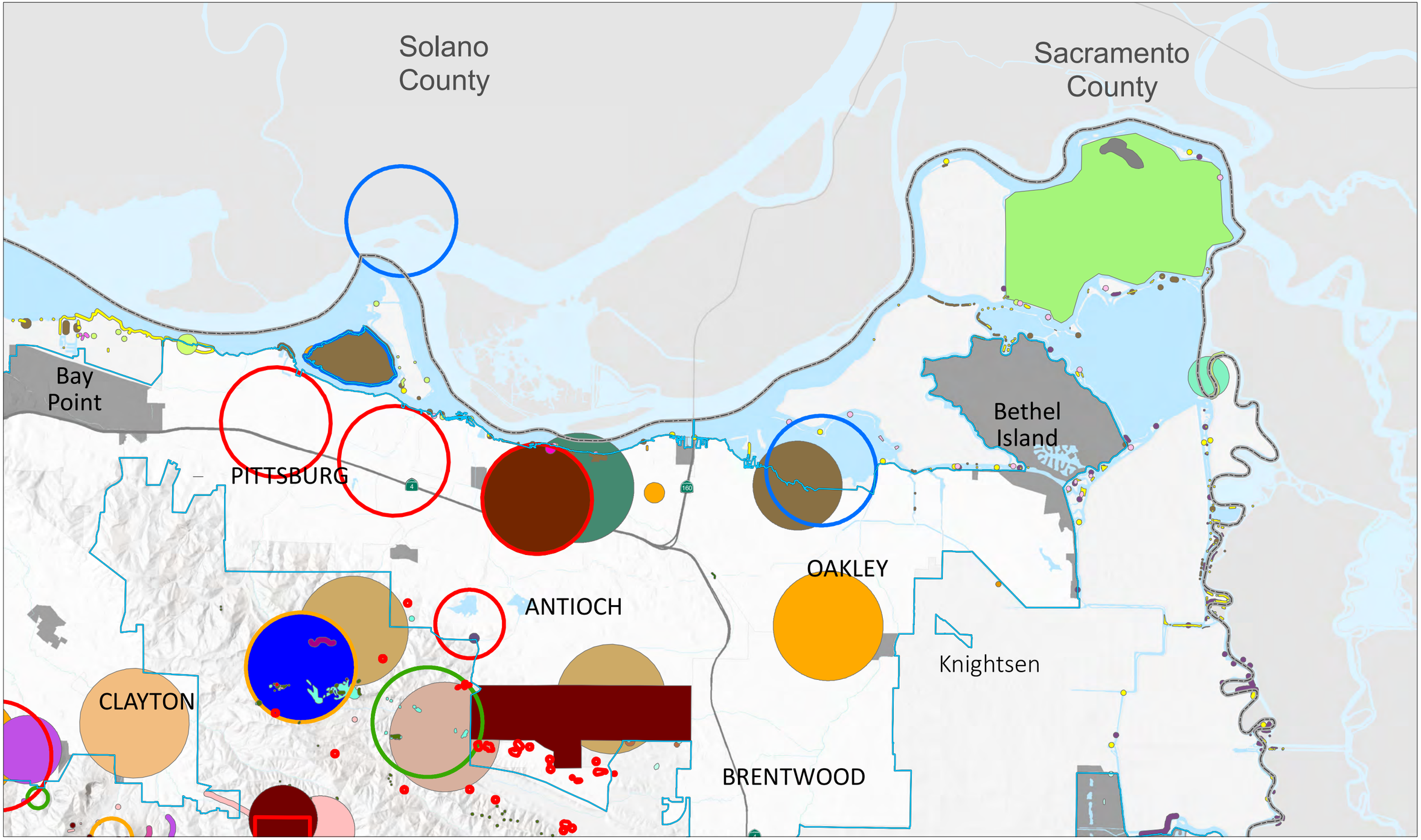
0 0.75 1.5 3 Miles

N

1 2 3 4

Note: See legend on Overview Map

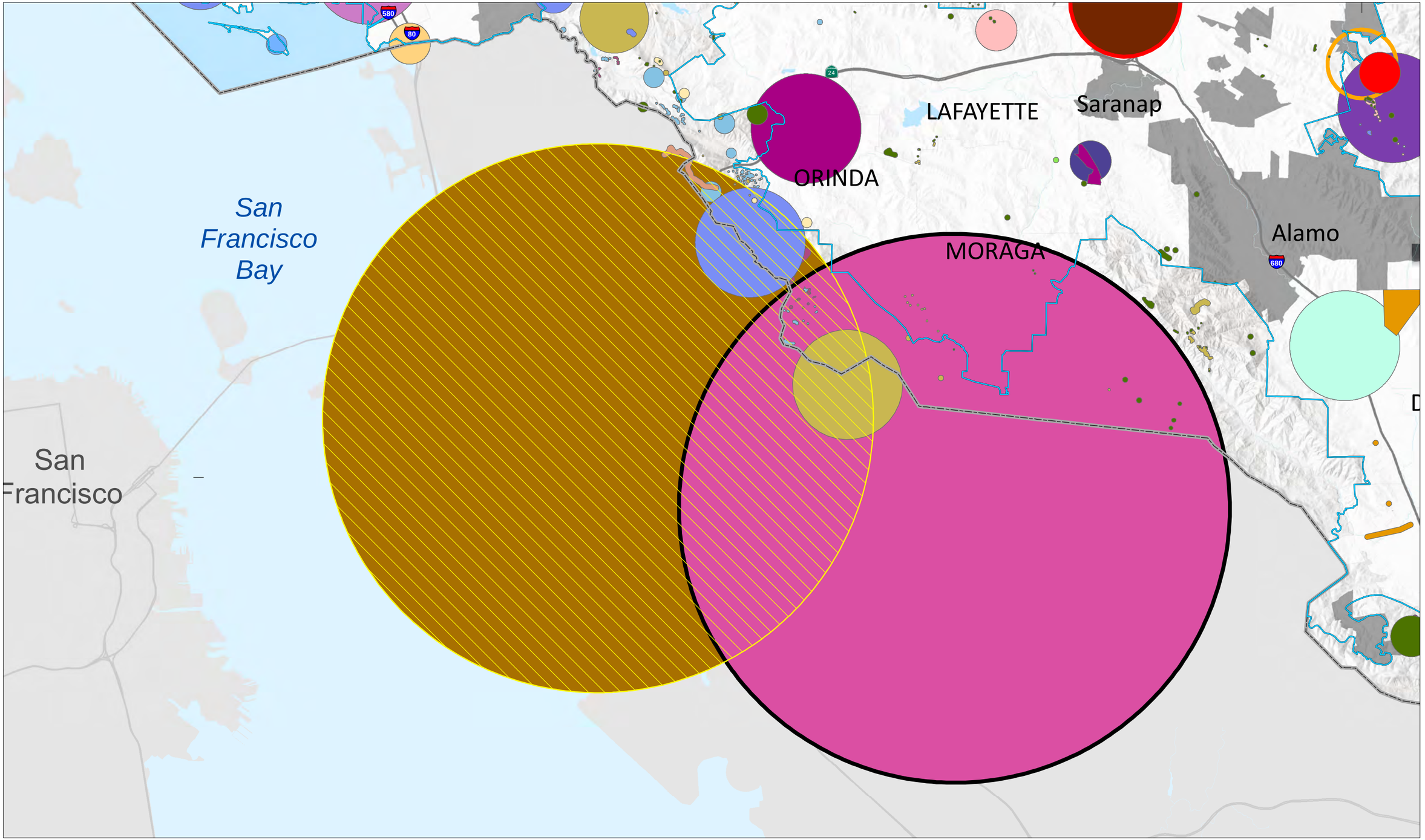
Figure 3-1
Sheet 1
Special-Status Plant Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: See legend on Overview Map

Figure 3-1
Sheet 2
Special-Status Plant Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

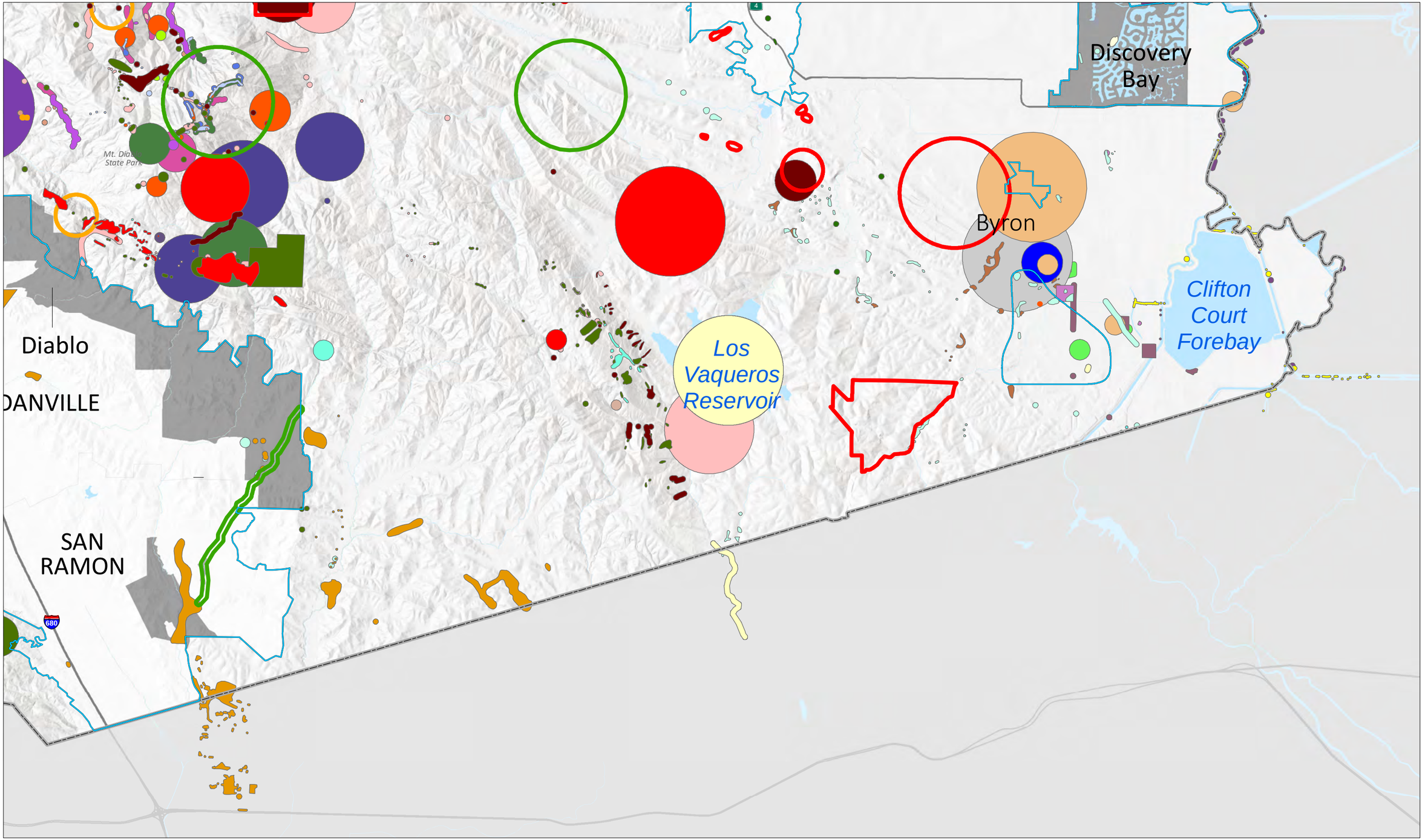
0 0.75 1.5 3 Miles

N

1 2 3 4

Note: See legend on Overview Map

Figure 3-1
Sheet 3
Special-Status Plant Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

0 0.75 1.5 3 Miles

N

Note: See legend on Overview Map

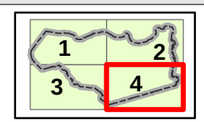
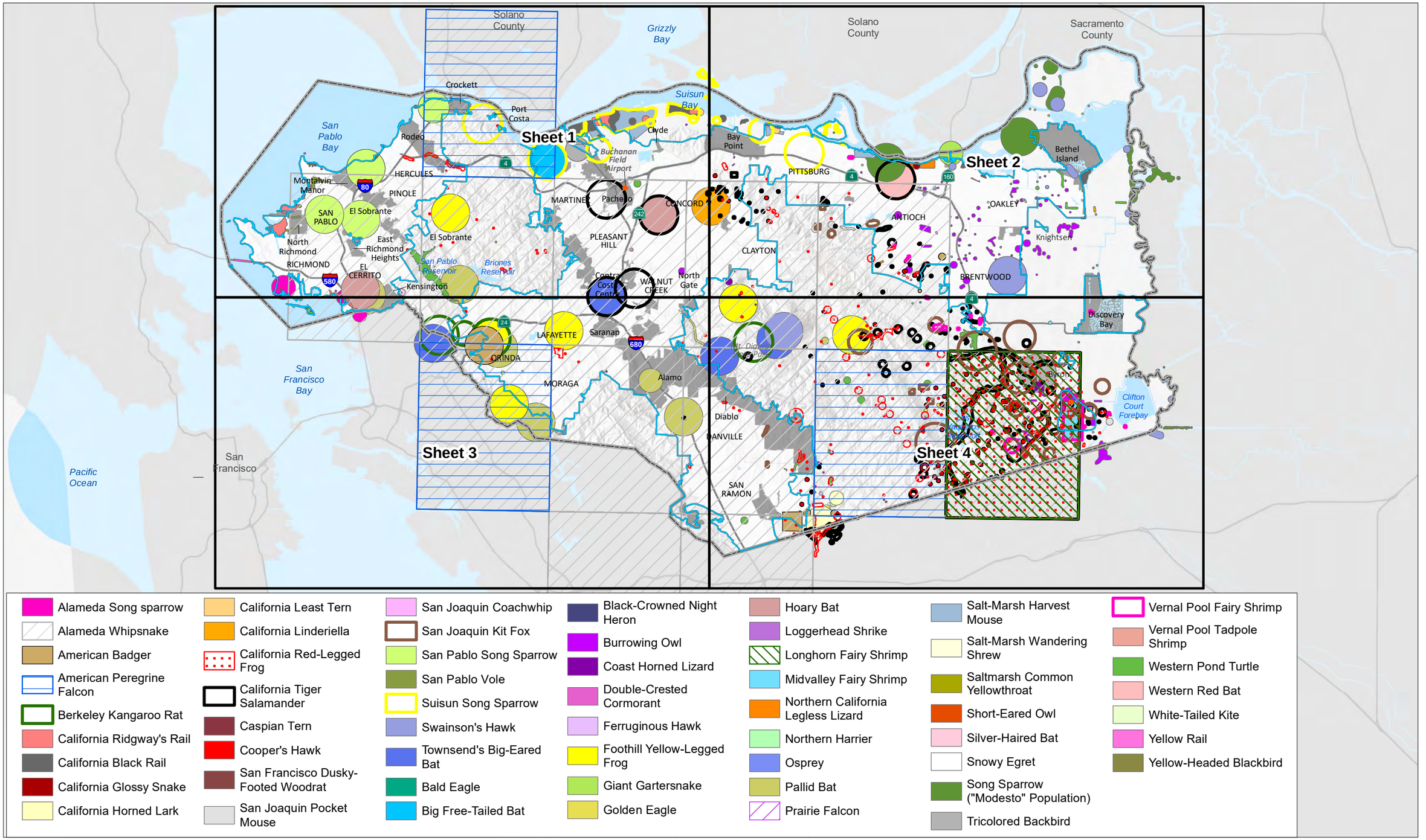


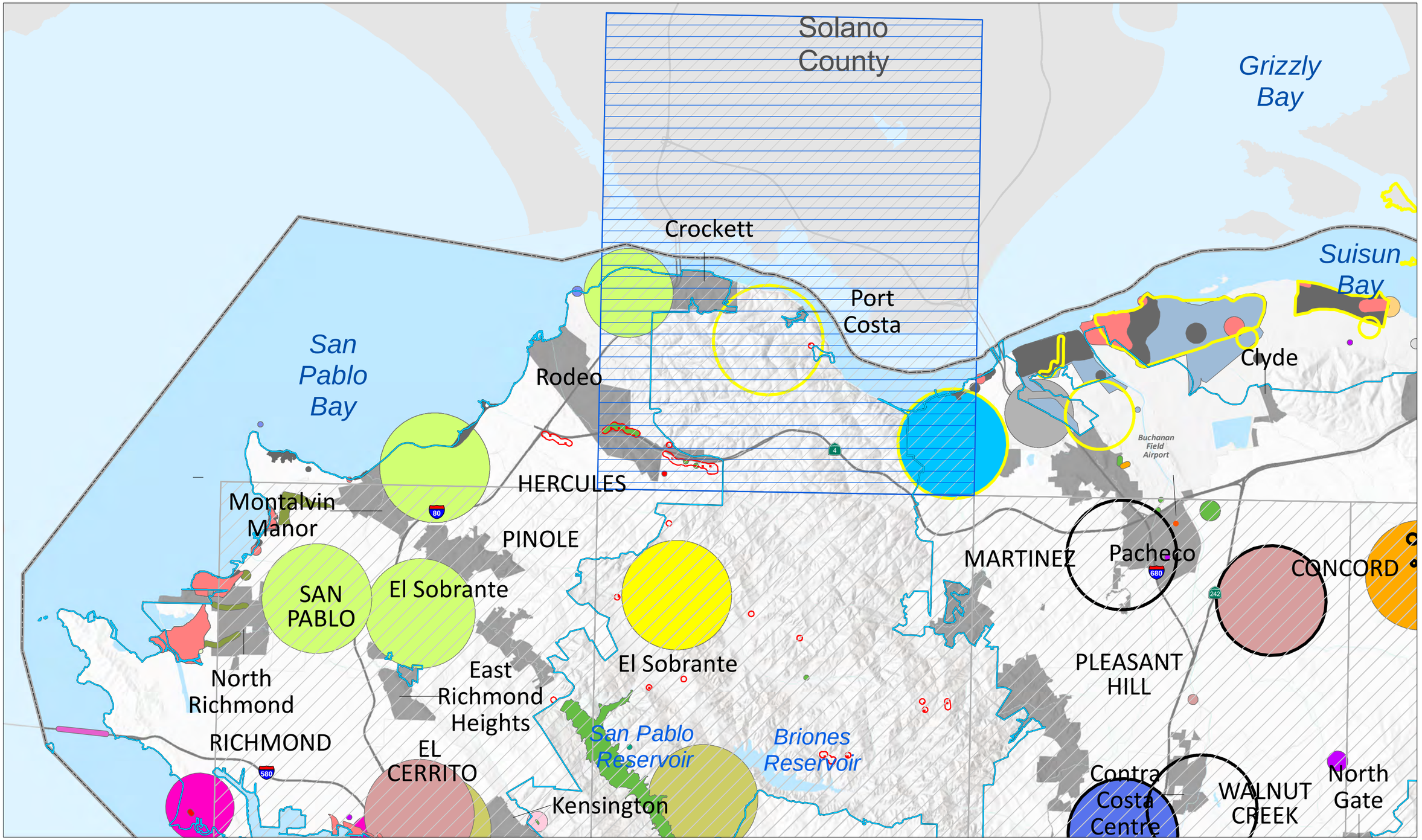
Figure 3-1
Sheet 4
Special-Status Plant Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: The following sheets provide a detailed map of each quadrant of the County.

Figure 3-2
Overview Map
Special-Status Wildlife Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

ICF

Note: See legend on Overview Map

Figure 3-2
Sheet 1
Special-Status Wildlife Species Occurrences

Solano County

Sacramento County

Bay Point

PITTSBURG

Bethel Island

OAKLEY

ANTIOCH

Knightsen

CLAYTON

BRENTWOOD

Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

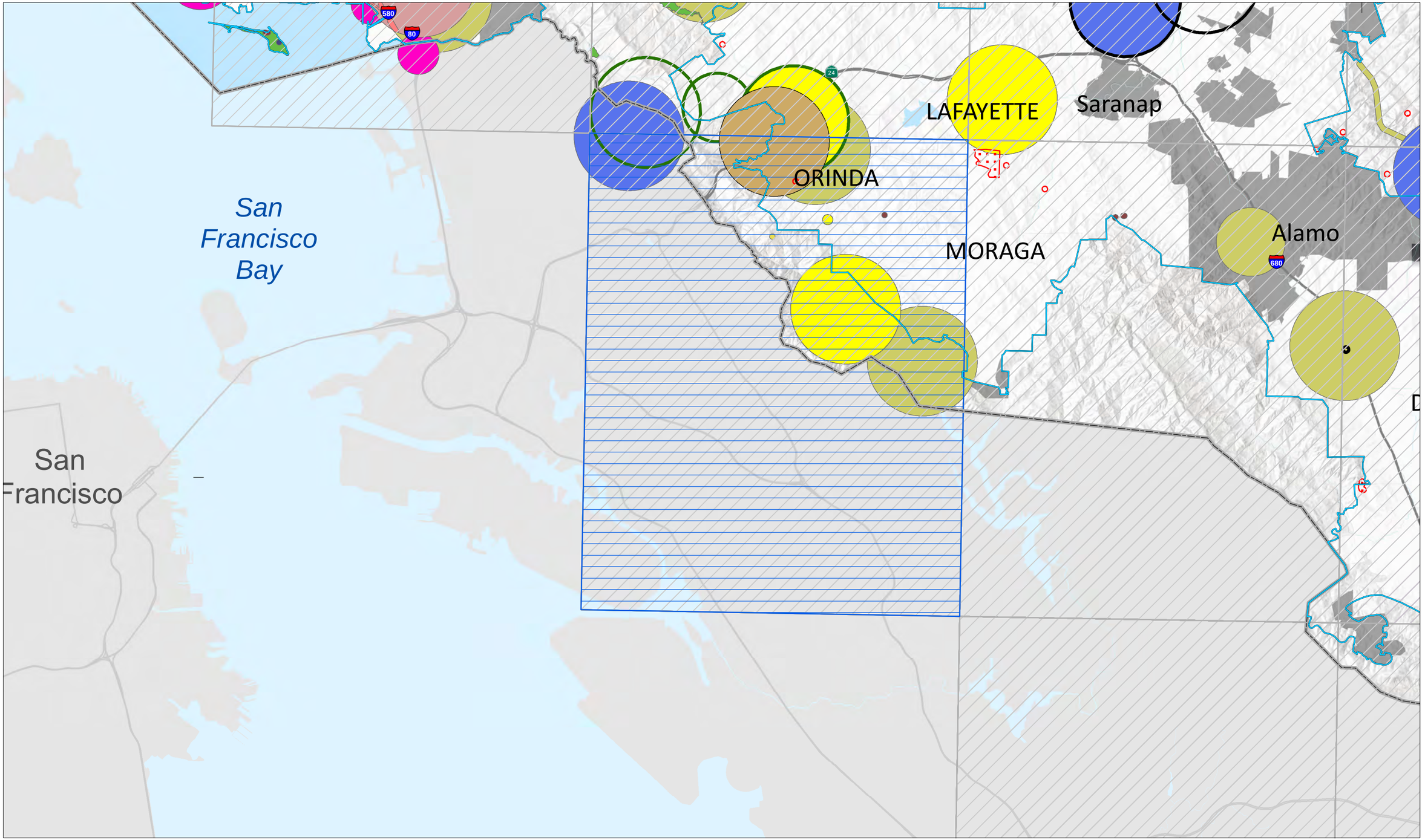
0 0.5 1 2
Miles

N

1 2 3 4

Note: See legend on Overview Map

Figure 3-2
Sheet 2
Special-Status Wildlife Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

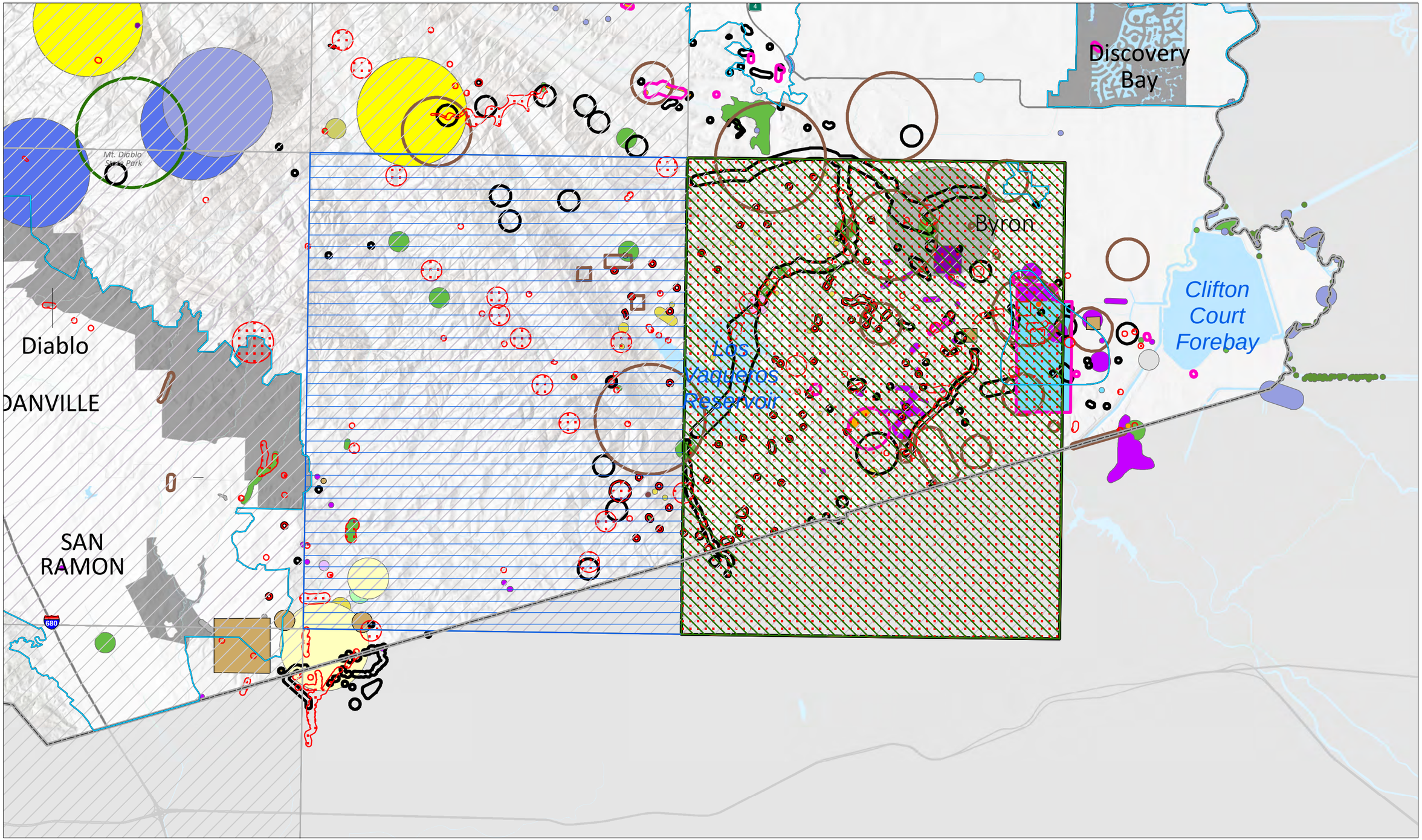
0 0.5 1 2
Miles

N

1 2 3 4

Note: See legend on Overview Map

Figure 3-2
Sheet 3
Special-Status Wildlife Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

0 0.5 1 2
Miles

N

Note: See legend on Overview Map

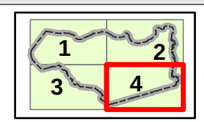
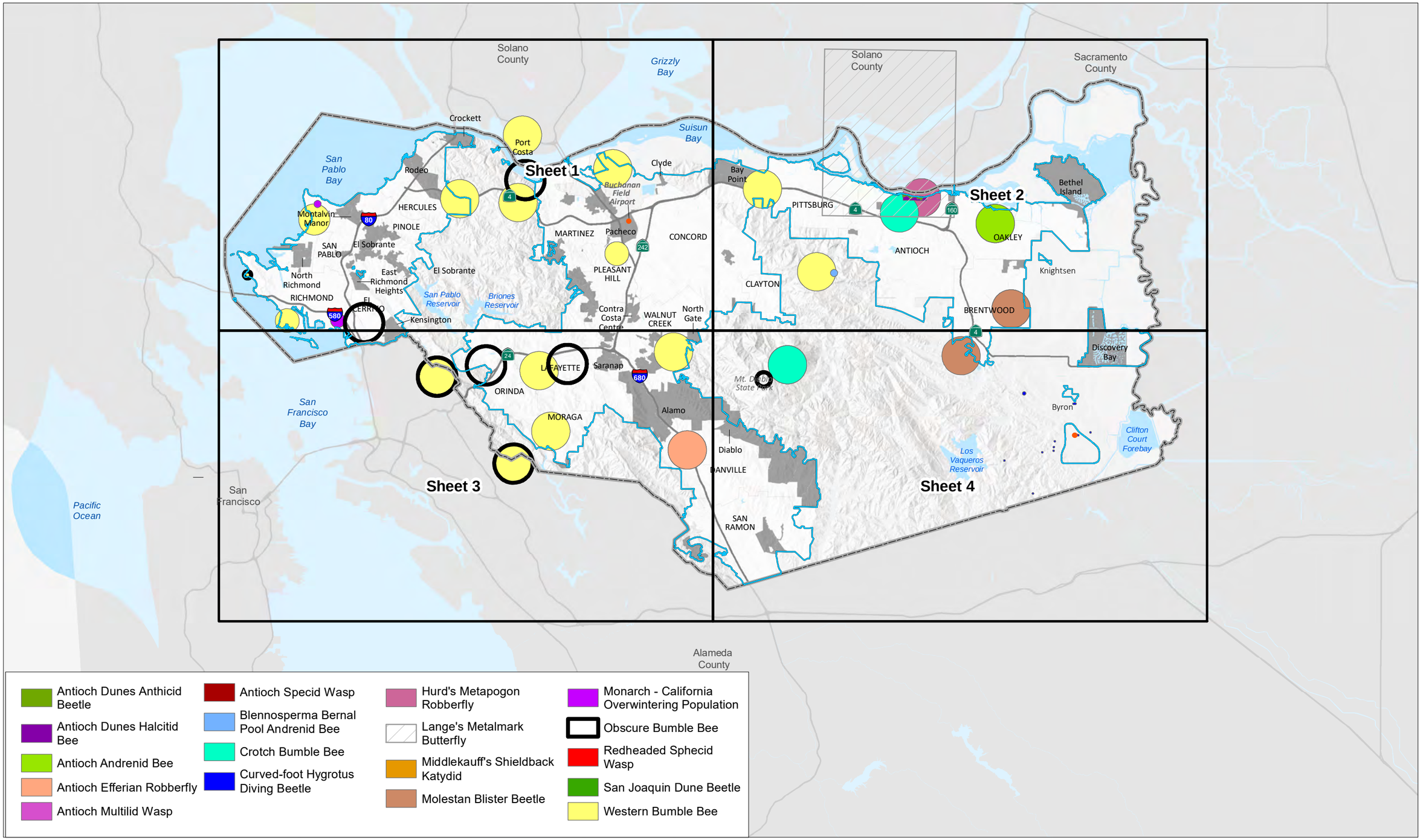


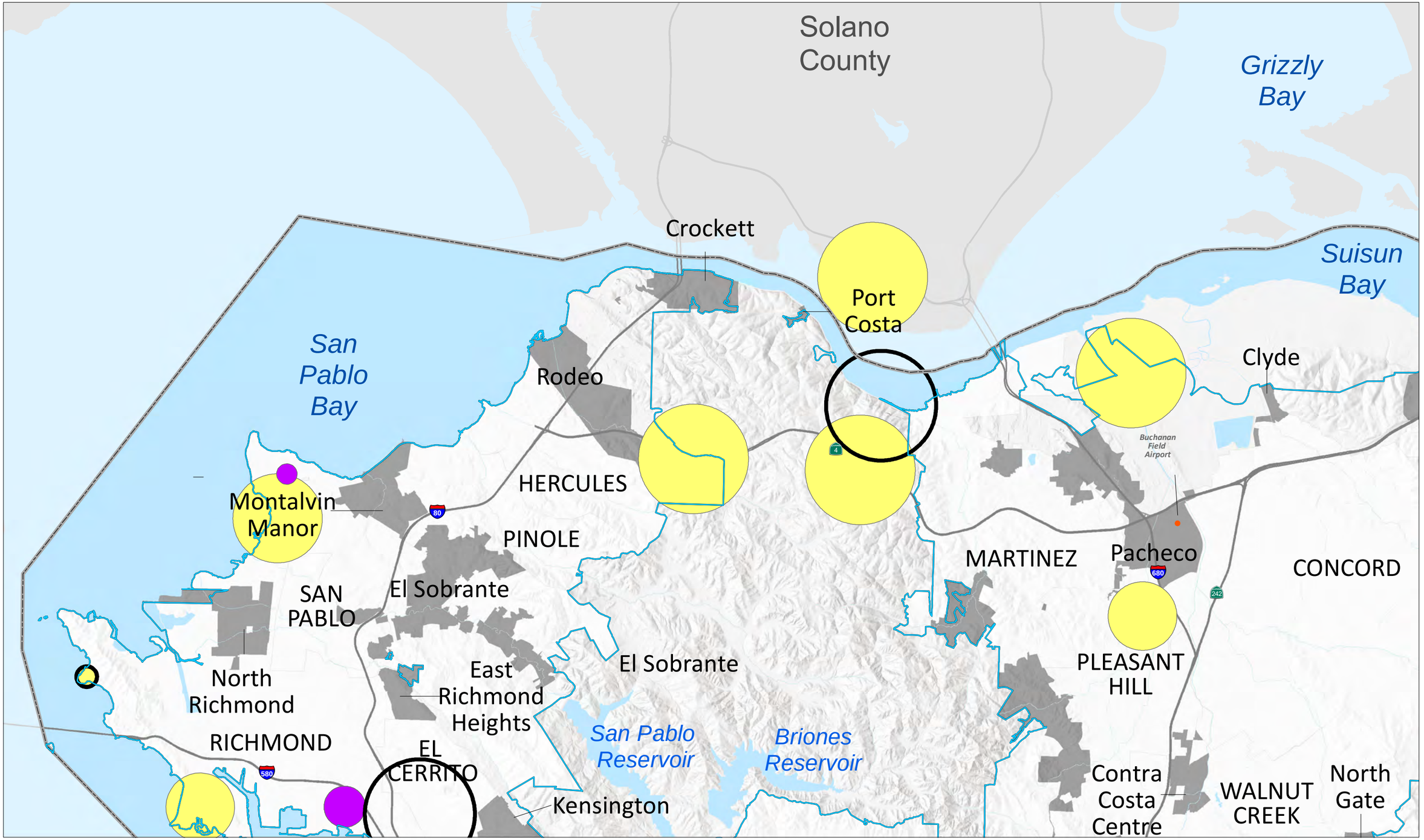
Figure 3-2
Sheet 4
Special-Status Wildlife Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: The following sheets provide a detailed map of each quadrant of the County.

Figure 3-3
Overview Map
Special-Status Insect Species



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

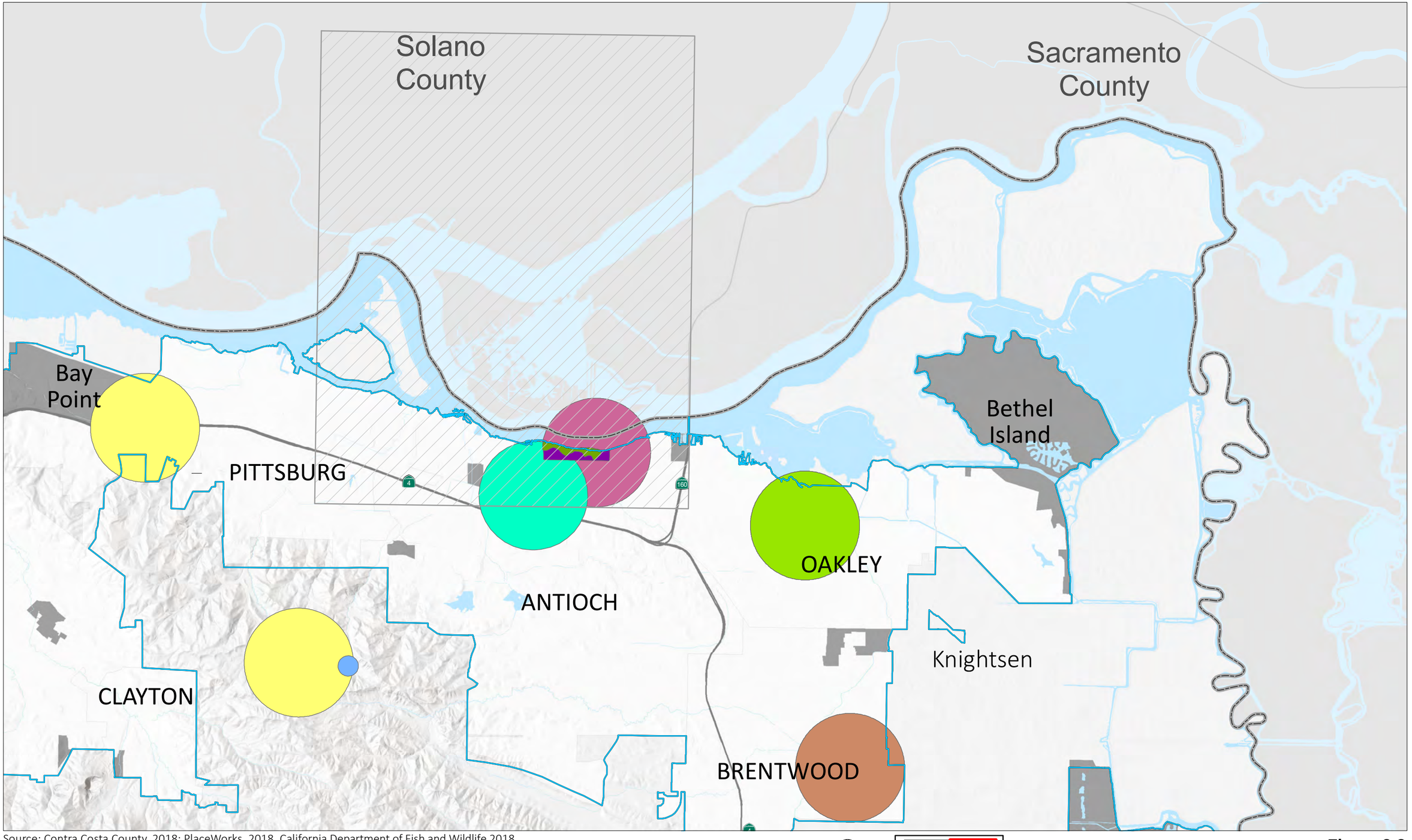
0 0.75 1.5 3 Miles

N

1 2 3 4

Note: See legend on Overview Map

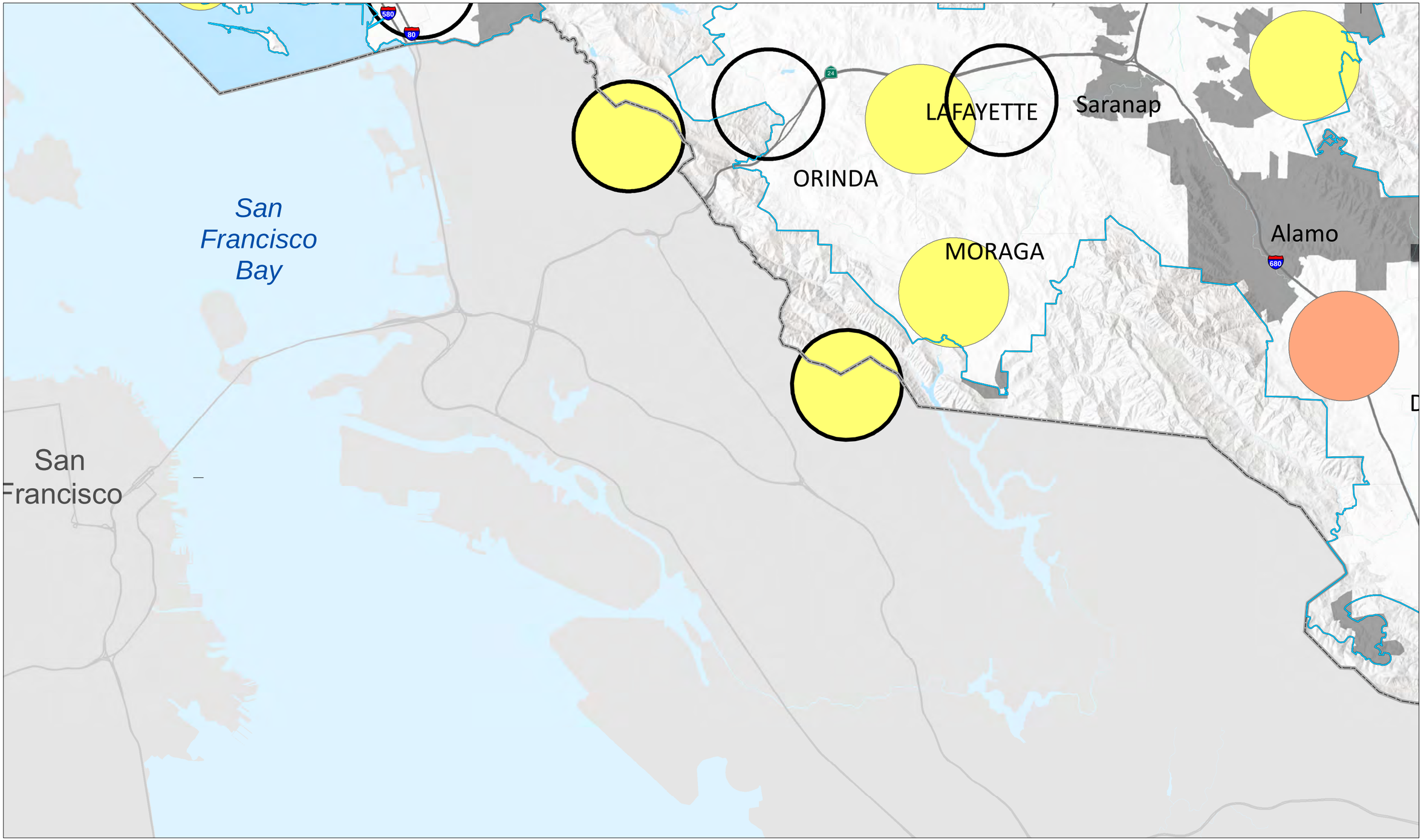
Figure 3-3
Sheet 1
Special-Status Insect Species



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: See legend on Overview Map

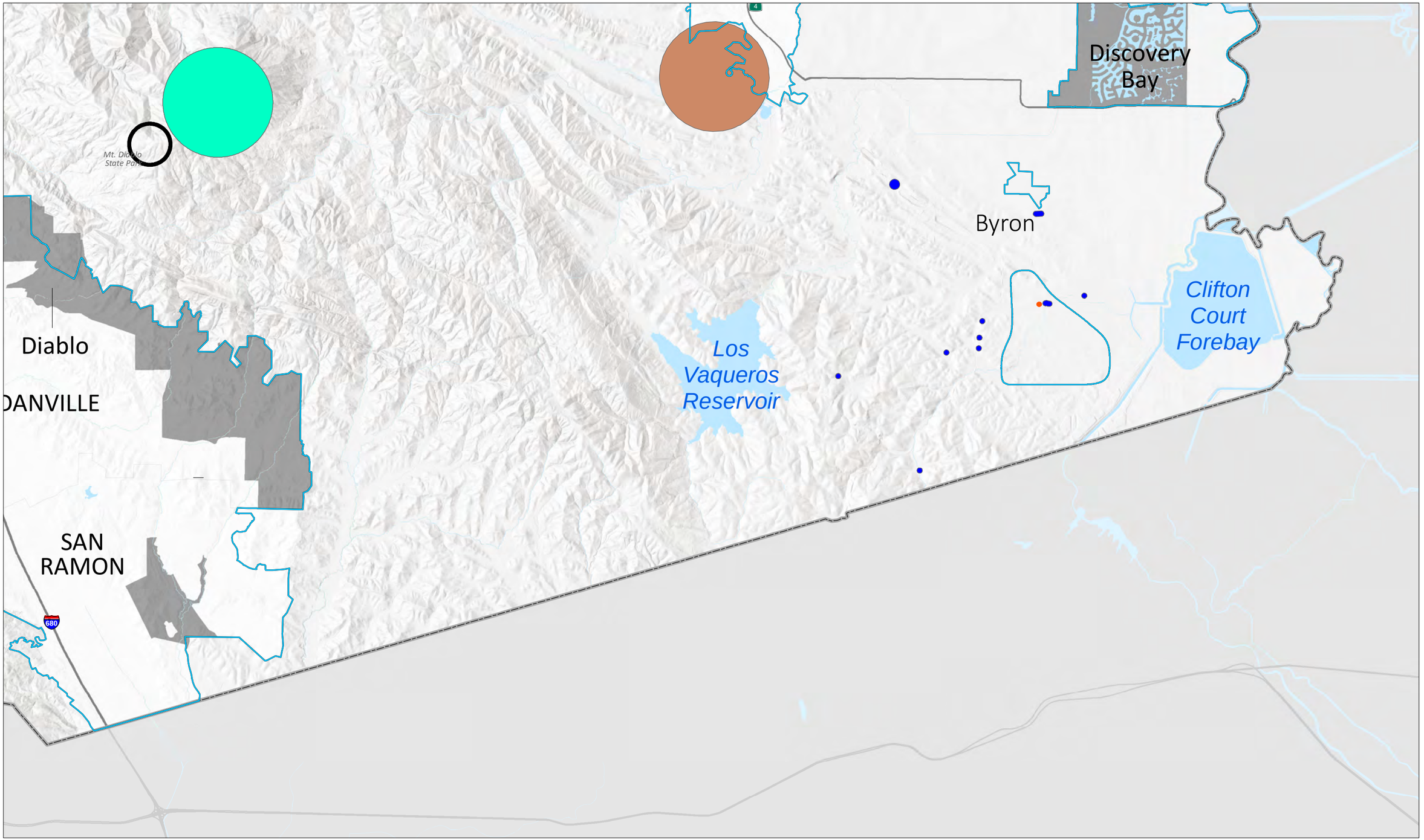
Figure 3-3
Sheet 2
Special-Status Insect Species



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: See legend on Overview Map

Figure 3-3
Sheet 3
Special-Status Insect Species



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

0 0.75 1.5 3 Miles

N

Note: See legend on Overview Map

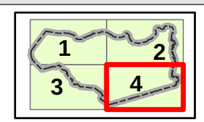
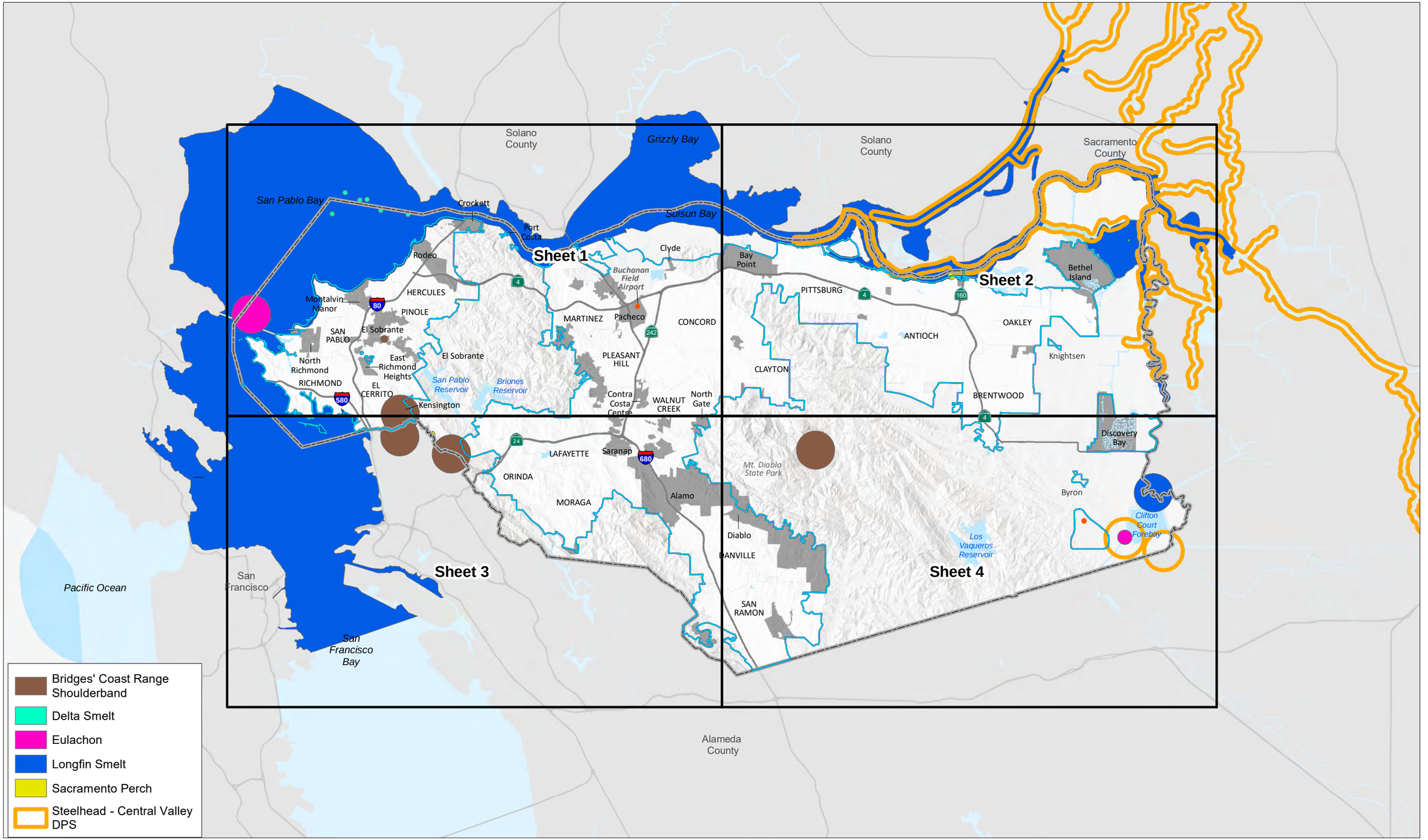


Figure 3-3
Sheet 4
Special-Status Insect Species



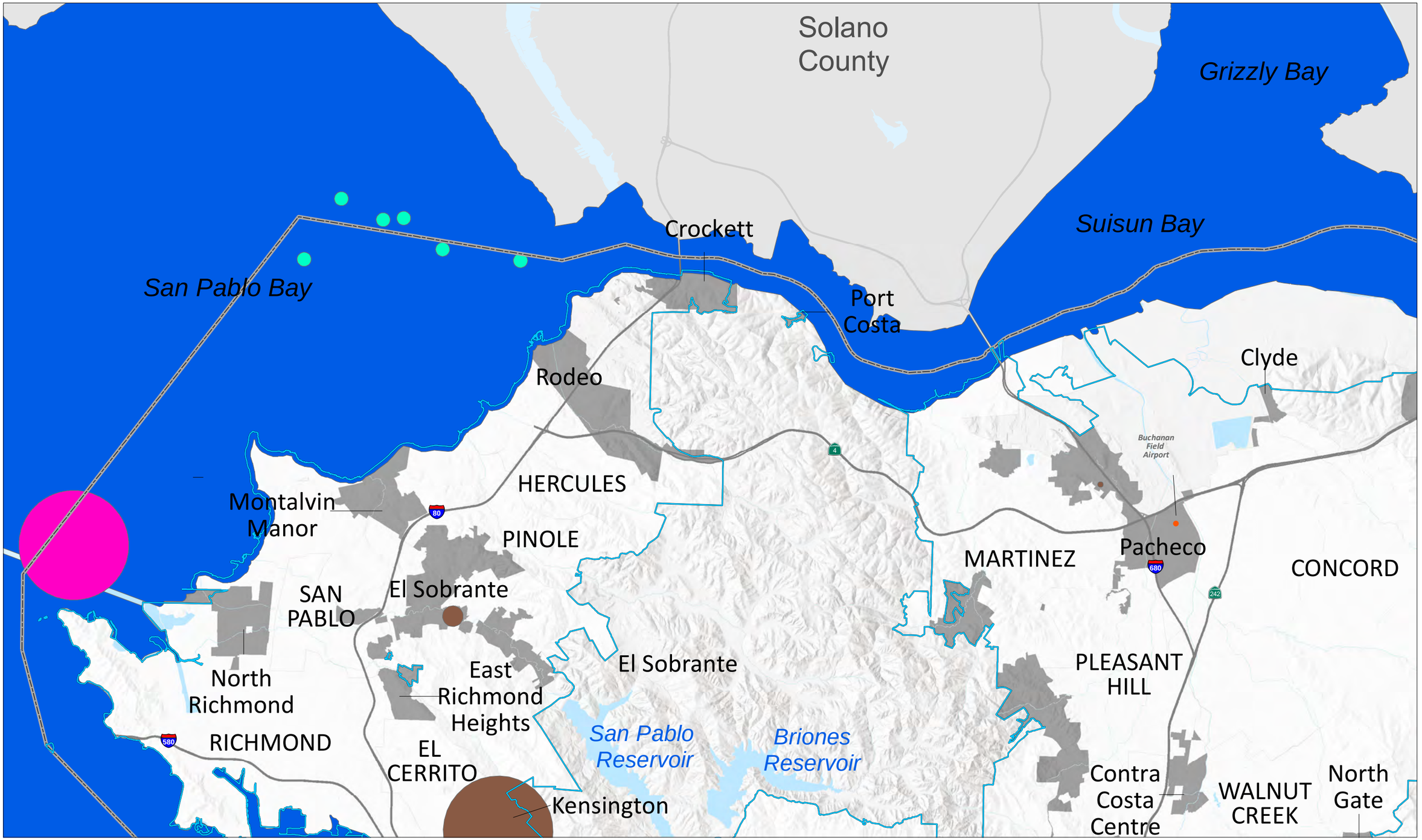
Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

0 2 4 8 Miles

N

Note: The following sheets provide a detailed map of each quadrant of the County.

Figure 3-4
Overview Map
Special-Status Fish and Mollusk Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: See legend on Overview Map

Figure 3-4
Sheet 1
Special-Status Fish and Mollusk Species Occurrences

Solano County

Sacramento County

Honker Bay

Suisun Bay

Bay Point

PITTSBURG

Bethel Island

ANTIOCH

OAKLEY

Knightsen

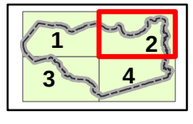
CLAYTON

BRENTWOOD

Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

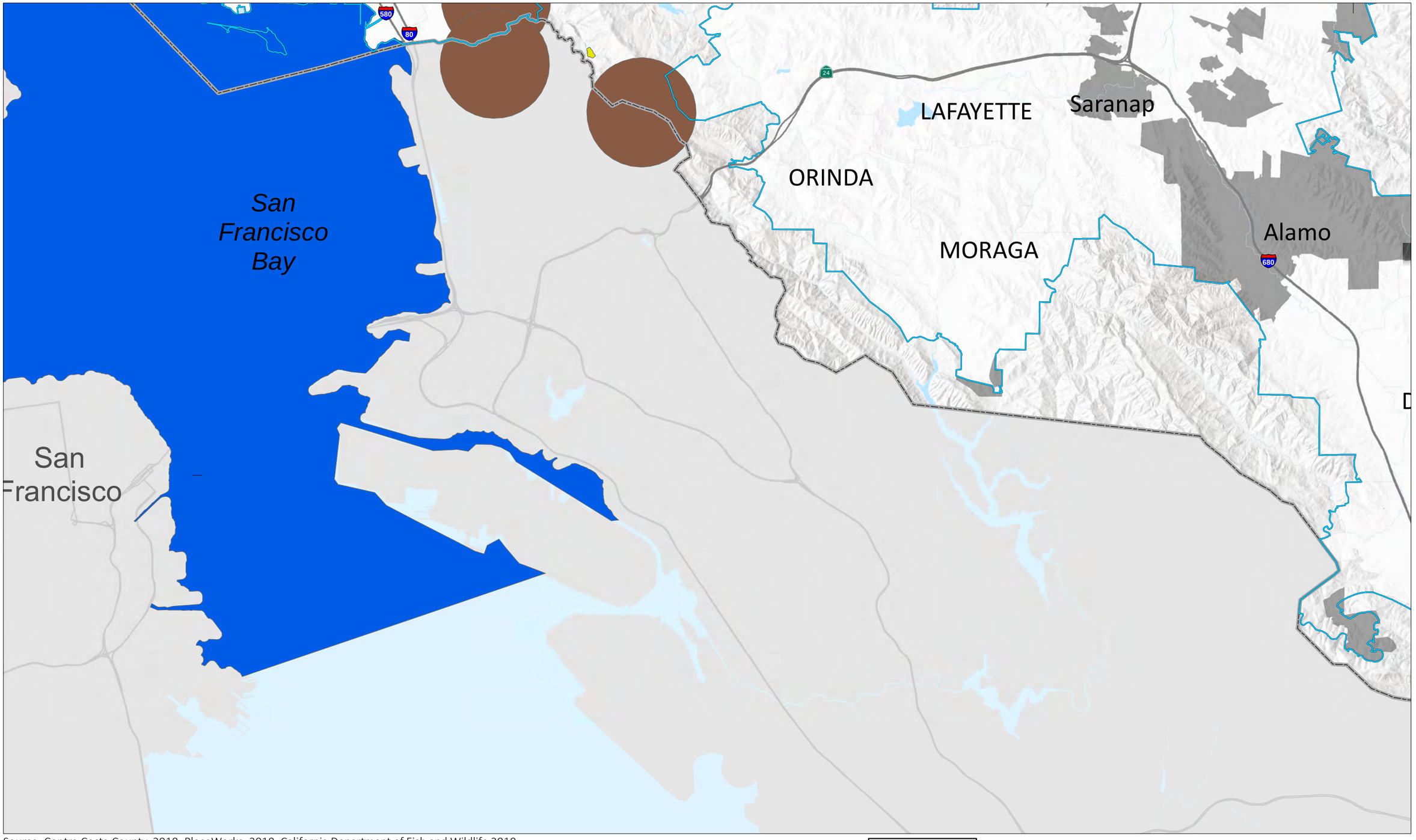
0 0.75 1.5 3
Miles

N



Note: See legend on Overview Map

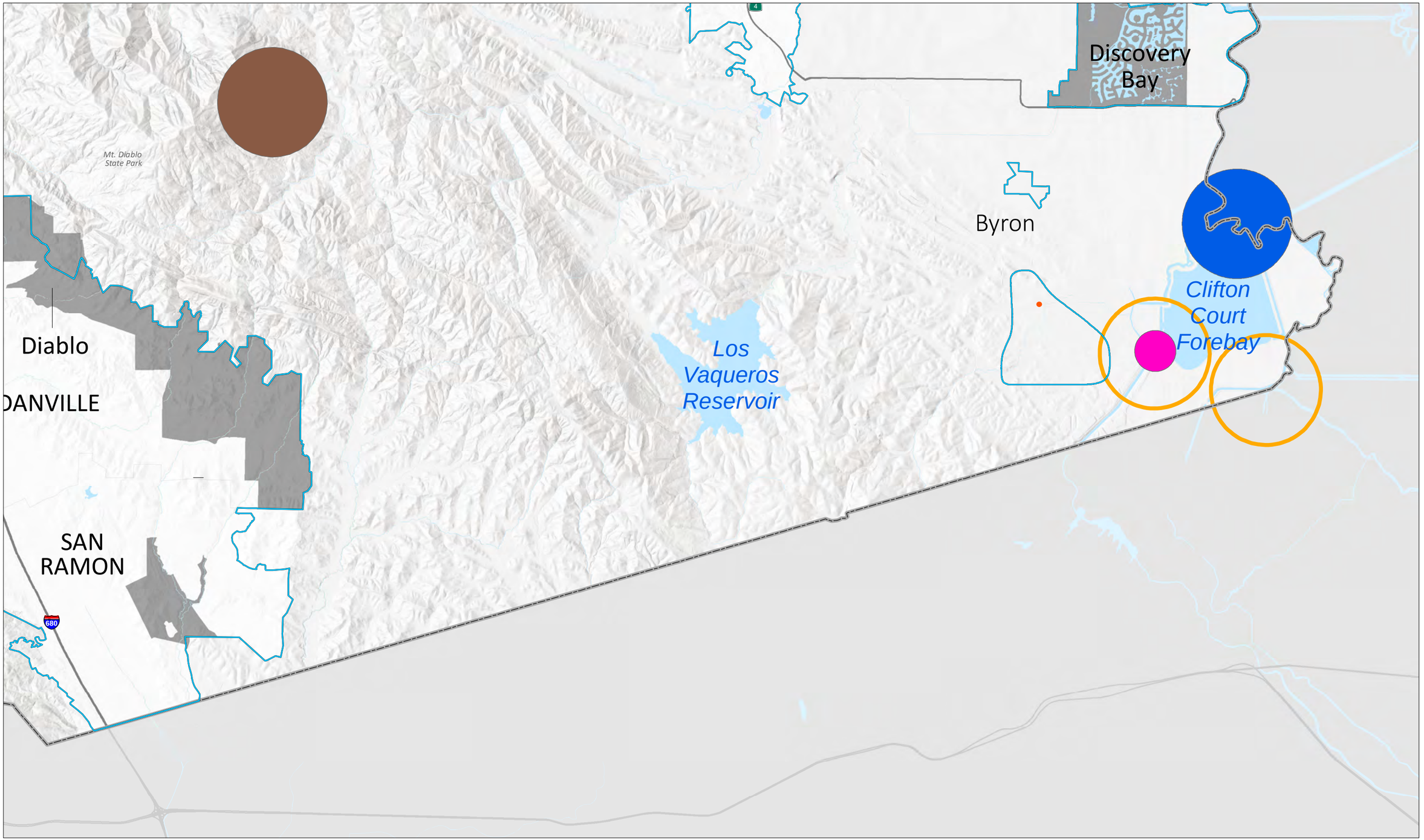
Figure 3-4
Sheet 2
Special-Status Fish and Mollusk Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: See legend on Overview Map

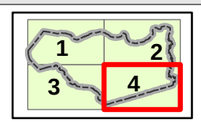
Figure 3-4
Sheet 3
Special-Status Fish and Mollusk Species Occurrences



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

0 0.75 1.5 3
Miles

N



Note: See legend on Overview Map

Figure 3-4
Sheet 4
Special-Status Fish and Mollusk Species Occurrences

Table 3-2. Special-Status Wildlife, Insect, and Fish Species in Contra Costa County

Scientific Name	Common Name	Federal	State	Global
Andrena blenospermatis	Blennosperma vernal pool andrenid bee	–	–	G2
Anthicus antiochensis	Antioch Dunes anthicid beetle	–	–	G2
Apodemia mormo langei	Lange's metalmark butterfly	E	–	G5T1
Bombus caliginosus	Obscure bumble bee	–	–	G4?
Bombus crotchii	Crotch bumble bee	–	–	G3G4
Bombus occidentalis	Western bumble bee	*	–	G2G3
Branchinecta longiantenna	Longhorn fairy shrimp	E	–	G1
Branchinecta lynchi	Vernal pool fairy shrimp	T	–	G3
Branchinecta mesovallensis	Midvalley fairy shrimp	–	–	G2
Coelus gracilis	San Joaquin dune beetle	–	–	G1
Danaus plexippus	Monarch butterfly (overwintering population)	*	–	G4T2T3
Efferia antiochi	Antioch efferian robberfly	–	–	G1G2
Eucerceris ruficeps	Redheaded sphecid wasp	–	–	G1G3
Helminthoglypta nickliniana bridgesi	Bridges' coast range shoulderband	–	–	G3T1
Hygrotus curvipes	Curved-foot hygrotus diving beetle	–	–	G1
Idiostatus middlekauffi	Middlekauff's shieldback katydid	–	–	G1G2
Lepidurus packardi	Vernal pool tadpole shrimp	E	–	G4
Linderiella occidentalis	California fairy shrimp	–	–	G2G3
Lytta molesta	Molestan blister beetle	–	–	G2
Metapogon hurdi	Hurd's metapogon robberfly	–	–	G1G2
Myrmosula pacifica	Antioch multilid wasp	–	–	GH
Perdita scitula antiochensis	Antioch andrenid bee	–	–	G1T1
Philanthus nasalis	Antioch specid wasp	–	–	G1
Sphecodogastra antiochensis	Antioch Dunes halcitid bee	–	–	G1
Archoplites interruptus	Sacramento perch	–	SSC	G2G3
Hypomesus transpacificus	Delta smelt	T	T	G1
Oncorhynchus mykiss	Central Valley DPS steelhead	T	–	G5T2Q
Spirinchus thaleichthys	Longfin smelt	C	T, SSC	G5
Thaleichthys pacificus	Eulachon	T	–	G5
Ambystoma californiense	California tiger salamander (Central CA DPS)	T	T	G2G3
Rana boylii	Foothill yellow-legged frog	*	C, SSC	G3
Rana draytonii	California red-legged frog	T	SSC	G2G3
Anniella pulchra	Northern California legless lizard	–	SSC	G3
Arizona elegans occidentalis	California glossy snake	–	SSC	G5T2
Emys marmorata	Western pond turtle	*	SSC	G3G4

Scientific Name	Common Name	Federal	State	Global
Masticophis flagellum ruddocki	San Joaquin coachwhip (= whipsnake)	–	SSC	G5T2T3
Masticophis lateralis euryxanthus	Alameda whipsnake	T	T	G4T2
Phrynosoma blainvillii	Coast horned lizard	–	SSC	G3G4
Thamnophis gigas	Giant garter snake	T	T	G2
Accipiter cooperii	Cooper's hawk	–	–	G5
Accipiter striatus	Sharp-shinned hawk	–	SSC	G5
Agelaius tricolor	Tricolored blackbird	*	Candidate, SSC	G2G3
Aquila chrysaetos	Golden eagle	–	FP, SSC	G5
Asio flammeus	Short-eared owl	–	SSC	G5
Athene cunicularia	Burrowing owl	–	SSC	G4
Buteo regalis	Ferruginous hawk	–	SSC	G4
Buteo swainsoni	Swainson's hawk	–	T	G5
Circus cyaneus	Northern harrier	–	SSC	G5
Coturnicops noveboracensis	Yellow rail	–	SSC	G4
Egretta thula	Snowy egret	–	–	G5
Elanus leucurus	White-tailed kite	–	FP	G5
Eremophila alpestris actia	California horned lark	–	–	G5T4Q
Falco mexicanus	Prairie falcon	–	–	G5
Falco peregrinus anatum	American peregrine falcon	D	FP	G4T4
Geothlypis trichas sinuosa	Saltmarsh common yellowthroat	–	SSC	G5T3
Haliaeetus leucocephalus	Bald eagle	D	E; FP	G5
Hydroprogne caspia	Caspian tern	–	–	G5
Lanius ludovicianus	Loggerhead shrike	–	SSC	G4
Laterallus jamaicensis coturniculus	California black rail	–	T; FP	G3G4T1
Melospiza melodia	Song sparrow ("Modesto" population)	–	–	G5
Melospiza melodia maxillaris	Suisun song sparrow	–	SSC	G5T3
Melospiza melodia pusillula	Alameda song sparrow	–	SSC	G5T2
Melospiza melodia samuelis	San Pablo song sparrow	–	SSC	G5T2
Nycticorax nycticorax	Black-crowned night heron	–	–	G5
Pandion haliaetus	Osprey	–	CSC	G5
Phalacrocorax auritus	Double-crested cormorant	–	–	G5
Rallus obsoletus obsoletus	California Ridgway's rail	E	E; FP	G5T1
Sterna antillarum (= albifrons) browni	California least tern	E	E; FP	G4T2T3Q
Xanthocephalus xanthocephalus	Yellow-headed blackbird	–	SSC	G5

Scientific Name	Common Name	Federal	State	Global
Antrozous pallidus	Pallid bat	–	SSC	G5
Corynorhinus townsendii townsendii	Townsend's big-eared bat	–	C	G3G4
Dipodomys heermanni berkeleyensis	Berkeley kangaroo rat	–	–	G3G4T1
Lasionycteris noctivagans	Silver-haired bat	–	–	G5
Lasiurus blossevillii	Western red bat	–	SSC	G5
Lasiurus cinereus	Hoary bat	–	–	G5
Microtus californicus sanpabloensis	San Pablo vole	–	SSC	G5T1T2
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	–	SSC	G5T2T3
Nyctinomops macrotis	Big Free-tailed bat	–	SSC	G5
Perognathus inornatus	San Joaquin pocket mouse	–	–	G2G3
Puma concolor	Mountain lion	–	–	–
Reithrodontomys raviventris	Salt marsh harvest mouse	E	E; FP	G1G2
Sorex vagrans halicoetes	Salt marsh wandering shrew	–	SSC	G5T1
Taxidea taxus	American badger	–	SSC	G5
Vulpes macrotis mutica	San Joaquin kit fox	E	T	G4T2

Key

Federal: California Department of Fish and Wildlife. 2018c. *Special Animals List*. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406.
E = listed as endangered under the federal Endangered Species Act.
T = listed as threatened under the federal Endangered Species Act.
* = Under review for listing under the federal Endangered Species Act.
– = no listing.

State: California Department of Fish and Wildlife. 2018c. *Special Animals List*. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406.
E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
C = a candidate for listing under the California Endangered Species Act.
SSC = listed as a California species of special concern by the California Department of Fish and Wildlife
FP = listed as a fully protected by the California Department of Fish and Wildlife
– = no listing.

Global: NatureServe. 2018. *Global Conservation Status Definitions*. Available: http://explorer.natureserve.org/granks.htm.
G1 = critically imperiled – high risk of extinction because of extreme rarity (often five or fewer populations)
G2 = imperiled – high risk of extinction because of very restricted range, very few populations (often 20 or fewer populations)
G3 = vulnerable – moderate risk of extinction because of restricted range and very few populations (often 80 or fewer populations)
G4 = apparently secure – uncommon but not rare
G5 = secure – common, widespread, and abundant
G#G# = Range rank; numeric range rank (e.g., G2G3) is used to indicate the range of uncertainty in the status of a species or community.
? = inexact numeric rank
Q = Questionable taxonomy; taxonomic distinctiveness of this entity at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid.
T# = Infraspecific taxon; the status of infraspecific taxa (subspecies or varieties) indicated by a "T-rank" following the species' global rank.
Rules for assigning T-ranks follow the same principles outlined above for global conservation.
DPS = Distinct Population Segment.

Wildlife Corridors

Wildlife corridors are generally linear regional habitats that provide movement opportunities or connectivity to other natural vegetation communities within a larger landscape that has been fragmented by urban development. Regional wildlife corridors provide foraging, breeding, and cover areas for migrating, dispersing, immigrating, and emigrating wildlife populations and individuals. The baylands surrounding the county's western and northern boundary serves as a migratory corridor for anadromous fish, including green sturgeon, Chinook salmon, steelhead, and lamprey. The riparian woodland community also provides movement corridors for fish and wildlife species. The grassland natural community is an important movement corridor for species such as San Joaquin kit fox, American badger, and Alameda whipsnake; grasslands in the eastern county connect to grassland communities in more southern counties, such as Alameda County and San Joaquin County, providing a movement corridor to greater habitat patches and facilitating a genetic exchange with other populations of San Joaquin kit fox and American badger. Aquatic habitats such as streams and ponds provide breeding habitat for California red-legged frog and California tiger salamander, while the matrix of upland grassland habitats between those aquatic habitats and riparian corridors provide dispersal habitat.

Most of the information about connectivity in the region is from high-level regional modeling (*Critical Linkages: Bay Area and Beyond* [Penrod et al. 2013]) and statewide modeling (*California Essential Habitat Connectivity Project* [Spencer et al. 2010]). Wildlife linkages in the county are shown in Figure 3-5.

The critical linkage modeling maps wildlife linkages that are of high ecological integrity, serving as end points for critical landscape linkages. The linkage model identifies 14 landscape-level connections that are crucial to maintaining connectivity for wildlife between large landscape blocks[6] within and adjacent to the nine-county Bay Area. Two of these linkages overlap the county:

- East Bay Hills: Diablo Range linkage, and
- Mount Diablo: Diablo Range linkage.

The East Bay Hills critical linkage connects habitats in the East Bay hills south of Moraga, through the Diablo Range, and southeast into Alameda County. The southern portion of this linkage is between Orinda and Moraga, on the eastern side of the EBRPD Sibley Volcanic Regional Preserve and Redwood Regional Park. Another linkage in the East Bay Hills links eastern Berkeley, south of Tilden Regional Park, to undeveloped lands northwest of Orinda. The most southern East Bay Hills linkage is identified from Las Trampas Regional Wilderness south into Alameda County. The linkage covers approximately 18 miles in Contra Costa County between Orinda and the southern end of the county.

The Diablo Range critical linkage joins the Altamont Hills region with the protected lands of the Los Vaqueros Watershed in the county. The Altamont Hills are believed to provide an essential link for suitable kit fox habitat in the northern extreme of the species' range (H. T. Harvey & Associates 1997), allowing genetic exchange between kit fox in Contra Costa and Alameda Counties and farther south in San Joaquin, Stanislaus, and Merced Counties. This linkage barely enters the county, covering only approximately 2 miles between Los Vaqueros Reservoir and the southern end of the county.

[6] Protected areas, areas with conservation easements, and roadless areas greater than 500 acres (Penrod et al. 2013).

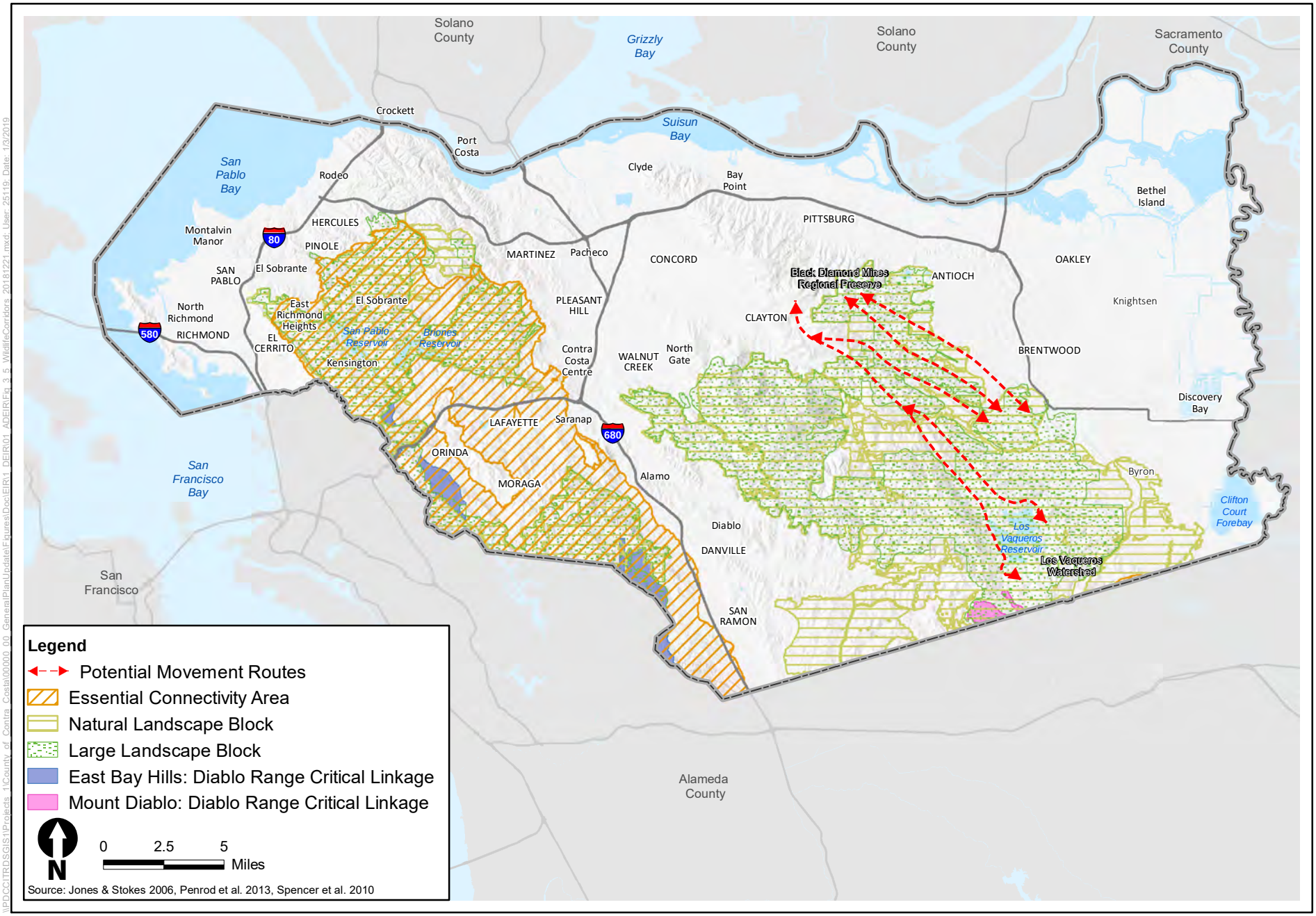


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Figure 3-5
Wildlife Corridors

The California Essential Habitat Connectivity Project identifies natural landscape blocks,[7] which include a combination of protected areas and other areas with intact natural communities that are at low risk of conversion to non-natural communities over time, and essential connectivity areas.[8] Across the Diablo Range in the county, the natural landscape blocks and essential connectivity area overlap. In addition, the HCP/NCCP identified the following potential movement routes between the Los Vaqueros Watershed and Black Diamond Mines Regional Preserve (Jones & Stokes 2006) (Figure 3-5, shown with red arrows):

- **Round Valley.** The southernmost and longest route, at approximately 8 miles, Round Valley is composed primarily annual grasslands, connecting Round Valley to Black Diamond Mines Regional Preserve.
- **Briones Valley.** This approximately 5-mile potential movement route through Briones Valley traverses a portion of the relatively narrow valley, with rural ranchettes in the lower Briones Valley.
- **Deer Valley.** This approximately 4-mile potential movement route through Deer Valley is partially protected by the dedication of development rights on and around Roddy Ranch Golf Course.
- **Horse and Lone Tree Valleys.** Horse and Lone Tree Valleys together form the widest (approximately 5 miles) potential movement route between Black Diamond Mines Regional Preserve and Cowell Ranch State Park.

Sensitive Habitats

For the purposes of this Existing Conditions Report, sensitive habitats were identified using three different sources:

- Contra Costa County General Plan 2005–2020 (Contra Costa County 2005),
- CNDDB (California Department of Fish and Wildlife 2018b), and
- Guidebook to Botanical Priority Protection Areas of the East Bay (Bartosh et al. 2010).

The sensitive habitats described in the sources identified above are not mutually exclusive. Each document was developed at a different time (and may use different data). This Existing Conditions Report does not attempt to make comparisons between the sensitive habitat areas defined in each source identified above.

Contra Costa County General Plan 2005–2020

The 2005–2020 General Plan identifies 41 unique biotic resource areas that have biological and wildlife importance (Figure 3-6). Furthermore, the 2005–2020 General Plan identifies these areas as significant ecological resource areas, most of which contain aquatic habitat, such as freshwater marsh, seasonal and perennial wetlands, alkali mud flats, coastal salt marsh, and riparian vegetation. Examples of significant ecological resource areas with aquatic habitat include the Marsh Creek

[7] Natural habitat blocks that support native biodiversity (Spencer et al. 2010).

[8] Areas essential for ecological connectivity between the natural landscape blocks (Spencer et al. 2010).

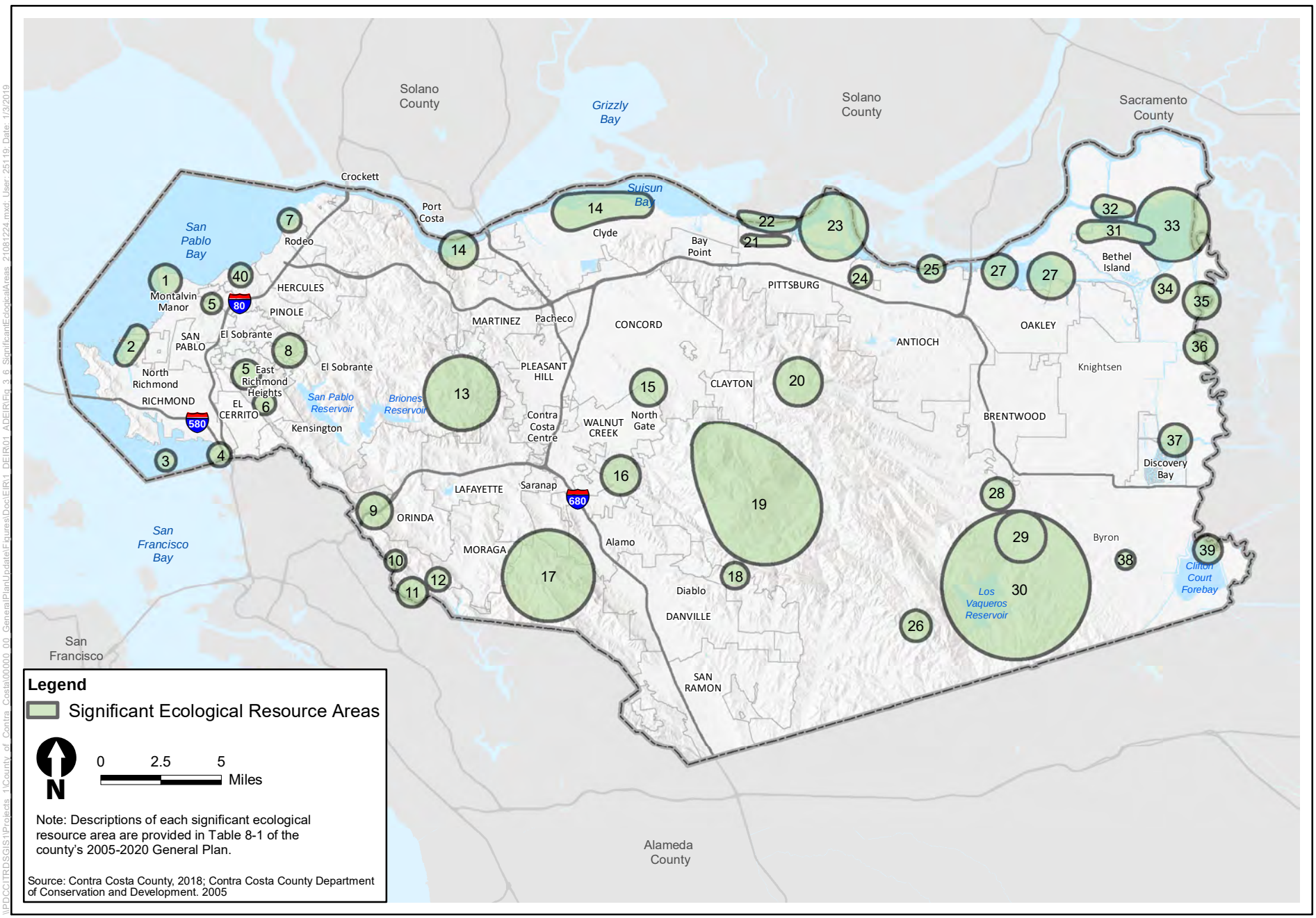

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Figure 3-6
Significant Ecological Resource Areas and Selected Locations of Protected Wildlife and Plant Species Areas

Riparian Corridor, Big Break, Alkali Meadows and Northern Claypan Vernal Pools, Bay Point Salt Marsh, mouth of the Contra Costa Canal, and Brooks Islands. Other locations include a mix of aquatic and upland habitat or are entirely within upland areas. Significant ecological resource areas in upland habitat typically contain unique soil types (e.g., San Pablo Ridge, Shell Ridge, Antioch Sand Dunes, Blackhawk Ranch Fossil Locality), high-quality native habitats, and often special-status species (e.g., Mount Diablo, Las Trampas and Rocky Ridges, Redwood Regional Park, Los Vaqueros Watershed). The habitat constituents within each significant ecological resource area are described in detail in the 2005–2020 General Plan (Contra Costa County 2005, pages 8-5 through 8-7).

California Natural Diversity Database

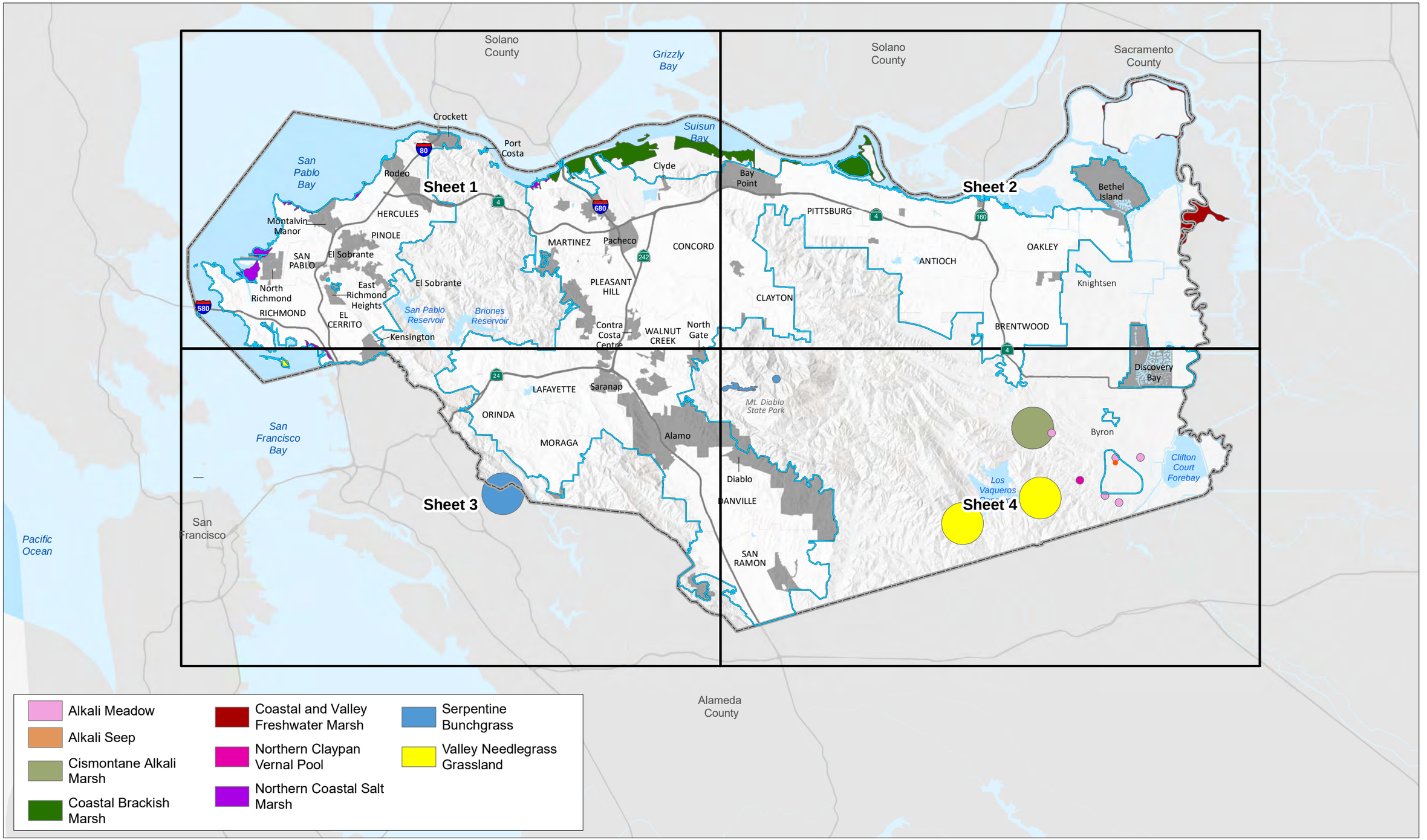
The CNDDB identifies the locations of sensitive natural communities in California, according to their rarity and the threats that may affect them. The rarity of a natural community is defined by its range and distribution as well as the proportion of high-quality occurrences. Threats and trends include factors such as development, agriculture, energy production and mining, and invasive species. The classification of sensitive natural communities is based on the second edition of *A Manual of California Vegetation* (Sawyer et al. 2009). A total of nine sensitive natural communities are mapped in the CNDDB within the county (Figure 3-7). The name and acreage of each sensitive natural community are provided in Table 3-3.

Table 3-3. Sensitive Natural Communities in Contra Costa County

Type	Acres
Alkali Meadow	2,326
Alkali Seep	1,978
Cismontane Alkali Marsh	1,978
Coastal Brackish Marsh	5,02
Coastal and Valley Freshwater Marsh	4,168
Northern Claypan Vernal Pool	70
Northern Coastal Salt Marsh	903
Serpentine Bunchgrass	819
Valley Needlegrass Grassland	4,025
Total	**16,767**

California Department of Fish and Wildlife, 2018a.

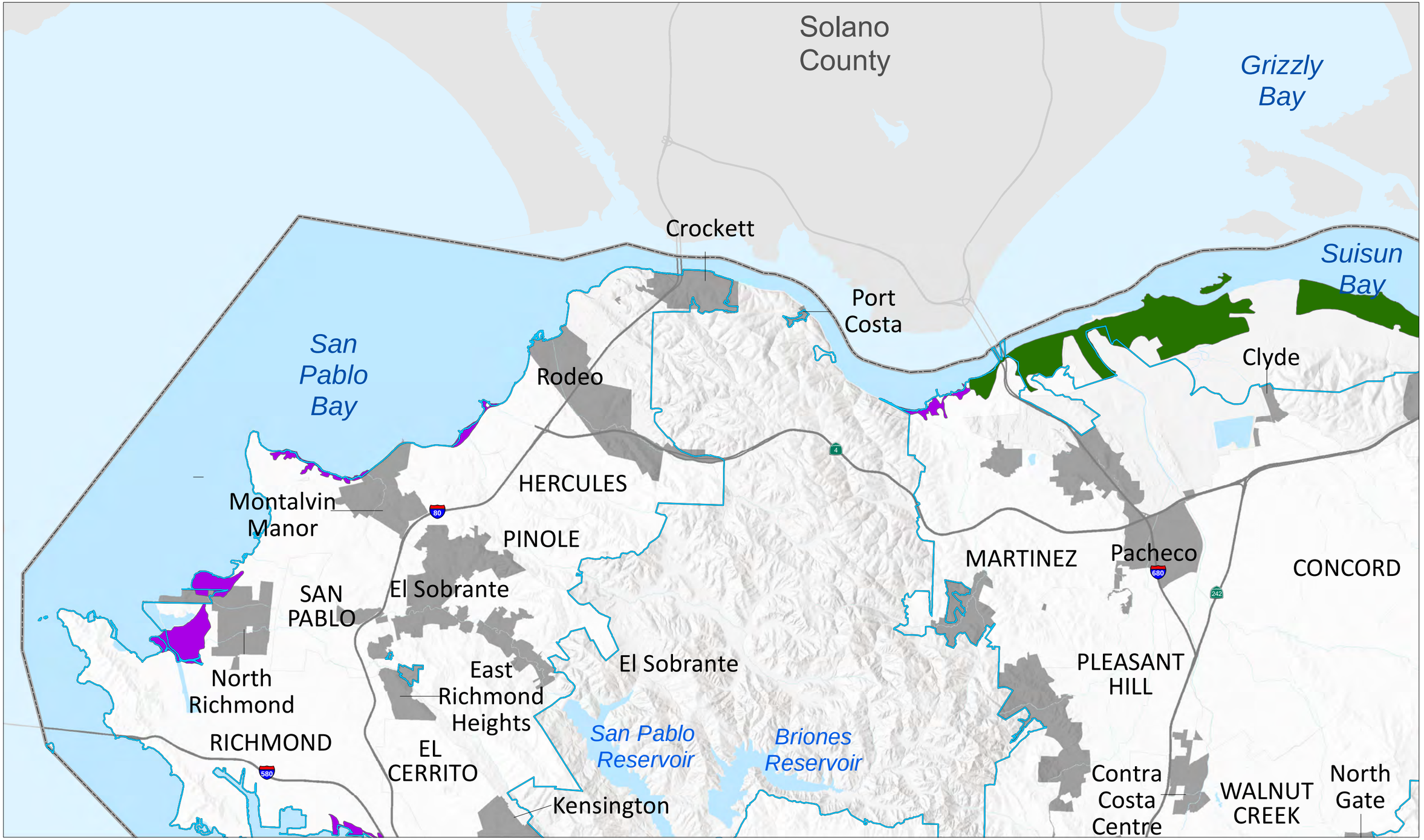
All but two of these communities are aquatic; thus, most of the sensitive natural communities are located along the edge of the Delta and/or San Francisco Bay. The eastern portion of the county, in the vicinity of the Los Vaqueros Watershed and Bryon Hills/Vasco Caves, is also a hot spot for sensitive habitats. It contains one of the upland vegetation communities, valley needlegrass grassland. The other upland community, serpentine bunchgrass, is found on the Contra Costa-Alameda County boundary, southwest of the cities in vicinity of Oakland. All of the communities are described in detail below.



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: The following sheets provide a detailed map of each quadrant of the County.

Figure 3-7
Overview Map
Sensitive Natural Communities



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

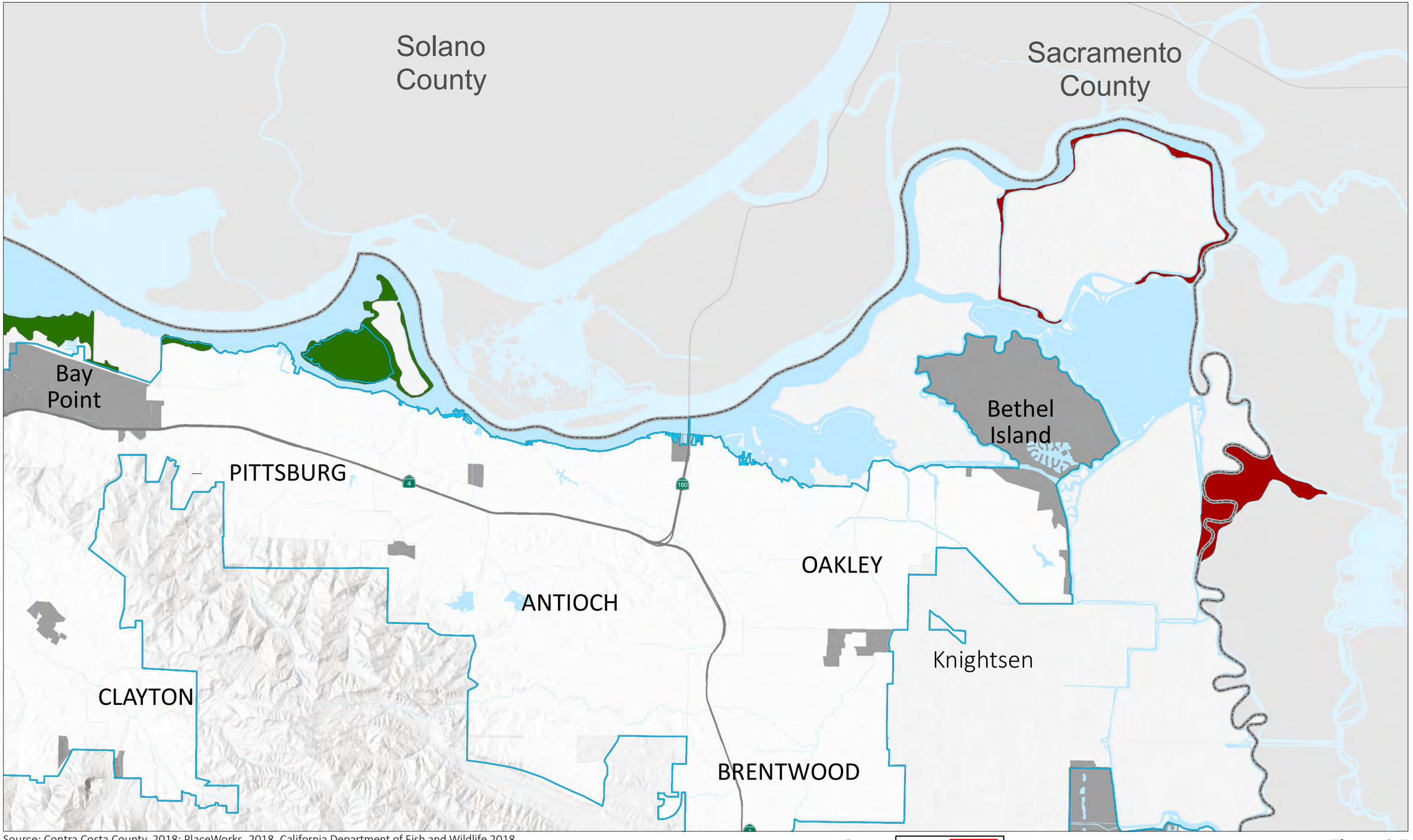
0 0.75 1.5 3
Miles

N

1 2 3 4

Note: See Legend on Overview Map

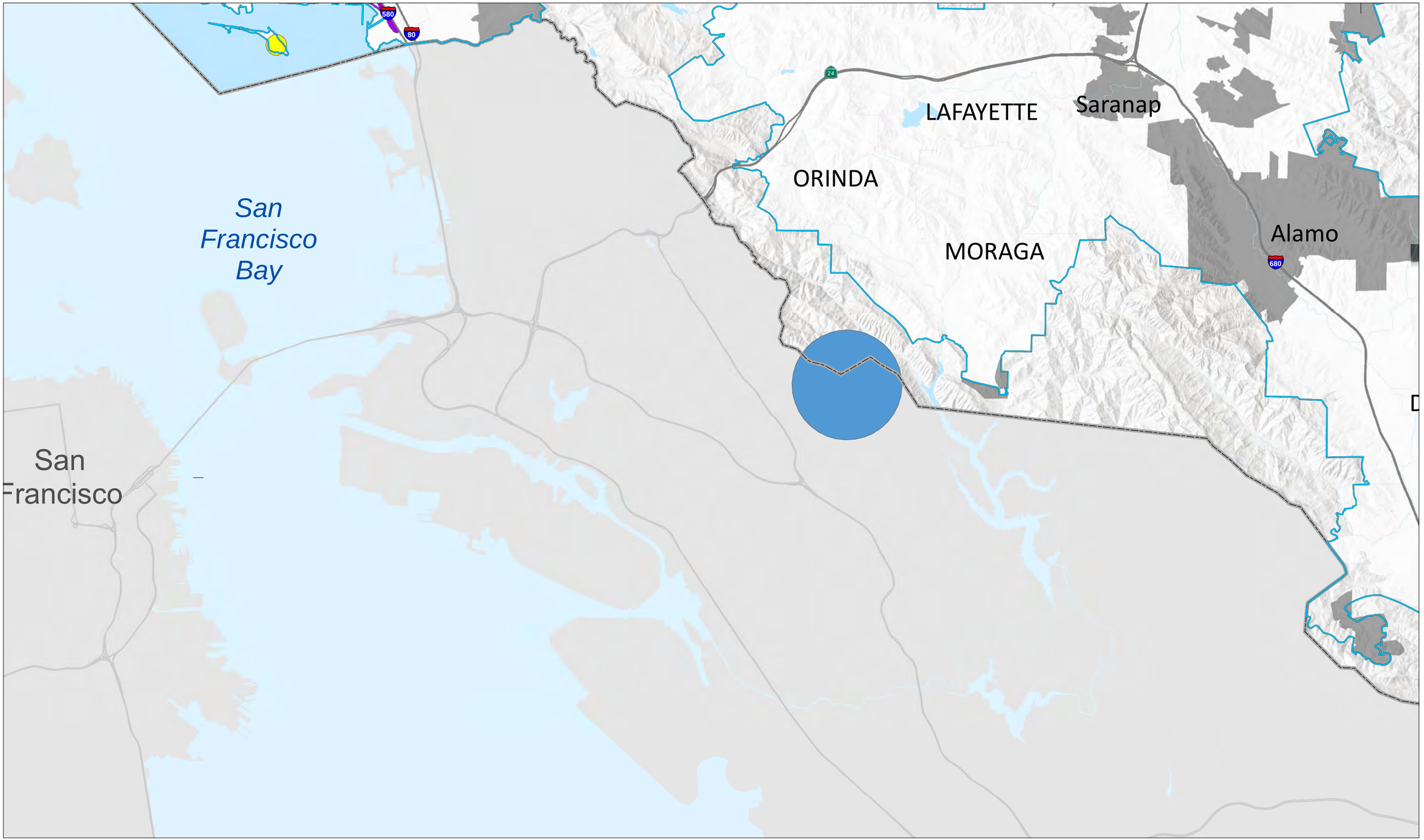
Figure 3-7
Sheet 1
Sensitive Natural Communities



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: See Legend on Overview Map

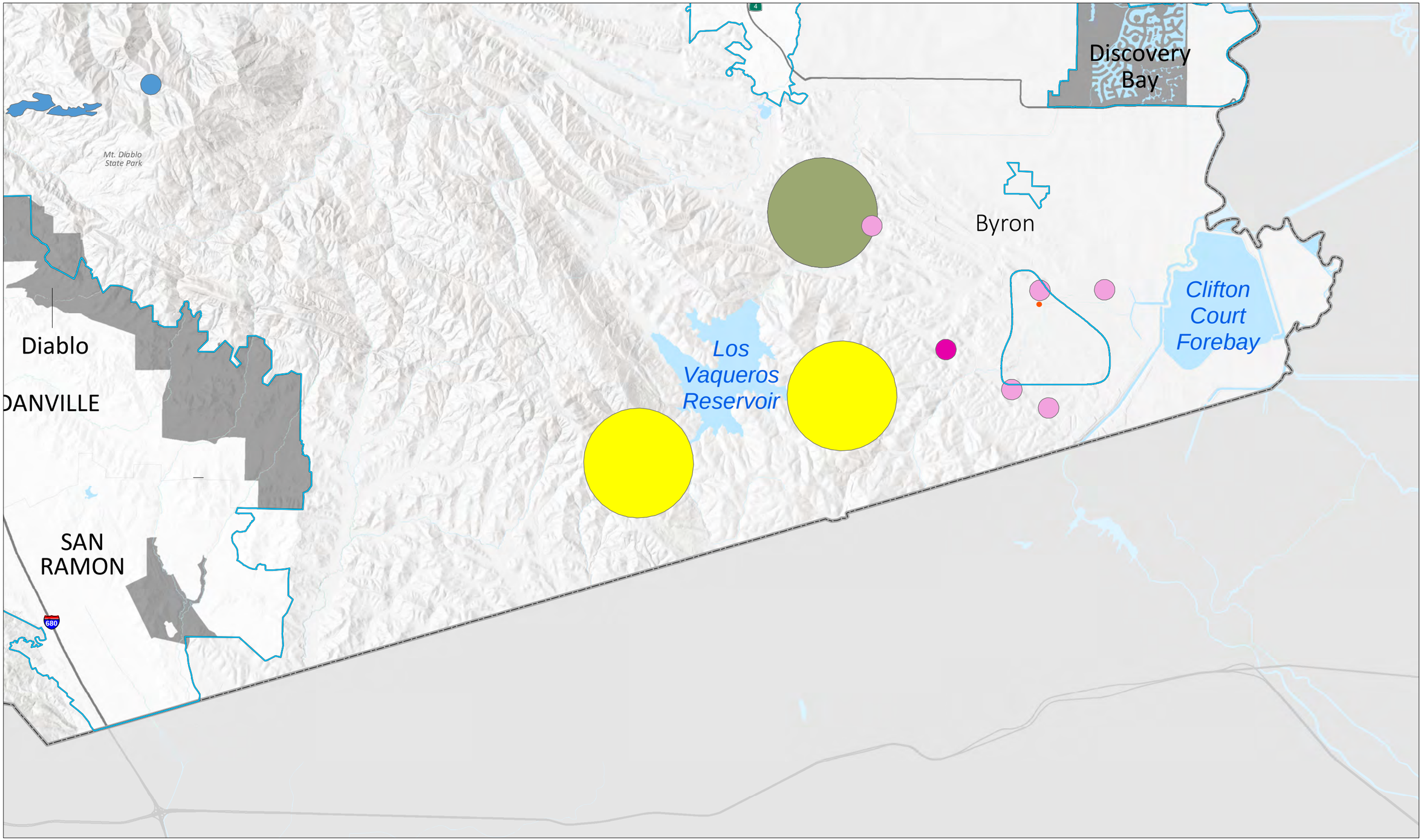
Figure 3-7
Sheet 2
Sensitive Natural Communities



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

Note: See Legend on Overview Map

Figure 3-7
Sheet 3
Sensitive Natural Communities



Source: Contra Costa County, 2018; PlaceWorks, 2018, California Department of Fish and Wildlife 2018

0 0.75 1.5 3 Miles

N

Note: See Legend on Overview Map

1 2 3 4

Figure 3-7
Sheet 4
Sensitive Natural Communities

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Alkali Meadow

Alkali meadows occur in areas where the water table is shallow (3 to 10 feet deep) and soils are alkaline. Alkali wetlands support ponded or saturated soil conditions and occur as perennial or seasonally wet features. The dominant cover is in the form of grasslands. Alkali meadow occupies approximately 2,326 acres (0.45%) in the county. Alkali wetland vegetation is composed of halophytic plant species that are adapted to both wetland conditions and high salinity levels. Grasses that grow on alkali soils include saltgrass (*Distichlis spicata*), wild barley (*Hordeum vulgare*), and alkali ryegrass (*Leymus triticoides*). The associated herb cover also consists of halophytes, including saltbush (*Atriplex* spp.), alkali heath (*Frankenia salina*), alkali weed (*Cressa truxillensis*), alkali mallow (*Malvella leprosa*), and common spikeweed (*Centromadia pungens*). Alkali wetlands provide function and value for wildlife, similar to the function and value provided by seasonal wetlands. The array of wildlife species found in seasonal wetlands is also found in alkali wetlands (Jones & Stokes 2006; ICF International 2010).

Alkali Seep

Alkali seeps are areas where water penetrates the alkali soil surface and creates a small wetland. These provide a source of drinking water for wildlife in the area (ICF International 2012). Alkali seeps occupy approximately 1.978 acres (0.39%) in the county. Alkali seeps typically occur within a matrix of alkali meadows or grasslands. Alkali seeps are halophytic plant species that have adapted to both wetland conditions and high salinity levels, such as salt grass or alkali heath (ICF International 2012). Alkali seeps contain vegetation that is very similar to the alkali wetland, described above.

Cismontane Alkali Marsh

Cistmontane alkali marshes occur on alkali soils associated with canyons or higher-elevation streams, often surrounded by woodlands (California Department of Fish and Wildlife 2018b). In the county, they would most likely be surrounded by oak woodland (*Quercus* spp.). Cismontane alkali marsh occupies approximately 1.978 acres (0.39%) in the county. Cismontane alkali marsh contains vegetation that is very similar to the alkali wetland, described above.

Coastal Brackish Marsh

Coastal brackish marsh is found below the high-tide line where fresh water and sea water mix (typically in estuaries); therefore, the salinity levels are diluted. This typically occurs near coastal bays, coastal rivers, estuaries, and coastal lagoons. Cismontane alkali marsh occupies approximately 502 acres (0.10%) in the county. Coastal brackish marsh includes both halophytic and freshwater vegetation. The species include those described below under both coastal and valley freshwater marsh and northern coastal salt marsh, although, typically, the species are perennial emergent species such as cattails (*Typha* spp.), bulrush (*Bolboschoenus* spp.), or pickleweed (*Salicornia* spp.) (Holland 1986).

Coastal and Valley Freshwater Marsh

Coastal and valley freshwater marsh is dominated by emergent herbaceous plants (reeds, sedges, grasses), with either intermittently flooded or perennially saturated soils. Freshwater marshes are found throughout the coastal drainages of California—wherever water slows down and

accumulates, even on a temporary or seasonal basis. A freshwater marsh usually features shallow water that is often clogged with dense masses of vegetation, resulting in deep peaty soils. Coastal and valley freshwater marsh occupies approximately 4,168 acres (0.81%) in the county. The plant species common to coastal and valley freshwater marsh consist predominantly of cattails (*Typha* spp.), bulrushes (*Schoenoplectus* and *Bolboschoenus* spp.), sedges (*Carex* spp.), and rushes (*Juncus* spp.). The dominant species in the perennial freshwater wetland in the study area include rabbitsfoot grass (*Polypogon* sp.), nutsedge (*Cyperus eragrostis*), willow weed (*Persicaria lapathifolia* [*Polygonum lapathifolium*]), and water cress (*Rorippa* spp.). Broadleaf cattail (*Typha latifolia*) and water-primrose (*Ludwigia* spp.) are common associates (Jones & Stokes 2000 [in ICF International 2012]). The dominant species in the nontidal freshwater marsh are narrow-leaved cattail (*Typha angustifolia*), rice cutgrass (*Leersia oryzoides*), bur-reed (*Sparganium eurycarpum*), alkali bulrush (*Bolboschoenus* [*Scirpus*] *robustus*), and perennial peppergrass (*Lepidium latifolium*) (Jones & Stokes 2002 [in ICF International 2012]).

Northern Claypan Vernal Pool

Northern claypan vernal pools are areas that pond water on the surface for extended durations during winter and spring and dry completely during late spring and summer. Northern claypan vernal pool occupies approximately 70 acres (0.01%) in the county and occurs on distinctive topographical areas with low depressions mixed with hummocks or mounds. Because of their unique hydrology, vernal pools support specialized plants that have adapted to growing in these stressful conditions, such as coyote thistle (*Eryngium* spp.), goldfields (*Lasthenia* spp.), downingia (*Downingia* spp.), and navarretia (*Navarretia* spp.). These species are generally restricted or nearly restricted to vernal pools. A number of special-status invertebrates, including vernal pool fairy shrimp (*Brachinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), and longhorn fairy shrimp (Brachinecta longiantenna), may occur in vernal pools (Jones & Stokes 2006).

Northern Coastal Salt Marsh

Northern coast salt marsh contains halophytic wetland vegetation (i.e., plants that grow in high-salinity water) below the high-tide line that is subject to the ebb and flow of daily tides in an area commonly referred to as the marsh plain. Northern coast salt marsh occupies approximately 903 acres (0.18%) in the county. Northern coast salt marsh colonizes microhabitats along the bay, depending on tidal elevations and drainage patterns. Northern coast salt marsh in the lowest, wettest portion of the marsh, where inundation/saturation is nearly permanent, typically includes California cordgrass (*Spartina foliosa*), pickleweed (*Salicornia* spp.), saltmarsh bulrush (*Bolboschoenus robustus*), and tules (*Schoenoplectus* spp.). Northern coast salt marsh is typically most expansive in the middle marsh. In these broad, nearly flat areas, dense woody pickleweed vegetation dominates the landscape, mixed with scattered patches of salt marsh dodder (*Cuscuta salina*), jaumea (*Jaumea carnosa*), alkali-heath (*Frankenia salina*), and saltgrass. Often referred to as tidal plains, the middle marsh typically floods during higher tides but is not continually inundated or saturated. Higher marsh occurs in drier areas above the mean high-water level along elevated or better-drained sediment deposits. These areas can be dominated by marsh gumplant, non-native grasses, marsh bacchris, and coyote brush and integrate with coastal freshwater habitats (San Francisco Estuary Institute 2011).

Serpentine Bunchgrass

The serpentine bunchgrass is a grassland that occurs on serpentine soils. Serpentine bunchgrass occupies approximately 819 acres (0.16%) in the county. Many serpentine species are partially or completely confined to this substrate (Safford et al. 2005). The composition of native bunchgrass species in serpentine bunchgrass is generally similar to that in non-serpentine habitats, although serpentine populations may be more tolerant of the heavy metals present in the soil and may have lower growth rates compared with non-serpentine populations (Huntsinger et al. 1996).

Serpentine bunchgrass is generally a mosaic of perennial bunchgrass stands and mixed assemblages of perennial and annual grass and herbaceous wildflower species (McCarten 1987). Characteristic grass species in serpentine grassland include big squirreltail (*Elymus multisetus*), California melic grass (*Melica californica*), California oat grass (*Danthonia californica*), fringed checkerbloom (*Sidalcea diploscypha*), jeweled onion (*Allium serra*), June grass (*Koeleria macrantha*), one-sided bluegrass (Poa secunda), purple needlegrass (*Stipa pulchra*), San Franciscan wallflower (*Erysimum franciscanum*), serpentine leptosiphon (*Leptosiphon ambiguus*), and squirreltail (*Elymus elymoides*) (Evens and San 2004). California goldfields (*Lasthenia californica* ssp. *californica*), California poppy, hayfield tarweed (*Hemizonia congesta*), purple owl's-clover (*Castilleja exserta*), rosin weed (*Calycadenia truncata*), and tidy-tips (*Layia platyglossa*) are wildflowers that often form patches of color within the grassland matrix. The flora is composed primarily of native species (although non-native species such as soft chess can also be common) and generally more diverse than the flora of grasslands on non-serpentine substrates (McNaughton 1968).

Valley Needlegrass Grassland

Valley needlegrass grasslands are areas where purple needlegrass is dominant or co-dominant with California melic grass or Torrey's melicagrass (*Melica torreyana*). Valley needlegrass grassland occupies approximately 4,025 acres (0.78%) in the county. Purple needlegrass is typically mixed with non-native annual grass species, such as oat grass (*Avena* spp.), brome (*Bromus* spp.), and barley (*Hordeum* spp.); perennial grasses, such as rygrass (*Elymus* spp.) and June grass (*Koeleria macrantha*); herbs, such as goldfields (*Lasthenia* spp.), filaree (*Erodium* spp.), and sanicle (*Saincula* spp.); blue-eyed grass (*Sisyrinchium bellum*); and clover (*Trifolium* spp.) It also occurs as a relatively dense patch surrounded by annual grasses. Valley needlegrass grassland is found on all topographic locations. The ssoils, which have a high clay content, may be loamy, sandy, or silty and derived from mudstone, sandstone, or serpentine substrates. Emergent trees and shrubs may be present as low cover (Sawyer et al. 2009).

Guidebook to Botanical Priority Protection Areas of the East Bay

A Guidebook to Botanical Priority Protection Areas of the East Bay (Guidebook) establishes Botanical Priority Protection Areas (BPPAs), which are unprotected botanical hot spots that contain sensitive botanical resources, including sensitive natural communities, special-status plant species, and historic occurrences of special-status plant species. A total of seven BPPAs (141,293 acres) have been mapped in the county, as shown in Table 3-4.

Table 3-4. Botanical Priority Protection Areas in Contra Costa County

Name	Location	Acres
Concord Naval Weapons Station	City of Concord	8,701
Delta	Unincorporated County Area	61,631
Four Valleys	City of Antioch	13,052
Marsh Creek	Unincorporated County Area	14,921
North of Mount Diablo	City of Clayton	6.776
Richmond Shoreline	City of Richmond	1,723
Sobrante Ridge	City of Richmond	801
Total		**141,293**

Source: Bartosh et al., 2010.

These areas represent the wide range of habitat in the county for special-status plant species. The BPPAs in the western portion of the county are smaller because of urbanization along San Francisco Bay, with little land remaining that can be protected. As discussed above in the *Special-Status Species* section, the vast expanses of undeveloped land in the eastern portion of the county contain greater habitat diversity and greater numbers of native plant species; therefore, larger BPPAs flank the Diablo Range. The BPPAs exclude land that was previously preserved. The Guidebook, which includes figures and a description of each BPPA, is included in Appendix A, *Guidebook to Botanical Priority Protection Areas of the East Bay* (Bartosh et al. 2010).

Chapter 4
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Appendix A

Guidebook to Botanical Priority Protection Areas of the East Bay

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A Guidebook to

Botanical Priority Protection Areas of the East Bay

By Heath Bartosh Lech Naumovich Laura Baker

East Bay Chapter of the California Native Plant Society



EAST BAY CNPS

A Guidebook to Botanical Priority Protection Areas of the East Bay

Special Publication # 4 of the California Native Plant Society East Bay Chapter

By Heath Bartosh Lech Naumovich Laura Baker

East Bay Chapter of the California Native Plant Society

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Introduction

The lands that comprise the East Bay Chapter are located at the convergence of the San Francisco Bay, the North and South Coast Ranges, the Sacramento-San Joaquin Delta, and the San Joaquin Valley. The East Bay Chapter area supports a unique congregation of ecological conditions and native plants. Based on historic botanical collections, the pressures from growth-based Bay Area economies have buried many of the botanical treasures of the East Bay. The collision of floristic protection and economic growth conceived the Botanical Priority Protection Areas Project (BPPA), and fortified intra-chapter collaboration between the Plant Science and Conservation arms of the East Bay Chapter of the California Native Plant Society (CNPS).

In January of 2006, the Bay Area Open Space Council (BAOSC) requested that our chapter provide them a list of important botanical areas. Our botanical priorities were to be incorporated into BAOSC's Upland Habitat Goals Project which aims to increase the acreage of protected lands and develop an increased awareness of key habitats among land management agencies and local jurisdictions. We had only one day to accomplish the difficult task of choosing between many botanically rich areas of Alameda and Contra Costa counties. At the end of the day, after a flurry of emails, fifteen areas endowed with native plant diversity that are threatened by current and potential land-use decisions were hastily identified.

This inquiry and resulting cache of botanical areas begged another question: how can we look at these areas through a more objective lens utilizing existing information? To answer this initial question, the project began as a simple Geographic Information System (GIS) exercise. Heath Bartosh, the chapter's Rare Plant Committee Chairman, began by mapping primarily watershed-based boundaries of each protection area.

Overall, the 15 BPPAs comprise 238,225 acres (372 square miles) in Alameda (96,932 acres) and Contra Costa (141,293 acres) counties. The BPPAs occupying the western portion of the chapter are smaller in acreage due the urbanization that has already occurred along the bayside flatlands leaving diminutive botanical refugia still in need of protection. In the east, vast expanses of undeveloped land containing a broader diversity of habitats and native plant species are still intact as characterized by the larger BPPAs found flanking the Diablo Range.

BPPA boundaries were drawn with the intention of excluding lands previously preserved, such as Mount Diablo State Park or lands owned and managed by the East Bay Regional Park District. However, certain BPPAs include public parcels or properties with other conservation status. These are cases where land has been conserved since the creation of these boundaries or where potential management decisions have the potential to negatively affect an area's botanical resources. Additionally, each acre within these BPPAs represents a *potential* area of high priority. Both urban and natural settings are included within these boundaries, therefore, they are intended to be considered as areas warranting further scrutiny due to the abundance of nearby sensitive botanical resources supported by high quality habitat within each BPPA. Although a parcel, available for preservation through fee title purchase or conservation easement, may be located within the boundaries of a BPPA, this does not by default indicate that it contains sensitive botanical resources. Parcels within each BPPA should be floristically evaluated on a case-by-case basis to determine their botanical resource value before any conservation activity, land-use change, or development is undertaken.

From within these boundaries an analysis was executed of readily and freely available spatial datasets such as botanical resource occurrences, substrates (soils and geology), wetlands, urbanized areas, existing protected areas, and possible threats. From these analyses each of the 15 maps includes a summary table that provides information such as the size of the area, watershed information, relevant substrate information, and botanical resource attributes.

The graphic portion of each map showcases protection areas on a 2009 aerial photograph provided by the National Agriculture Inventory Program. Certain BPPAs include areas of edaphic substrates which strongly influence plant species composition and structure. The East Bay is bestowed with significant substrates such as alkaline soils, sandy soils, and serpentinitic habitats. Within a specific BPPA, edaphic substrates were spatially analyzed using Farmland Mapping and Monitoring Program (FMMP) data. The most useful component of the FMMP data locates areas of urbanization and irrigated agriculture. These aspects of the human environment including development and alteration of vegetative cover, soil structure and hydrology have eroded the natural habitat that native plants need to persist. Spatially analyzing edaphic substrate data against select FMMP data shows the amount of these substrates that have been lost due to post-industrial. For example, 17,280 acres of the alkaline soils have been mapped within all East Bay BPPAs. Of those acres, 21 percent containing alkaline soils within our BPPAs have been lost. Although sandy soils within our chapter area are restricted to Contra Costa County, at one time they represented 24,726 acres. To date, at least 33 percent of sandy soils no longer support healthy native communities of plants. Serpentine substrates manifest themselves in three of the 15 BPPAs: Cedar Mountain, Marsh Creek, and North of Mount Diablo. However, none of these habitats has been as significantly impacted as the large serpentine bodies of the Berkeley and Oakland Hills have been from residential development.

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Following this initial mapping effort, the East Bay Chapter's Conservation Committee began to utilize the concept in draft form in key local planning efforts. Lech Naumovich, the chapter's Conservation Analyst staff person, showcased the map set in forums such as the BAOSC's Upland Habitat Goals Project and the Green Vision Group (in association with Greenbelt Alliance); East Bay Regional Park District's Master Plan Process; and local municipalities. In the near future we anticipate these BPPAs will be incorporated into the Eastern Alameda County Conservation Strategy, a regional planning effort currently being developed.

As a result of this collaboration our chapter also secured grant funding from the Tides and Rose Foundations to prepare this guidebook of these BPPAs. This guidebook includes maps of the 15 BPPAs, which appear opposite pictorial and narrative treatments. These treatments include a written contribution from a guest author, lists and photographs of sensitive botanical resources, a portrayal of the subject areas' botanical hot spots and noteworthy collection history, and a discussion of threats, opportunities, and constraints unique to each area. With the exception of the guest authors' contributions, the remaining text appearing in the green boxes was written by lead authors Mr. Bartosh, Mr. Naumovich, and Conservation Committee Chairperson, Laura Baker.





As an enticement to professionals and laypeople alike, our guest authors contributed their personal impressions of these areas and why they are important as native plant refugia. Their contributions appear at the top of the page to provide the reader "A Sense of Place" relative to each BPPA. The guest authors include a broad spectrum of individuals ranging from dedicated amateur botanists, established academics, and government regulators. They were provided a list of interview questions to elicit a connection to the BPPA that would appeal to both native plant neophytes and seasoned enthusiasts. These questions were formed into a short paragraph that portrays their impressions and importance of the BPPA. Due to layout restrictions, many of the guest authors' pieces appearing in this guidebook are abridged versions. Each of the guest author's entire narratives will be published separately in coming issues of the East Bay Chapter's newsletter, the *Bay Leaf.*

Botanical Priority Protection Areas

Alameda and Contra Costa Counties

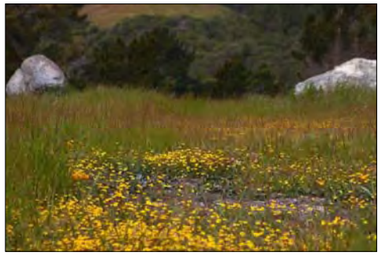
Each BPPA includes a list of sensitive botanical resources that have been given listing status and comprise: one sensitive natural community; four plant species that are either statewide or locally rare and considered extant; and one historic occurrence that has not been seen for a minimum of 40 years. A section on the botanical hot spots within the BPPA is included that addresses the general locations of this list of botanical resources and colorful collection anecdotes. This list is also accompanied by photos of selected species within each BPPA.

An understanding of listing status in California and its regulatory significance is important to understanding the text below that deals with various rankings. Listing status is given for specific vegetation types and native plant species that meet a certain set of criteria. Within our chapter area we recognize three types of listing status: Sensitive Natural Communities; Special-Status Plant Species; and Locally Rare Plant Species. These designations support our labeling of the 15 botanical areas as priorities for protection.

Typically, vegetation types that are given an elevated listing status are referred to as Sensitive Natural Communities. Sensitive Natural Communities are characterized as plant assemblages that are unique in constituent components, restricted in distribution, supported by distinctive edaphic conditions, considered locally rare, potentially support special-status plant or wildlife species and/or receive regulatory protection from municipal, county, state and/or federal entities. The California Natural Diversity Database treats a number of natural communities as rare, which are given the highest inventory priority. Current vegetation types treated as Sensitive Natural Communities appear in the California Department of Fish and Game (CDFG) Vegetation Mapping and Classification Program's *List of California Vegetation Alliances*.

Special-status plant species are those considered listed as Endangered, Threatened, or Rare by the U.S. Fish and Wildlife Service and/or by the CDFG. Regulatory statues that have designated certain plant species as having special-status include: Federal Endangered Species Act (FESA), California Endangered Species Act (CESA), California Fish and Game Code, and the Native Plant Protection Act (NPPA) of 1977.

In addition, CNPS has developed and maintains a list of rare, Threatened and Endangered plants of California. This information is published in the *Inventory of Rare and Endangered Vascular Plants of California*. The CNPS list is endorsed by the CDFG and effectively serves as its list of "candidate" plant species. The following identifies the definitions of the CNPS listings:



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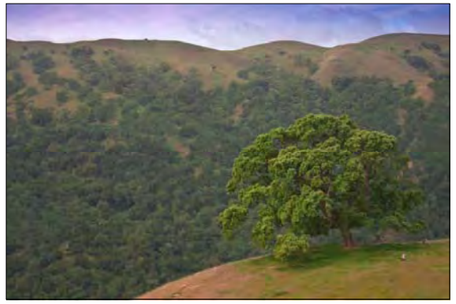



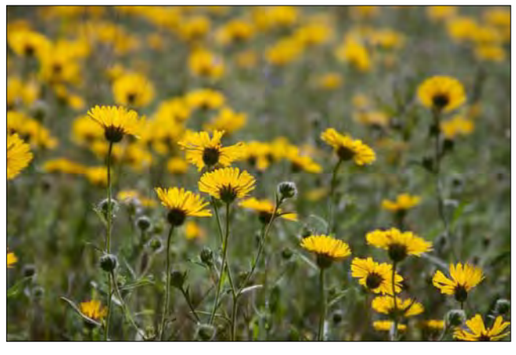

List 1A: Plants presumed to be extinct in California;

List 1B: Plants that are rare, Threatened, or Endangered in California and elsewhere;

List 2: Plants that are rare, Threatened, or Endangered in California, but are more numerous elsewhere;

List 3: Plants about which more information is needed (a review list); and

List 4: Plants of limited distribution (a watch list).

CNPS List 1B and List 2 species are considered eligible for state listing as Endangered or Threatened pursuant to the California Fish and Game Code. As part of the CEQA process, such species should be fully considered, as they meet the definition of Threatened or Endangered under the NPPA and Sections 2062 and 2067 of the California Fish and Game Code. CNPS List 3 and List 4 species are considered to be either plants about which more information is needed or are uncommon enough that their status should be regularly monitored. Such plants may be eligible or may become eligible for state listing, and CNPS and CDFG recommend that these species be evaluated for consideration during the preparation of California Environmental Quality Act (CEQA) documents, as some of these species may meet NPPA and CESA criteria as Threatened or Endangered.

Locally rare plant species are those considered to be: 1) at the outer limits of their known distribution; 2) a range extension; 3) a rediscovery; or 4) rare or uncommon in a local context. All of these are tracked in Alameda and Contra Costa counties by the East Bay chapter of CNPS and published in *Rare, Unusual, and Significant Plants of Alameda and Contra Costa Counties*. Through this program, the East Bay Chapter has been divided into 40 botanical regions based on vegetation, geology, habitats, soil types, climate, and other factors.

Although not regarded as special-status species by the USFWS or CDFG, locally rare plants can receive regulatory protection, through CEQA's Article 9 and Guidelines §15125(a) and §15380 which state that "special emphasis should be placed on environmental resources that are rare or unique to that region." CNPS also has the stated goal of "preserving plant biodiversity on a regional and local scale." Relying on these statements the East Bay Chapter of CNPS maintains a program, started in 1991, that tracks rare, unusual, and significant plants that occur within our chapter.

Anthropogenic and environmental threats are a common thread to each BPPA. The inclusion of a discussion of threats, opportunities, and constraints highlights current conservation issues and conveys why these areas need protection. We hope to highlight some of the current, relevant environmental impacts facing the BPPAs, as well as introduce some of the cooperative efforts that are helping bring attention and protection to the unique botanical values of the sites.

Our chapter is keenly aware of the challenge facing us as we try to cope with the push to accommodate a growing tide of population drawn to the beauty of our unique East Bay landscape. California's most enduring but ironically tragic character flaw is that it draws many people to a place of delicate and finite natural resources. With our guidebook, we hope to provide local governments and land managers enough information to make botanically conscious land-use decisions so that our beloved botanical treasure box will bend, not break, under the weight of its growing human population.

This project has been supported by funding from the Rose Foundation, the Tides Foundation, and the East Bay Chapter of CNPS.

For information on this project please contact Heath Bartosh, East Bay Chapter Rare Plant Botanist. hbartosh@nomadecology.com or Lech Naumovich, East Bay Chapter Conservation Analyst conservation@ebcnps.org.



Water body and waterway data furnished by Contra Costa information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Botanical Priority Protection Area	
Altamont	
Size	29,178 Acres
Watershed Information	
Watershed Based	YES - Partial
Watersheds	Bethany Reservoir Mountain House Patterson Run Delta
Significant Substrates	
Total Alkaline Soils	928 Acres
Alkaline Soils Extirpated	10%
Alkaline Soils Extant	90%
Botanical Attributes	
Locally Rare Plant Occurrences	12
CNDDB Plant Occurrences	6
State or Federally Listed Plant Populations	5
CNDDB Community Occurrences	1



San Joaquin

Mountain House

580

Patterson Pass

Byron Conservation Bank

Bethany Reservoir

Byron Airport CE

Vasco Caves

Brushy Peak

Altamont

Botanical Priority Protection Areas

Legend

Botanical Priority Protection Area
- Altamont

Significant Substrates
- Alkaline Soils Extant
- Alkaline Soils Extirpated

Public Land and Conservation Easements
Access
- Open Access
- Restricted Access
- No Access

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1:57,600
0 2,400 4,800
Feet

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council. Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Alameda County, California

A Sense of Place

Guest Author
Elizabeth Zacharias

Amidst the largest concentration of wind turbines in the world lies the Altamont Pass BPPA. The Altamont Pass is regionally important as a meeting place of three subregions of the California Floristic Province: the San Joaquin Valley, San Francisco Bay Area, and South Coast Range.

Within this landscape, alkaline natural communities such as Northern Claypan Vernal Pools and Valley Sink Scrub can be observed. These areas are unique natural communities and are extreme habitats. Plants that live here can survive the harsh alkaline conditions that are sometimes expressed as alkaline scalds, which are characterized by a salty crust that forms on the soil surface.

"flourish in the hot dry temperatures"

The appeal of the Altamont Pass is drawn from its mesmerizing landscape with its rolling hill topography that is strikingly golden in the late summer. This time of year is especially intriguing because it is when the *Atriplex* species that inhabit these alkaline refugia thrive and are most readily identifiable. In the fall, late season plants, namely the tarweeds and alkaline-loving plants, flourish in the hot dry temperatures and alkaline lowlands that by this time have produced their radiantly white salt deposits. The spring is also alluring as these dry hills gain a greenish hue as the annual grasses and herbs begin to germinate, grow, and explode into color when in flower.

Historically, Native Americans and gold prospectors used the Altamont Pass as a trade route or thoroughfare to the Sierran gold country. In 1853, the transcontinental railroad was built through the pass. In 1915, the Lincoln Highway was routed through the pass and later became the Altamont Pass Highway in 1938. From that time development within the pass was relatively static until wind farms began to populate the area in 1981.



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Botanical Hot Spots

Located at the edge of the Inner South Coast Range and the San Joaquin Valley, the Altamont Pass BPPA is an important transition zone between the Great Central and Livermore valleys in Alameda County. In the valley bottoms where alkaline soils are present, Valley Sink Scrub, dominated by iodine bush (*Allenrolfea occidentalis*), also supports a valuable suite of herbaceous *Atriplex* species. Local rarity abounds as records of unusual and significant plant species have been recorded from Mountain House and Patterson Pass in alkaline valley bottoms and in the heavy clay soils occupying upland slopes. A voucher of white blue-eyed Mary (*Collinsia bartsiifolia* ssp. *bartsiifolia*) has not been collected from this area since the 1930s when R.F. Hoover and Lewis Rose independently passed through here.

Sensitive Natural Community

Valley Sink Scrub (1)

Rare and Unusual Plant Species

Brittlescale - *Atriplex depressa* (2)

Saltscale - *Atriplex serenana* var. *serenana* (3)

California filaree - *California macrophylla* (4)

San Joaquin silverpuffs - *Microseris campestris* (5)

Historic Occurrence

White blue-eyed Mary - *Collinsia bartsiifolia* ssp. *bartsiifolia* (1933)

Threats, Opportunities and Constraints

For botanists, the Altamont Pass serves as the transition zone between the "Bay Area" and the "Great Valley". The annual grasslands, dotted with thousands of windmills, seem to stretch from Brentwood to Corral Hollow. This is one of California's most productive areas for wind power generation due to the swift winds that are drawn from the coast over the golden hills by the convective San Joaquin Valley furnace. Many studies have been performed on avian species and their interactions with this renewable resource area, however, little seems to be known about its botany. In between the summits of the rolling hills, alkaline swales preserve habitat for rare and unusual species. Although we don't expect this area to be developed anytime in the near future, expanding the wind farms and adding solar projects could destroy this habitat. Currently, a number of agencies have begun developing a "Wind Resources Area" Habitat Conservation Plan that will allow wind power to continue with some technological overhauls of defunct windmills. Additionally, this area also falls under the Eastern Alameda County Conservation Strategy, thus making it a site where mitigation needs could be satisfied. Given the significance of the Altamont Pass to a diversity of organisms, including plants, birds of prey, and other migratory animals and its ecological service as an important ecotone, protecting this BPPA is extremely important.

Botanical Priority Protection Area	
Byron	
Size	20,829 Acres
Watershed Information	
Watershed Based	YES - Partial
Watersheds	Brush Lower Kellogg Bethany Reservoir Delta
Significant Substrates	
Total Alkaline Soils	4,928 Acres
Alkaline Soils Extirpated	21%
Alkaline Soils Extant	79%
Total Sandy Soils	631 Acres
Sandy Soils Extirpated	2%
Sandy Soils Extant	98%
Botanical Attributes	
Locally Rare Plant Occurrences	38
CNDDB Plant Occurrences	24
State or Federally Listed Plant Populations	6
CNDDB Community Occurrences	0



Legend

Botanical Priority Protection Area
- Byron

Significant Substrates
- Alkaline Soils Extant
- Alkaline Soils Extirpated
- Sandy Soils Extant
- Sandy Soils Extirpated

Public Land and Conservation Easements

Access
- Open Access
- Restricted Access
- No Access

East Bay Chapter
California Native Plant Society

N
W E
S

1:57,600

0 2,400 4,800

Feet

Byron

Botanical Priority Protection Areas

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council.
Water body and waterway data furnished by Contra Costa information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Contra Costa County, California

A Sense of Place

Guest Author
Mike Wood

The Byron BPPA is a botanically diverse, habitat rich area unlike any you will encounter in the immediate Bay Area. The alkali-influenced habitats are reminiscent of the southern San Joaquin Valley and support an exciting assemblage of annual and perennial plant species not found elsewhere in our chapter area. It is part of a generally uninterrupted stretch of open space between the Central Valley, the Altamont Hills and Mount Diablo. Some of the plant communities it supports are rare in the region and harbor rare plant and animal species. Nearly all of the alkali wetlands within the East Contra Costa Habitat Conservation Plan inventory area are found in the Byron area.

Viewed from afar, this landscape is captivating with its undulating slopes, ravines, flat lands, and the interplay of grassland and sky. Up close, one begins to appreciate the botanical treasures that reside here, especially in the alkali "scalds" or the claypan vernal pools. Whether due to changes in chemical composition, soil structure, or hydrologic regime, these areas serve as an ecological filter and refuge to an assortment of plant species by resisting invasion of non-indigenous plant species not adapted to these local conditions. In the scalds, it is remarkable to see several rare members of the genus *Atriplex* persisting in these otherwise barren, sandy, inhospitable patches in a sea of Italian ryegrass. The vernal pools not only provide haven for narrowly distributed plant species but also display flowery concentric patterns of color as the pools gradually dry in spring.

"haven for narrowly distributed plant species"

EAST BAY CNPS



Botanical Hot Spots

The Byron BPPA has the largest intact expanses of alkaline habitat in Contra Costa County. It is likely here where caper-fruited tropidocarpum (*Tropidocarpum capparideum*) was first described as inhabiting alkaline valley lands along the San Joaquin River. The last collection of this species, vouchered in 1957, is from a field near Holey Road. Areas flanking Byron Highway and Byron Airport are sublime examples of Alkaline Meadow habitat in eastern Contra Costa County. A springtime acquaintance can be made with recurved larkspur (*Delphinium recurvatum*) which can be found in these areas. A diminutive yet pungent member of the lily family, stinkbells (*Fritillaria agrestis*), watches over hill slopes of clay lenses along the Vasco and Camino Diablo corridors. Although private and subject to mining activity, a broad band of sand, totaling a few hundred acres, is also present within this BPPA. The Bay Area's botanical great grandmother, Alice Eastwood, passed through the Byron Hot Springs area on a collecting trip in 1914 where she collected ladiestongue mustard (*Heterodraba unilateralis*). Like Ms. Eastwood, this species is now but a wonderful memory.

Sensitive Natural Community

Alkali Meadow (1)

Rare and Unusual Plant Species

San Joaquin spearscale - *Atriplex joaquinana*

Recurved larkspur - *Delphinium recurvatum* (2)

Stinkbells - *Fritillaria agrestis* (3)

Caper-fruited tropidocarpum - *Tropidocarpum capparideum* (4)

Historic Occurrence

Ladiestongue mustard - *Heterodraba unilateralis* (1914) (5)

Threats, Opportunities and Constraints

Byron is an oft overlooked area that sits in the lowlands between Altamont Pass and the familiar prominence of Mount Diablo. It has long attracted travelers and was once known as a booming resort town where tourists and locals alike would soak in the alkaline waters provided by the warm springs at the historic Byron Hot Springs Resort. As business slowed, the infrastructure deteriorated and the community gradually dissolved. Surveyed by many of the early California botanists, this area has records of six plant species that haven't been observed in over 30 years. Although the landscape may be considered prime real estate by some developers - it is flat, relatively inexpensive, and somewhat unattractive to the untrained eye - Byron has thus far undergone little development pressure. Yet, at regular intervals, proposals to redevelop the hot springs or build low-density subdivisions do occur and such proposals would only further marginalize the ecology of this botanically significant area. Given the particular combination of soils, climate, groundwater, and drainage that help maintain its unique flora, this area must be preserved in its entirety. The Byron area, like several other BPPAs, occurs within the scope of the East Contra Costa County Habitat Conservation Plan, so there may be opportunities to preserve its unique habitat types.

Botanical Priority Protection Area	
Cedar Mountain	
Size	26,570 Acres
Watershed Information	
Watershed Based	YES
Watersheds	Tunnel Lang Canyon Upper Arroyo Mocho
Significant Substrates	
Total Serpentinite	7,928 Acres
Serpentinite Extirpated	0%
Serpentinite Extant	100%
Botanical Attributes	
Locally Rare Plant Occurrences	150
CNDDB Plant Occurrences	16
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	0

Carnegie State Vehicular Recreation Area

Del Valle Regional Park

Ohlone Regional Wilderness

Mines Road

San Joaquin

Stanislaus

Santa Clara



Legend

Botanical Priority Protection Area
- Cedar Mountain

Significant Substrates
- Serpentine Bedrock and Soils

Public Land and Conservation Easements

Access
- Open Access
- Restricted Access
- No Access

East Bay Chapter
California Native Plant Society

1:57,600
0 2,400 4,800
Feet

Cedar Mountain

Botanical Priority Protection Areas

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council.
Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Alameda County, California

A Sense of Place

Guest Authors
John Game, Steve Edwards

Cedar Mountain, in arid southeastern Alameda County, preserves a most unusual habitat. The mountain is topped by a verdant Sargent Cypress forest, dark green in color, seeming almost marooned in a region of chaparral and oak woodland, and beneath the cypresses there are vast, luxuriant stands of native perennial grasses, especially the large, fountain-like tussocks of California Fescue. Although the mountain is remote and difficult to reach, a journey there is especially worthwhile because the habitat differs dramatically from any other in the East Bay.

"a most unusual habitat"

In addition to the cypress forest, the mountain includes raw serpentine barrens, and these settings as well as others on or adjacent to the mountain support many rare or unusual species. There are at least three kinds of jewelflowers (*Streptanthus* spp.) and two of them may need new names. The beautiful Talus Fritillary (*Fritillaria falcata*) has its northernmost occurrence here. Among the other notable rare plants are Carlotta Hall's lace fern (*Aspidotis carlotta-halliae*), Jepson's woolly sunflower (*Eriophyllum jepsonii*), fairy fans (*Clarkia breweri*), and long-rayed brodiaea (*Triteleia peduncularis*). The serpentine body is the largest montane block of this lithology in the East Bay and, owing to its remoteness, it has been but little explored.

Serpentine substrate and remoteness may account for the fact that the vegetation on Cedar Mountain is unusually pristine—it has been little intruded by invasive exotic species. To stand among the cypresses in this unique, high-quality habitat and gaze northward to Mount Diablo or eastward to the San Joaquin Valley constitutes one of the most thrilling natural history experiences in the Bay Area, and Cedar Mountain has long been at the top of the list of the most important places needing protection in the East Bay.



EAST BAY
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Botanical Hot Spots

Serpentine substrates are the basis for the true character of the Cedar Mountain BPPA. This ultramafic mountain is the only place in the East Bay where magnificent Sargent cypress (*Hesperocyparis sargentii*) forests occur. These stands act as mountain sentinels guarding a multitude of serpentine-loving plant species. A resident wild onion of the Mount Hamilton range, Sharsmith's onion (*Allium sharsmithiae*), was named for a native daughter of the East Bay, Helen Sharsmith. Ms. Sharsmith added to the California flora by writing the Flora of the Mount Hamilton Range for her dissertation in 1945 based on her extensive field work. Other species known from this BPPA include local rarities such as Brewer's jewelflower (*Streptanthus breweri* var. *breweri*) and spring gold (*Crocidium multicaule*). Ira Wiggins was the last person to collect Siskiyou false rue anemone (*Enemion stipitatum*) from Cedar Mountain in 1926.

Sensitive Natural Community

Northern Interior Cypress Forest (1)

Rare and Unusual Plant Species

Sharsmith's onion - *Allium sharsmithiae*

Plain mariposa - *Calochortus invenustus* (2)

Mt. Hamilton thistle - *Cirsium fontinale* var. *campylon* (3)

Spring gold - *Crocidium multicaule*

Talus fritillary - *Fritillaria falcata* (4)

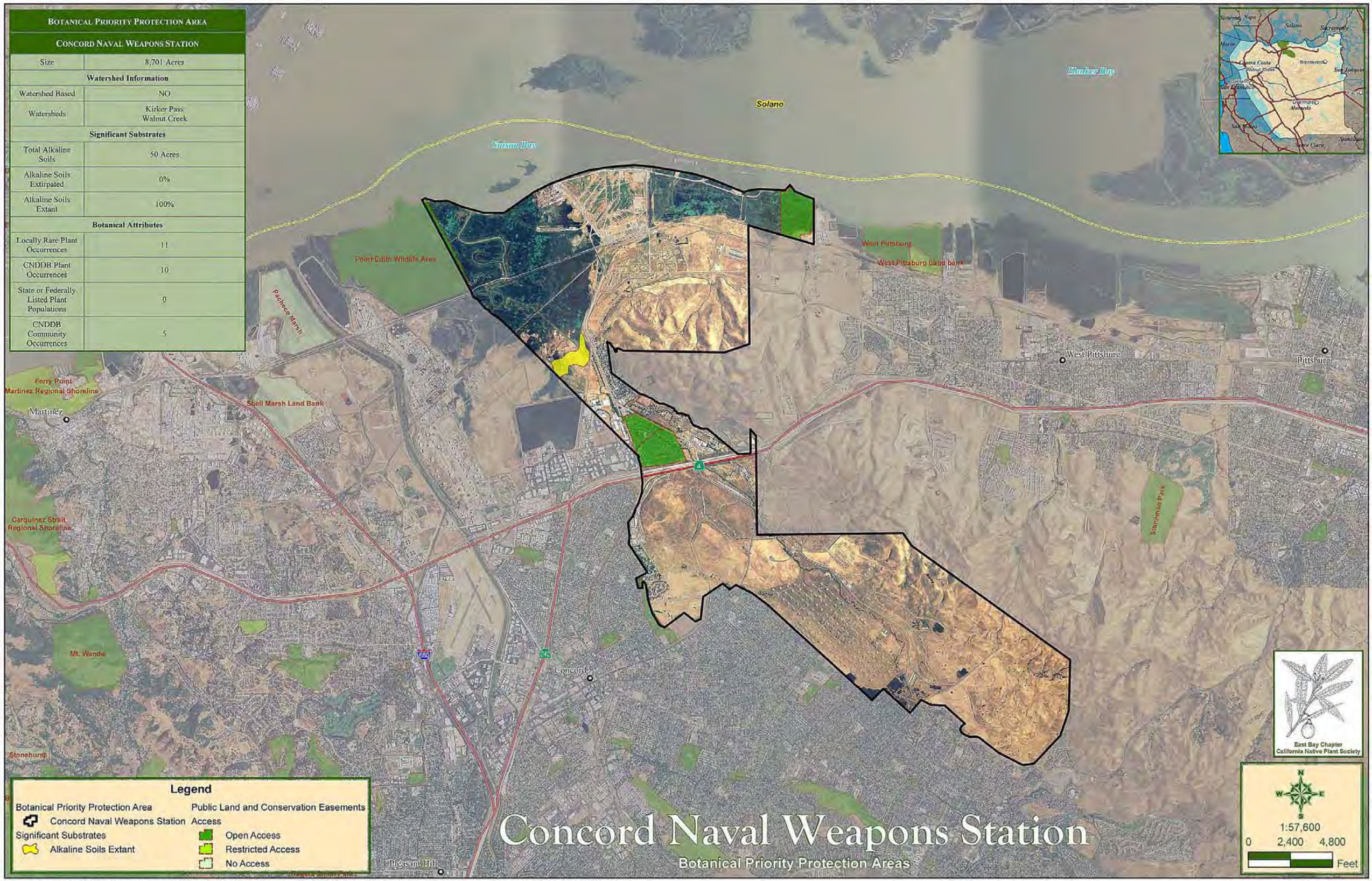
Historic Occurrence

Pine forest larkspur - *Delphinium gracilentum* (1926) (5)

Threats, Opportunities and Constraints

Tucked into the southeastern corner of Alameda County, Cedar Mountain is one of the many rarely frequented gems of the Hamilton range. This rugged landscape has been explored by few since nearly all of the land is privately owned. Once, this land crawled with miners, imparting the familiar moniker of "Mines" to the road which runs through this area. The serpentine bedrock and soils are a well mapped feature of this rugged country, indicating that a high level of botanical diversity and endemism exists within these edaphic plant communities. There are no immediate threats by development or industry to the landscape, but a revival in mining of rock or rare earth elements could be enormously destructive to the delicate botanical resources here. The Nature Conservancy has outlined Cedar Mountain in its Central Coast Ecoregional Plan as an area of high conservation priority, and to date, the Conservancy has helped protect lands and empower private landowners to manage their lands with more ecological savvy than any other organization in this area. Additionally, Cedar Mountain is within the scope of the Eastern Alameda Conservation Strategy as a potential conservation area.

Currently, very little of the land is accessible to the public for recreation or research. Many partnership opportunities exist to help educate landowners, as well as to help privately protect some of the best hidden natural resource treasures in the East Bay.



Botanical Priority Protection Area	
Concord Naval Weapons Station	
Size	8,701 Acres
Watershed Information	
Watershed Based	NO
Watersheds	Kirker Pass Walnut Creek
Significant Substrates	
Total Alkaline Soils	50 Acres
Alkaline Soils Extirpated	0%
Alkaline Soils Extant	100%
Botanical Attributes	
Locally Rare Plant Occurrences	11
CNDDB Plant Occurrences	10
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	5

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council. Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Concord, Contra Costa County, California

A Sense of Place

Guest Author
Dianne Lake

Once a bustling military installation, the Concord Naval Weapons Station is now a place of stunning silence. The variety of water features, from baylands to foothills, provide potential habitat for a number of rare plants. Notably, Mount Diablo creek runs in daylight after emerging from an upstream portion that is channelized and buried. This creek has extensive riparian vegetation until it meets the extent of the brackish bay water, where the vegetation shirks in stature. These salt marsh habitats are home to soft bird's-beak which is limited to only a few occurrences with specific soil and hydrological conditions. This short annual has an extremely humble flower that is barely noticeable to the untrained eye. Additional state-listed salt marsh plants that are found here includeSuisun marsh aster, Delta tule pea, and Mason's lilaeopsis.

"a place of stunning silence"

The tule pond, or cistern pond, rings out with song in the evenings. This pond provides year-round water and habitat to many plants and animals. Freshwater wetland plants thrive here, including a host of sedges and rushes. The least surveyed habitat on this site may be the vernal pools and swales that dot the landscape. These features are spread throughout the site and provide potential habitat for some of the most fleeting of our East Bay plants.

The drier upland areas also have some interesting flora. The grove of valley oaks in the Southern end of the site add woodland character to this landscape. When the soil gets even thinner, barren and rocky areas can be found with blazing stars, that are found few other places in the East Bay.

This is truly a place of great mystery. Its position in the landscape seems to hint at this area being an extension of Lime Ridge, where a number of rare Pincushion plants and Eriastrums are found. Very few historical plant collections are attributed to this area. Even the well-traveled Brewer did not grace this area with his presence. No one knows why, but it's certain that there are many undiscovered mysteries about this landscape.



EAST BAY
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Botanical Hot Spots

Located at the western end of the Los Medanos Hills and along the southern shore of Suisun Bay, Concord Naval Weapons Station BPPA is less known for its botanical residents than for its military history. Nonetheless, it boasts Northern Coastal Salt Marsh and some rare plant species. Along the waterfront is one of the most easterly occurrences of the federally Endangered soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*). Two species endemic to the Sacramento-San Joaquin Delta region also inhabit these shores, Delta tule pea (*Lathyrus jepsonii* ssp. *jepsonii*) and Mason's lilaeopsis (*Lilaeopsis masonii*). These bear the names of two of California's more notable botanists. A third botanist, Robert F. Hoover, was a prodigious collector in the East Bay during the 1930s. Hoover was the last person to collect snake's head (*Malacothrix coulteri*) in this area in 1935. This collection represents the northernmost station for this Mojavian species.

Sensitive Natural Community

Northern Coastal Salt Marsh (1)

Rare and Unusual Plant Species

Suisun marsh aster - *Symphyotrichum lentum* (2)

Soft bird's-beak - *Cordylanthus mollis* ssp. *mollis* (3)

Delta tule pea - *Lathyrus jepsonii* var. *jepsonii* (4)

Mason's lilaeopsis - *Lilaeopsis masonii*

Historic Occurrence

Snake's head - *Malacothrix coulteri* (1935) (5)

Threats, Opportunities and Constraints

The Concord Naval Weapons Station is undergoing a public process to plan and reuse the majority of the inland portion of the base. The coastal portion will remain military land while the public helps decide what to do with some 5,000 acres of grasslands, oak savanna, streams, and vernal pools. While this process has been heavily monitored by the environmental and affordable housing groups, final decisions are made by a group of five City Council members who will select and approve the final plans. With great persistence and passion, the local community and City Council recently denied a "take-over" proposal by a developer that would have unilaterally given the property to that developer. Although much of the land has been impacted from the conversion of the natural landscape to a munitions depot, the inland and coastal portions provide the most intact corridor from the Suisun Bay up into the rocky pinnacles of Mount Diablo. Only recently have focused botanical surveys started to uncover some of the more cryptic inhabitants of the inland portion of this base. We believe that proper management and stewardship of this area will unveil even more botanical surprises. With the help of the community, environmental organizations, and the Concord City Council, much of this land will become the area's newest regional park, to be managed by the East Bay Regional Park District.

Botanical Priority Protection Area	
Corral Hollow	
Size	8,974 Acres
Watershed Information	
Watershed Based	YES - Partial
Watersheds	Patterson Run Arroyo Seco Mitchell Ravine
Significant Substrates	
Not Applicable	
Botanical Attributes	
Locally Rare Plant Occurrences	64
CNDDB Plant Occurrences	8
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	0

Millard Hughes
Silva/Clamp Ranch
BLM
Corbett Greenville Ranch
Del Valle Regional Park
Tesla
Carnegie State Vehicular Recreation Area
San Joaquin



East Bay Chapter
California Native Plant Society

Legend

Botanical Priority Protection Area
Corral Hollow

Public Land and Conservation Easements
Access
Open Access
Restricted Access
No Access

1:48,000
0 2,000 4,000
Feet

Corral Hollow

Botanical Priority Protection Areas

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council.
Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Alameda County, California

A Sense of Place

Guest Author
Erin McDermott

Approaching from the west, one leaves south Livermore passing by vineyards that boarder Tesla Road. Once east of Greenville Road the cultivated route fades away as you are drawn toward the hills that embody days of old California. This is the Corral Hollow BPPA and it is wild. Corral Hollow is near the northern end of the South Coast Range. Regionally this area is part of the Diablo Range Corridor that connects Mount Diablo, in the north, to the Mount Hamilton Range, in the west, and Cedar Mountain, to the south. Corral Hollow also provides an east-west corridor between the San Joaquin and Livermore valleys.

"lush riparian valleys"

This "Hollow" is a dry, rocky, and steep place covered with brush, oaks, and scattered pines and rock outcrops. The rolling grassy hills offer sweeps of wildflowers in the spring while accents of lush riparian valleys filled with sycamores and cottonwoods provide shaded respites in the hot summer months. Looking upward you might encounter a soaring hawk or golden eagle.

Late spring brings dry parched hills with wilting temperatures but does provide opportunity to find secret gems like scrub sentinel Hospital Canyon larkspur (*Delphinium californicum* ssp. *interius*) poking its towering inflorescences out of the top of the sagebrush; the armored yet delicate Santa Clara thorn-mint (*Acanthomintha lanceolata*) in flower on hot dry, steep, loose, talus slopes; and stands of flowering purple needlegrass (*Nassella pulchra*) with their twisted awns waving in the wind.

In the not-so-distant past Native Americans inhabited the valley, and bedrock mortars are a gentle reminder of their presence here. Corral Hollow contained the hamlet of Tesla and its associated coal mine, which supplied most of the coal used in the Bay Area from 1902 to 1915, according to Steve Edwards, author of the Bay Nature article "Vale of Tesla". At one point the town had as many as 1,500 residents.

EAST BAY
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Botanical Hot Spots

Looking at a stand of Desert Olive Scrub, one could imagine oneself in some Mojave canyon while standing firmly in an East Bay county, so closely does the feeling of being in Corral Hollow resemble a desert experience. Indeed there is an abundance of other plant species such as desert shredding primrose (*Camissonia boothii* ssp. *decorticans*) that have crept up the west side of the San Joaquin Valley from the Mojave Desert. There are also significant South Coast Range stalwarts, including big tarplant (*Blepharizonia plumosa*). Corral Hollow is a stronghold of this tall annual which secretes fragrant terpenoids that can act as an olfactory alarm to let you know it is close by. Robert F. Hoover came through Corral Hollow with his plant press in 1938 when he collected green fiddleneck (*Amsinckia vernicosa* var. *vernicosa*) in 1937. He was the last one to do so.

Sensitive Natural Community

Desert Olive Scrub (1)

Rare and Unusual Plant Species

Big tarplant - *Blepharizonia plumosa* (2)

Desert shredding primrose - *Camissonia boothii* ssp. *decorticans* (3)

Lemmon's jewelflower - *Caulanthus coulteri* var. *lemmonii* (4)

Rayless ragwort - *Senecio aphanactis*

Historic Occurrence

Green fiddleneck - *Amsinckia vernicosa* var. *vernicosa*

Threats, Opportunities and Constraints

The arid canyon known as Corral Hollow runs from the Mediterranean Bay Area onto the edge of the San Joaquin Valley. This area has a long cultural history of use by Native Americans, miners and gold rushers alike. Home to many desert species of plants and animals, this area is at an ecological crossroads. The Corral Hollow area is most frequently observed through a windshield or the occasional turn-out on Tesla Road. Otherwise, this alluring area is largely restricted from public access other than what Carnegie State Park provides. The remainder of the land within this BPPA is held by private hands or the Lawrence Livermore National Laboratory. Extremely limited access can be both a benefit and a bane. Few botanical surveys have been completed in this area and its doubtful many area residents are familiar with the place-name "Corral Hollow". The most notable and germane threat to this area is the expansion of the existing California State Parks Off Highway Vehicle area known as "Carnegie State Park". Since this is one of the few publicly owned lands in this area, the thirst for this type of recreation needs to be balanced with real conservation. Carnegie's hills are steep, often glowing green in the spring but scarred from the hill climbing events of the summer. Although some land that expanded the Carnegie holdings was purchased by OHV funds, we believe that there may be other areas which could be sacrificed for off road vehicles that are less botanically significant. Discussions with State Parks have been ongoing for over 5 years with hope for other expansion alternatives.

Botanical Priority Protection Area	
Delta	
Size	63,631 Acres
Watershed Information	
Watershed Based	NO
Watersheds	Delta
Significant Substrates	
Total Alkaline Soils	3,639 Acres
Alkaline Soils Extirpated	49%
Alkaline Soils Extant	51%
Total Sandy Soils	14,077 Acres
Sandy Soils Extirpated	53%
Sandy Soils Extant	47%
Botanical Attributes	
Locally Rare Plant Occurrences	49
CNDDB Plant Occurrences	105
State or Federally Listed Plant Populations	3
CNDDB Community Occurrences	45



Legend

Botanical Priority Protection Area
- Delta

Significant Substrates
- Alkaline Soils Extant
- Alkaline Soils Extirpated
- Sandy Soils Extant
- Sandy Soils Extirpated

Public Land and Conservation Easements

Access
- Open Access
- Restricted Access
- No Access

East Bay Chapter
California Native Plant Society

1:95,040
0 0.75 1.5
Miles

Delta

Botanical Priority Protection Areas

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council.
Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Eastern Contra Costa County, California

A Sense of Place

Guest Author
Chris Thayer

At the confluence of the great San Joaquin and Sacramento river systems, the California Delta of Contra Costa County is at the center of connectivity between the state's freshwater and terrestrial resources. Along its meandering estuarine sloughs, rare shoreline plants such as woolly rose-mallow, Suisun Marsh aster, and Delta tule pea find their homes. Nearby, remnant dunes formed by wind-blown sands of the late Pleistocene and early Holocene periods harbor a handful of local plant rarities, including several desert denizens that became stranded along the west side of the San Joaquin Valley far from home in the Mojave following the Hypsithermal Period of global warming some 6,000 to 8,000 years ago. Species such as California croton, desert primrose, and valley lessingia are found nowhere else in our region but on the local relict dunes. The exceedingly narrow ranges of the Contra Costa wallflower and the Antioch Dunes evening primrose are now essentially confined to the Antioch Dunes National Wildlife Preserve. Lange's metalmark butterfly, dependent on the unique Antioch Dune buckwheat is also restricted to the preserve. This precarious location is one of the last outstanding examples of the Delta dune habitat, historically diminished by extensive sand mining and industrialization in the past century. Alkaline and saline soil deposits, once widespread in the Delta region, have also dwindled in our lifetime, along with the specialized habitats for another suite of rare and unusual species, owing in part to the construction of a system of levees in the early 1900s that disconnected the land from tidally-influenced waters and natural river flow. Freshwater diversion, for both domestic water supply and agricultural use, has contributed to salt intrusion into waters of the Delta. Other human impacts, including the introduction of non-native wildlife and plants, have been greatly detrimental to the natural processes of the region. The recent urbanization of the greater Delta may have been poorly planned, considering the region's strategic position for water supply in California as well as the potential for restoration of fisheries habitat, crucial to our state's welfare if we take history into consideration. Efforts currently underway to restore components of this important Bay Area landscape are worthy of our support.

"the center of connectivity"



EAST BAY
CNPS











Botanical Hot Spots

In the far northeastern corner of Contra Costa County lies the Delta BPPA. Sand and salts are the principal factors that provide for intriguing plant communities here. Most notable are the Stabilized Interior Dunes. What was maybe once more widespread on these sand hills near the San Joaquin River, but now relegated to very few occurrences is the federally Endangered Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*). Two local rarities of the sunflower family that can be found on these dunes, though fast disappearing, are sticky lessingia (*Lessingia glandulifera* var. *glandulifera*) and Lobb's tarweed (*Deinandra lobbii*). In this BPPA, one of two East Bay locations for boraxweed (*Nitrophila occidentalis*) occupies an alkaline flat just east of the Contra Costa Canal near Oakley. Herbert L. Mason came through this area in 1932 on a collecting trip. It was then that Douglas' phacelia (*Phacelia douglasii*), a South Coast Range regular, was collected for the last time in this county.

Sensitive Natural Community

Stabilized Interior Dunes (1)

Rare and Unusual Plant Species

California croton - *Croton californicus* (2)

Lobb's tarweed - *Deinandra lobbii*

Boraxweed - *Nitrophila occidentalis* (3)

Antioch Dunes evening primrose - *Oenothera deltoides* ssp. *howellii* (4)

Historic Occurrence

Douglas' phacelia - *Phacelia douglasii* (1932) (5)

Threats, Opportunities and Constraints

The Antioch Dunes may be the single most imperiled landscape in the East Bay. Standing at the edge of the Delta, these inland dunes once towered some 120 feet over water's edge. These behemoths served as refuge for native peoples as well as desert plants and animals that are now nearly extinct from this area. Once the value of building materials skyrocketed after San Francisco's 1906 earthquake, the dunes became a resource for rebuilding the city. More recent development projects continued to harvest sands and flatten the dunes, in many cases down to the underlying hardpan. Luckily, some impacted properties adjacent to the larger preserve may still harbor suitable habitat for endangered species. The conservation of these sites would allow for a large preserve to emerge to help manage these unique resources on a landscape scale.

The fast growing native annual herbs and deep rooted perennials of the Antioch Dunes are adapted to the nature of the constantly blowing sands. This constant movement of the sand acts as an equalizer, impeding more competitive invaders from getting established in this unstable milieu. However, as human disturbance increased, more weeds have been introduced, thus stabilizing the sand dunes. Extensive annual grasses and nitrogen-fixing plants have colonized this area and have dramatically altered both the vegetation and functionality of these dunes. Recent changes in policy have allowed for experimental management of the dunes that will attempt to shift the balance back to the native plants. Antioch Dunes National Refuge has the honorable distinction of being the first US Fish and Wildlife National Refuge created for the protection of insects and plants.

Botanical Priority Protection Area	
East Dublin & Tassajara	
Size	15,419 Acres
Watershed Information	
Watershed Based	YES
Watersheds	Lower Tassajara Cottonwood
Significant Substrates	
Total Alkaline Soils	573 Acres
Alkaline Soils Extirpated	1%
Alkaline Soils Extant	99%
Botanical Attributes	
Locally Rare Plant Occurrences	2
CNDDB Plant Occurrences	94
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	0



Los Vaqueros Watershed

Los Vaqueros Reservoir

Brushy Peak

Brushy Peak Regional Preserve

Highland Road

Tassajara Valley

Tassajara Creek Regional Park

Dublin Canyon

Bishop Ranch Regional Open Space

Dougherty Hills Open Space

Machado Property

Dublin Hills

Dublin Hills

Dublin

580

580

Las Positas Golf Course

Garaventa Wetlands Preserve

Springtown Preserve

Livermore

Legend

Botanical Priority Protection Area
East Dublin & Tassajara

Significant Substrates
Alkaline Soils Extant
Alkaline Soils Extirpated

Public Land and Conservation Easements
Access
Open Access
Restricted Access
No Access

East Dublin & Tassajara

Botanical Priority Protection Areas

East Bay Chapter
California Native Plant Society

1:57,600
0 2,400 4,800
Feet

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council.
Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Alameda and Contra Costa Counties, California

A Sense of Place

Guest Author
Bruce Baldwin

For me, the look and smell of the East Dublin-Tassajara area resonates as a connection with my childhood in Arroyo Grande and a lifetime of California experiences. It is as close to pristine California as you can get in our East Bay grasslands. Based on studies conducted at the Jepson Herbarium, I can attest that this area is home to some plants, such as Congdon's tarplant, undergoing initial evolutionary divergence in our area and some that represent much more ancient diversity than previously thought, such as the San Joaquin spearscale. This diversity probably owes much to the dynamic geological history and steep ecological gradients provided by this BPPA. With continued urbanization, there is potential to lose diversity within these refugia prior to its discovery or full characterization.

"some plants undergoing initial evolutionary divergence"

The alkaline habitat that supports species such as Congdon's tarplant and San Joaquin spearscale is botanically rich and rare within the Bay Area. However, habitat such as this is typically considered wasteland. The plants that occupy this alkaline habitat may not have horticultural appeal either, although they have enormous value to biologists and their importance to understanding California's natural history is great. Once the observer realizes the value of this underappreciated biological diversity, its unique beauty can shine through.

Even in the fall season when the place superficially looks spent and desiccated, there is a lot going on, not only with the plants but also with the insects, whose associations and interactions are poorly understood. Visiting here in the morning and evening hours will allow you to beat the heat and observe more wildlife activity. I especially enjoy the feeling of this country at the time of day when the lighting is dim and the shadows are long.



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East Dublin & Tassajara



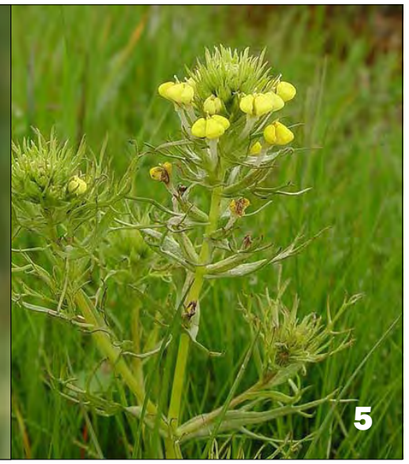
1



2



3



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5

Botanical Hot Spots

The alkaline valley bottoms within Tassajara Creek, Highland Road, and Doolan Canyon are also the heartland for another unique member of the sunflower family, Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*). This summer flowering species was named after Joseph Whipple Congdon, a Rhode Island transplant who made innumerable contributions to the California flora. Another extremely important component of this BPPA is the remnant Northern Claypan Vernal Pools that have almost completely disappeared along the Interstate 580 corridor. Of the crown jewels that have been known to occupy these botanical refugia are species such as saline clover (*Trifolium depauperatum* var. *hydrophilum*), white headed navarretia (*Navarretia leucocephala* var. *leucocephala*), and annual semaphoregrass (*Pleuropogon californicus* var. *californicus*). However, the eastward march of the City of Dublin continues to threaten these imperiled East Bay habitats.

Sensitive Natural Community

Northern Claypan Vernal Pool (1)

Rare and Unusual Plant Species

Congdon's tarplant - *Centromadia parryi* ssp. *congdonii* (2)

White-headed navarretia - *Navarretia leucocephala* var. *leucocephala* (3)

Semaphore grass - *Pleuropogon californicus* var. *californicus*

Saline clover - *Trifolium depauperatum* var. *hydrophilum* (4)

Yellow owl's clover - *Triphysaria versicolor* var. *faucibarbata* (5)

Threats, Opportunities and Constraints

At the edge of the suburban sprawl sits a warm farming community that was once surrounded by voluptuous hills and low elevation wilderness. Now it seems that the ecological heritage of the Tassajara Valley and its surrounding hills is under assault by pseudo-agrarian projects like "New Farm" and by Dublin's insatiable desire to expand its Dougherty Valley-like projects even further east. Some of the most exemplary vernal pools of the East Bay have already been consumed by recent development and are now a memory under high rises that tower over Interstate 580. Many of these sites are now home to "landscaped parks" with horticultural trees displacing one of the most species-rich grassland areas in the East Bay. A few years back, an entire town was planned for the center of Tassajara Valley, only to be stopped by a coalition of groups interested in protecting its natural resources. This BPPA is practically devoid of woody shrubs and trees, instead this landscape is dominated by one of the last remaining matrices of grasslands and vernal pools that once characterized the greater Livermore Valley. The Eastern Alameda County Conservation Strategy and Tri-Valley Conservancy's North Livermore conservation plan may bring more attention from biologists and planners to this area, we hope with an eye on preserving the dry land farming and ranching life that once flourished in the Livermore Valley.

Botanical Priority Protection Area	
Four Valleys	
Size	13,052 Acres
Watershed Information	
Watershed Based	YES
Watersheds	Sand Deer
Significant Substrates	
Total Alkaline Soils	632 Acres
Alkaline Soils Extirpated	17%
Alkaline Soils Extant	83%
Total Sandy Soils	1,916 Acres
Sandy Soils Extirpated	27%
Sandy Soils Extant	73%
Botanical Attributes	
Locally Rare Plant Occurrences	13
CNDDB Plant Occurrences	15
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	0

Oakley

Contra Loma Regional Park

Easement

Black Diamond Mines Regional Preserve

Black Diamond Mines Regional Preserve

Lone Tree Valley

Horse Valley

Black Diamond Mines

Roddy Ranch Agricultural Preserve

Deer Valley

Roddy Ranch

Chaparral Springs

Clayton Ranch Land Bank

Game Refuge 3-F

Mount Diablo State Park

Briones Valley

John Marsh Home/Cowell Ranch State Historic Park

Wright Property

Seeno Conservation Easement

Galvin

Round Valley Regional Park

Los Vaqueros Watershed

Legend

Botanical Priority Protection Area
- Four Valleys

Significant Substrates
- Alkaline Soils Extant
- Alkaline Soils Extirpated
- Sandy Soils Extant
- Sandy Soils Extirpated

Public Land and Conservation Easements

Access
- Open Access
- Restricted Access
- No Access

Four Valleys

Botanical Priority Protection Areas

East Bay Chapter
California Native Plant Society

1:57,600
0 2,400 4,800
Feet

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council. Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Antioch, Contra Costa County, California

A Sense of Place

Guest Author
David Gowen

The historic names of these four valleys convey a sense of a slower pace of life and an emphasis on living in nature. Lone Tree, Sand Creek, Horse, and Deer Valleys are four grassland-rich drainages that flow from the uplands of Black Diamond Mine area, emptying into the flatlands of Brentwood. The four valleys area has been grazed since the 1800s, even before Marsh's first settlement in this area. Our human influence on this landscape is evident, but only recently have researchers began to understand how grazing promotes the conservation of rare plants in this area. Even now, new occurrences of known plants are being found in this ecotone between the Central Valley and Coast Ranges. The large expanses of grasslands take on a brilliant, warm light in the mornings. This area might be best described in spring as green hills, with a sense of quiet. The prevailing winds are westerly so that the urban noise to the north rarely finds its way into the valleys. Although close to large cities, the four valleys are private and relaxing, and represent some of the last "flat lands" that haven't been developed in the East Bay.

"green hills, with a sense of quiet"

These grasslands are home to the first location where big tarplant was collected, and where it continues to thrive. Vernal swales often wind in the valley bottoms providing habitat for halophiles or other salt loving plants. Round-leaved filaree, once thought to be ubiquitous in the East Bay, can still be found here. Patches of Diablan Sage Scrub, Blue Oak Woodland, and occasional valley oaks retain some of the most interesting species found in the East Bay. Here we find an odd occurrence of Hansen's larkspur, otherwise distributed in the Southern Sierra Nevada Range. Two unusual pincushion plants (*Navarretia ssp.*) are found in this area including the southern-most occurrence of Tehama pincushion, which is otherwise found in the North Coast Range. Time has stood still in this ranching landscape and community, until recently.

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Botanical Hot Spots

Near the boundary of the Great Valley and San Francisco Bay subregions of the California Floristic Province lies the Four Valleys BPPA. These valleys include Briones, Deer, Horse, and Lone Tree valleys. They create a transition zone between the eastern flanks of the northern Diablo Range, the San Joaquin Valley, and the Los Medanos Hills where both sandy and alkaline soil hot spots produce wildflower fields with springtime riots of color. Rosinweed (*Calycadenia multiglandulosa*) has even been known to provide some late season color in this golden landscape during the month of August. Many of the historic collections of this area are attributed only to the City of Antioch since official landmarks were less abundant in the 19th century. Showy madia (*Madia radiata*) is one of these species. It was repeatedly collected from Antioch and Lone Tree Valley, the only places it has been known from in the East Bay. Robert Hoover's plant press strikes again as he was the last person to collect this species from within our chapter area in 1941.

Sensitive Natural Community

Wildflower Fields (1)

Rare and Unusual Plant Species

Rosinweed - *Calycadenia multiglandulosa*

Hansen's larkspur - *Delphinium hansenii* (2)

Showy madia - *Madia radiata* (3)

Adobe navarretia - *Navarretia nigelliformis* ssp. *nigelliformis* (4)

Historic Occurrence

Slender pentachaeta - *Pentachaeta exilis* ssp. *exilis* (1931) (5)

Threats, Opportunities and Constraints

Running in succession from north to south, the Lone Tree, Horse, Deer and Briones Valleys were once bucolic ranch lands. About a quarter of a century ago, the City of Antioch began to sprawl into the foothills of Mount Diablo. Developers saw these flat valleys as ideal places for luxury homes well distanced from urban noise. Two of the valleys have already been impacted by sprawling single family homes, wide roads, and plantations of exotic street trees. Given current plans, all four valleys will be populated with tens of thousands of people and thousands of new single-family detached homes. Strong development pressures and financing from large homebuilders helped pass Measure K in 2005 that allowed for further development into these historically rich botanical areas. Many people initially hoped that these important areas could be spared, but because the City of Antioch refused to participate in the East Contra Costa County Habitat Conservation Plan, that opportunity was lost. Proposed developments will now be under greater scrutiny by resource agencies and local public land advocates who have directed their focus towards this area, since development could mean the loss of some of the last western corridors for San Joaquin kit fox, the type-locality for big tarplant (*Blepharizonia plumosa*), and many desert taxa that have migrated this far north during long warming trends thousands of years ago. These valleys provide an important east-west migration corridor for both plants and animals. Save Mount Diablo, Friends of Marsh Creek, and two land trusts have been working hard to help bring attention to the resources of this area and help maintain viable ranching landscapes for many years to come.

Botanical Priority Protection Area	
Marsh Creek	
Size	14,921 Acres
Watershed Information	
Watershed Based	YES
Watersheds	Long Canyon Sycamore Curry Canyon
Significant Substrates	
Total Serpentinite	80 Acres
Serpentinite Extirpated	0%
Serpentinite Extant	100%
Botanical Attributes	
Locally Rare Plant Occurrences	8
CNDDB Plant Occurrences	8
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	2

Black Diamond Mines Regional Reserve
Black Diamond Mines
Roddy Ranch Agricultural Preserve
Roddy Ranch
Chaparral Springs
Clayton Ranch Land Bank
Game Refuge 3-F
North Peak
Marsh Creek
John Marsh Home/Cowell Ranch State Historic Park
Knight Property
Mount Diablo State Park
Diablo Foothills Regional Park
Seeno Conservation Easement
Galvin
Round Valley Regional Park
Oak Hill Park
City Park
Los Vaqueros Watershed
Morgan Territory Regional Preserve

Sonoma Napa Solano Sacramento Marin Contra Costa Brentwood San Joaquin San Francisco Oakland Alameda San Mateo Santa Clara Stanislaus

East Bay Chapter
California Native Plant Society

Legend

Botanical Priority Protection Area
- Marsh Creek

Significant Substrates
- Serpentine Bedrock and Soils

Public Land and Conservation Easements
Access
- Open Access
- Restricted Access
- No Access

N W E S

1:57,600

0 2,400 4,800 Feet

Marsh Creek

Botanical Priority Protection Areas

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council.
Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Contra Costa County, California

A Sense of Place

Guest Author
Mike Park

One of the greatest attractions of the Marsh Creek BPPA is that it is significantly underbotanized as evident by the very few collections at the University and Jepson Herbaria. Marsh Creek's geomorphology creates an intriguing variety of habitats. The canyon of the upper creek is rather deep, moist, and mesic. The transitional areas and canyon walls support vegetation communities that range from open blue oak savannah to impenetrable chaparral communities. And, the ridges are either wooded or windswept rocky grasslands.

"the fragrance of black sage is delightful"

Marsh Creek offers rewarding hikes for people of all skill and fitness levels, yet the area seldom draws throngs of hikers and lends itself to quiet, thoughtful explorations. Adjacent public lands such as Morgan Territory Regional Preserve and Mount Diablo State Park can be accessed from Marsh Creek. April to May is the best time to visit. Wildflowers are peaking, and the temperatures have not yet begun to regularly reach above the mid-80s. The tranquility early in the day is the most striking feature as birds fill the air with calls and song, the air is still cool and the canyon bottoms are moist and fragrant. In chaparral, the fragrance of black sage (*Salvia mellifera*) is delightful. Midday is frequently too warm, but sunsets can often be worthwhile from the high ridges as the air cools.

Interesting plant and animal interactions have been noted here. The maintenance of open areas between chaparral and grasslands seems to be facilitated by seed-eaters such as California quail that use shrubs for cover when not foraging in adjacent open areas. These open areas are critical for annuals that do not compete well with grasses on this ecotone: the rare and endangered Mount Diablo Buckwheat historically occurred here and is an example of a plant that may be dependent on this dynamic.



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Botanical Hot Spots

Colloquially referred to as the "doughnut hole," this BPPA is comprised of privately held lands almost entirely surrounded by state and regional parks. Marsh Creek BPPA has an abundance of exemplary oak woodlands and savannahs, sage scrub, chamise chaparral, and grassland. Mount Diablo fairy lantern (*Calochortus pulchellus*), one of the noteworthy species within this BPPA, occurs on these ecotone hot spots. William Brewer collected the fairy lantern from Mount Diablo in 1862. One of the many namesakes of Mr. Brewer that also occurs in this BPPA is his dwarf flax (*Hesperolinon breweri*) which shares an affinity for the serpentine habitat found here with most beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenus*). Bands of serpentinite that descend from the southern flank of North Peak provide the unique growing grounds that are uncommon in the East Bay and support Serpentine Chaparral.

Sensitive Natural Community

Serpentine Chaparral (1)

Rare and Unique Plant Species

Mount Diablo fairy lantern — *Calochortus pulchellus* (2)

Blue-leaved spring beauty — *Claytonia exigua* ssp. *glauca*

California ash — *Fraxinus dipetala* (3)

Brewer's flax — *Hesperolinon breweri*

Most beautiful jewelflower — *Streptanthus albidus* ssp. *peramoenus* (4)

Threats, Opportunities and Constraints

In the past 15 years, more than 30,000 people have moved into the Marsh Creek watershed. Its headwaters emanate from the northern slopes of Mount Diablo and drain into the western Delta at Big Break 30 miles downstream. The lowlands of this watershed have been aggressively developed. The creek corridor, which is also home to the winding Marsh Creek Road, serves as an important conduit for plants and animals, and any buildout along the road would have negative effects on them. In the mid 1990s, Save Mount Diablo began to build awareness about the value of the Marsh Creek watershed and started advocating for land conservation. As a result, the organization has been able to acquire numerous parcels of land within this BPPA which have been sold to and managed by either California State Parks or by East Bay Regional Park District to create important landscape-scale networks of contiguous wildland. Recently, Save Mount Diablo acquired the 165-acre Viera-North Peak property near the western edge of the Marsh Creek BPPA. This property has some of the finest serpentine habitat on the mountain that includes a new population of Mount Diablo jewel flower (*Strepthanthus hispidus*). Save Mount Diablo has also directed land acquisition efforts at preserving properties that include riparian habitat along Marsh Creek itself. Luckily, with the fiscal support of the new East Contra Costa County Habitat Conservation Plan, more unique lands can be preserved as working landscapes and botanic hot spots.

Botanical Priority Protection Area	
North of Mount Diablo	
Size	6,776 Acres
Watershed Information	
Watershed Based	NO
Watersheds	Little Pine Donner
Significant Substrates	
Total Serpentinite	158 Acres
Serpentinite Extirpated	0%
Serpentinite Extant	100%
Total Sandy Soils	61 Acres
Sandy Soils Extirpated	2%
Sandy Soils Extant	98%
Botanical Attributes	
Locally Rare Plant Occurrences	6
CNDDB Plant Occurrences	7
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	0



Black Diamond Mines Regional Reserve

Greater Lime Ridge

Lime Ridge Open Space

©Iryton

Black Diamond Mines

Chaparral Springs

Clayton Ranch Land Bank

Game Refuge 3-F

Shell Ridge Recreation Area

Diablo Foothills Regional Park

Mount Diablo State Park

Wright Property

Legend

Botanical Priority Protection Area
- North of Mount Diablo

Significant Substrates
- Sandy Soils Extant
- Serpentine Bedrock and Soils

Public Land and Conservation Easements

Access
- Open Access
- Restricted Access
- No Access

East Bay Chapter
California Native Plant Society

1:43,200
0 1,800 3,600
Feet

North of Mount Diablo

Botanical Priority Protection Areas

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council. Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Clayton, Contra Costa County, California

A Sense of Place

Guest Author
Brad Olson

The lands north of Mount Diablo are dominated by rolling hills of grassland and chaparral on southfacing slopes and blue oak woodland on north facing slopes. Scattered in this topography are stock ponds, seeps and riparian drainages. The geology consists of sedimentary rocks that have been uplifted and exposed at various locations, such as above Stewartville and near Kirker Canyon. This area lacks the steep topography of Mount Diablo, but has its own gentle rural charm. Good views of the Sacramento-San Joaquin Delta and the Sierra Nevada Mountain Range can be had from the ridgelines of the area.

"gentle rural charm"

Small pockets of interesting native vegetation are strewn throughout the area. Silver bush lupine is found growing in small patches of moist grassland near the ridge tops. Black Oak-Hop Tree Woodland can be found just over the east side of these same ridges. Mountain mahogany grows in the steep cool drainages near Clayton Ranch. The diminutive blazing star grows in crevices in the south facing rock outcrops.

The Chamise Chaparral of Irish Canyon contains scattered individuals of the rare Mount Diablo Manzanita and splashes of virgin's bower. Underneath the chamise is a fragrant understory of black sage, pitcher sage, skunkweed and *Pogogyne*. Transitional areas between chaparral and blue oak woodland or grassland support a number of rare and unusual plants, including the locally-endemic Mount Diablo sunflower, Mount Diablo globe lily and serpentine bedstraw.

Native Americans inhabited this area for several hundred years, making use of the abundant acorns from the oaks, and an understory of bulbs, including soap lily and brodiaea. The area has a long history of livestock grazing. Many of the families have been ranching in the area for more than 100 years. Livestock production is becoming less viable in this area as urban encroachment forces ranching families to



EAST BAY
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Botanical Hot Spots

This area and the mountain proper are a locus of convergence for plant species from the North and South Coast Ranges. It also bridges the gap between the floristically significant Black Diamond Mines Regional Preserve and Mount Diablo proper. Hot spots of native plant diversity abound here from rich chaparral to bands of serpentinite that support serpentine bunchgrass grassland. The richness of the chaparral is demonstrated by the occurrence of two local endemics, Mount Diablo Manzanita (*Arctostaphylos auriculata*) and Contra Costa manzanita (*Arctostaphylos manzanita ssp. laevigata*). The rich chaparral predominantly occupying southern slopes provides suitable habitat for Hospital Canyon larkspur (*Delphinium californicum ssp. interius*). Although the Mount Diablo buckwheat (*Eriogonum truncatum*) was rediscovered in 2005, the last time this plant was possibly collected from within this BPPA was in 1936 by Mary Bowerman. The label information on that specimen is vague, but it's possible the collection location could have been north of Mount Diablo.

Sensitive Natural Community

Serpentine Bunchgrass Grassland (1)

Rare and Unique Plant Species

Mount Diablo manzanita — *Arctostaphylos auriculata* (2)

Contra Costa manzanita — *Arctostaphylos manzanita ssp. laevigata*

Hospital canyon larkspur — *Delphinium californicum* ssp. *interius* (3)

Diablo helianthella — *Helianthella castanea*

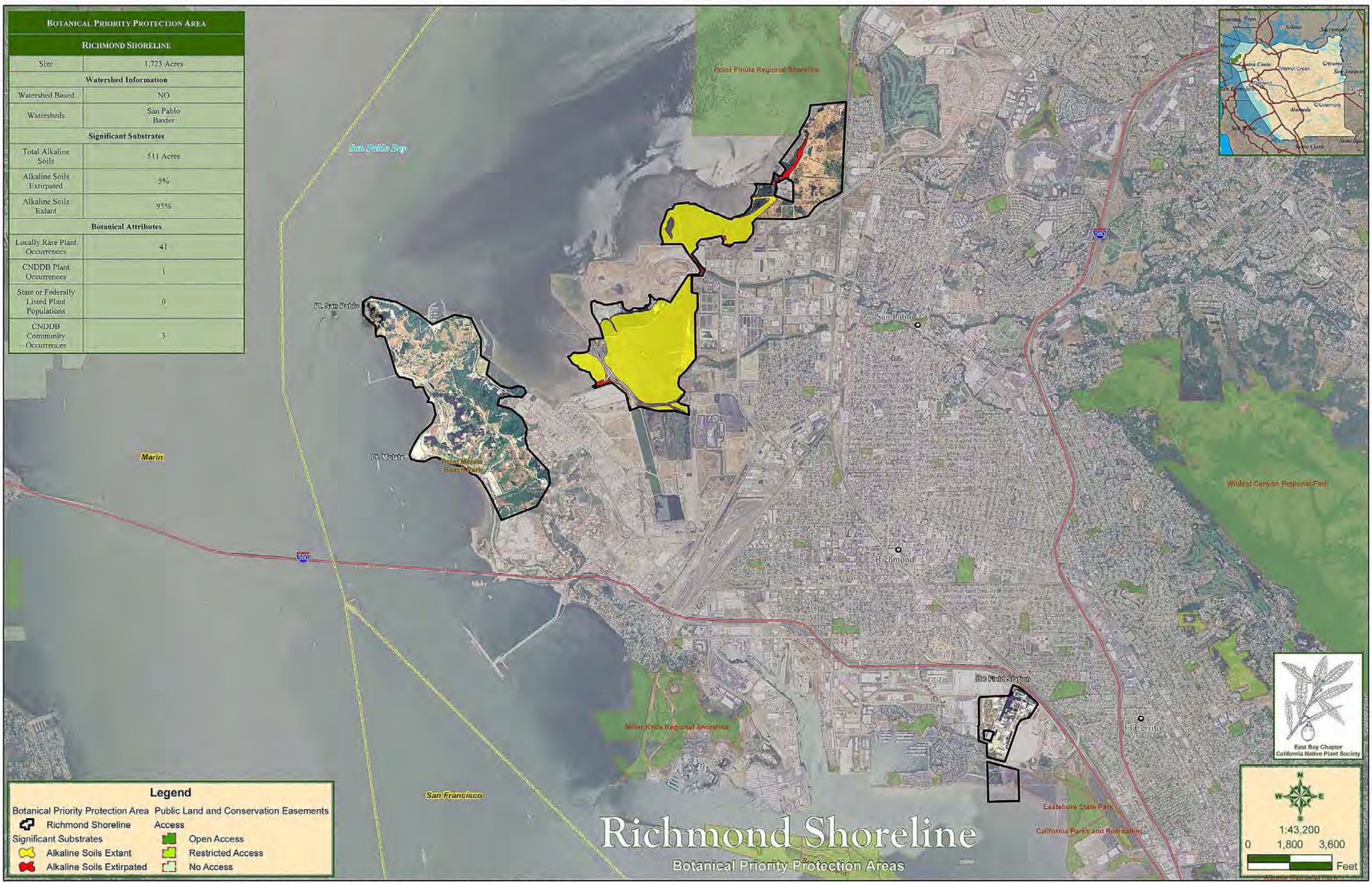
Historic Occurrence

Mount Diablo buckwheat — *Eriogonum truncatum* (1934) (4)

Threats, Opportunities and Constraints

Mount Diablo serves as the meeting point of several botanical subregions: the North Coast, Central Coast, South Coast Ranges, and the Great Valley. The mountain and its foothills have a rich history of exploration and habitation, making it a local favorite for outstanding vistas and natural and cultural history. It is a statewide botanical hot spot known for its rich serpentine, expansive chaparral, and diverse woodlands. Conservation of the mountain began with the early floristic work of Mary Bowerman. Mary was the last surviving student of Willis Linn Jepson who, in turn, was one of the patriarchs of California floristics. Through her groundbreaking flora of Mount Diablo, published in 1944, Mary shed light on the incredible diversity that Mount Diablo supports. Spending many days exploring the mountain, Mary had the foresight to realize that this great treasure would need protecting. Subsequently, she co-founded Save Mount Diablo with the dream "that the whole of Mount Diablo, including its foothills, will remain open space...that the visual and natural integrity will be sustained." Although Save Mount Diablo has preserved about 90,000 acres of land in the immediate vicinity, the northern foothills of this area are under heavy pressure to develop ranchettes and mansions. In the past few years botanical discoveries and rediscoveries have been made. Lime Ridge navarretia (*Navarretia gowenii*) was recently described, and a species once thought to be extinct, Mount Diablo buckwheat (*Eriogonum truncatum*), was re-discovered in a remote area. The rich serpentine barrens and foothills to the north of Mount Diablo may still harbor important discoveries. Luckily, with the fiscal support of the new East Contra Costa County Habitat Conservation Plan, more unique lands within a portion of this BPPA can be preserved as working landscapes and botanic hot spots.

Botanical Priority Protection Area	
Richmond Shoreline	
Size	1,723 Acres
Watershed Information	
Watershed Based	NO
Watersheds	San Pablo Baxter
Significant Substrates	
Total Alkaline Soils	511 Acres
Alkaline Soils Extirpated	5%
Alkaline Soils Extant	95%
Botanical Attributes	
Locally Rare Plant Occurrences	41
CNDDB Plant Occurrences	1
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	3



Legend

Botanical Priority Protection Area
- Richmond Shoreline

Significant Substrates
- Alkaline Soils Extant
- Alkaline Soils Extirpated

Public Land and Conservation Easements
Access
- Open Access
- Restricted Access
- No Access

Richmond Shoreline

Botanical Priority Protection Areas

East Bay Chapter
California Native Plant Society

1:43,200
0 1,800 3,600
Feet

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council. Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Richmond, Contra Costa County, California

A Sense of Place

Guest Author
David Amme

Point Molate is one of the last large relatively undeveloped tracts of shoreline habitat in the East Bay where the hills come right down to the San Francisco Bay. Driving east across the Richmond-San Rafael bridge, you get the best view from a distance of the Potrero Hills and Point Molate looming north of the bridge. I was drawn to explore the grasslands there in the 1970s. I found native red fescue growing in the remnant coastal prairie, a special ecotype that I named "Molate fescue".

"in the rain shadow of Mount Tamalpais"

Point Molate is uniquely situated in the rain shadow of Mount Tamalpais, so it gets less rain than other areas of East Bay shoreline. Geologically and botanically, the point is related to the other highlands in this part of the Bay including the islands and China Camp. Today there are some native plants that occur only in China Camp on the west side and Point Molate on the east. The views are stunning and the sunsets are spectacular. The early summer is the best time to see the grasses. The special combination of climate and topography creates some rare plant communities. There's coastal bluff where you find the live forever, *Dudleya farinosa*, coastal prairie that contains oatgrass, red fescue, purple needlegrass, California melic, Junegrass, Diego bentgrass, and a wonderful array of forbs like narrow leaf mule's ears and pipevine. These and other terrestrial communities include coastal scrub and oak woodland. In the subtidal zone there's one of the largest beds of eelgrass in the Bay, a critically important aquatic habitat.

It's disturbing to see how large the infestations of broom, eucalyptus and pampas grass have become, but for me the most depressing development is the proposal to build a huge casino. It makes no sense to turn a beautiful piece of shoreline property into something you'd find in Las Vegas. I find it hard to believe that Point Molate couldn't be preserved for its unique natural beauty, its abundant natural resources, and its value as open space.

EAST BAY
CNPS











Botanical Hot Spots

At the westernmost tip of Contra Costa County, the mild climate of the coast shapes the inhabitants of the Richmond Shoreline BPPA. The Golden Gate helps usher in this Pacific infusion by providing its temperature and precipitation regimes to this once common habitat type that skirted the bay. The hot spots of this BPPA are areas where Coastal Terrace Prairie is still intact and native bunchgrass such as California oatgrass (*Danthonia californica* var. *californica*) are co-dominant. Here other species commonly found in coastal environs make an appearance in the East Bay such as a diminutive member of the morning-glory family, California ponysfoot (*Dichondra donelliana*) and the colorful and elegant stonecrop bluff lettuce (*Dudleya farinosa*). True to its name, Pacific gumplant (*Grindelia stricta* var. *platyphylla*) can also be found occupying the windswept coastal bluffs. Although no herbarium collections exist for California mistmaiden (*Romanzoffia californica*), which is more commonly found along the North Coast, there are observation records that indicate this plant species also calls the Richmond Shoreline home. Another coastal hugging species, fragrant fritillary (*Fritillaria liliacea*), was once known from this BPPA. However, it was last collected in 1900 near Point Richmond by Joseph Prince Tracy.

Sensitive Natural Community

Coastal Terrace Prairie (1)

Rare and Unusual Plant Species

California ponysfoot — *Dichondra donnelliana* (2)

Bluff lettuce — *Dudleya farinosa* (3)

Coast gumplant — *Grindelia stricta* var. *platyphylla*(4)

California mistmaiden — *Romanzoffia californica*

Historic Occurrence

Fragrant fritillary — *Fritillaria liliacea* (1900) (5)

Threats, Opportunities and Constraints

Richmond's meandering shoreline is considered the longest of any city in the East Bay. Once the industrial stronghold for the East Bay, Richmond's shoreline factories and operations have faded, leaving behind poverty and pollution. Yet, the promise of environmental justice is still unfulfilled. Much of the shoreline is polluted or scarred, often obscuring the natural value and promise of this area. Thus shoreline development presents itself as a tool to recover prosperity in Richmond, but often at the cost of gentrifying a landscape once inhabited only by factory workers and local fishermen. A strong coalition of environmental and social justice groups are working with the City of Richmond, local labor unions, the East Bay Regional Park District, and local residents to develop a strategy that will protect the important natural resources of the area, which include remnant salt marsh, coastal bluff, and coastal prairie communities, now considered rare and unusual in the East Bay and much of California. Imminent threats to the shoreline include executive housing, another port, and the destruction of coastal prairie by the Campus Bay project at the University of California Richmond Field Station. However, the most potentially destructive project is the massive casino-hotel-ferry terminal complex proposed for Point Molate on the San Pablo Peninsula which may well be tied up in litigation for years to come. An alternative vision for Point Molate and its surroundings is outlined in the San Pablo Peninsula Open Space Study that calls for parks, open space and sustainable development of the historical portions of Point Molate. Visionary restoration and preservation of these areas might well transform a tortured landscape into a source of civic pride, ensuring that this unique stretch of shoreline will endure for generations to come.

Botanical Priority Protection Area	
Sobrante Ridge	
Size	801 Acres
Watershed Information	
Watershed Based	NO
Watersheds	San Pablo
Significant Substrates	
Not Applicable	
Botanical Attributes	
Locally Rare Plant Occurrences	0
CNDDB Plant Occurrences	1
State or Federally Listed Plant Populations	1
CNDDB Community Occurrences	0



Legend

Botanical Priority Protection Area
Sobrante Ridge

Public Land and Conservation Easements
Access
Open Access
Restricted Access
No Access

Sobrante Ridge

Botanical Priority Protection Areas

East Bay Chapter
California Native Plant Society

1:33,600
0 1,400 2,800
Feet

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council. Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Richmond, Contra Costa County, California

A Sense of Place

Guest Author
Gudrun Kleist

Although located at the northern end of the highly populated East Bay Hills and surrounded by residential subdivisions, the Sobrante Ridge BPPA is a great place to find solitude. I live within walking distance of this extraordinary example of Northern Maritime Chaparral and have visited it nearly every day for the past 22 years. To me the most appealing aspect of the ridge is the incredible views of Mount Diablo to the east, Mount Tamalpias to the west, San Pablo Bay to the north, and San Pablo Ridge to the south.

"manzanita trunks glisten burgundy"

Regionally, this BPPA is significant as it supports the northernmost population of the federally listed pallid manzanita (*Arctostaphylos pallida*) whose worldwide distribution lies here and in the Oakland hills to the south. Seasonally the best time to visit Sobrante Ridge is in December to see the pallid manzanita in bloom, especially on a morning after a rain storm, when the view from the top is breathtaking and Mount Diablo is covered in snow. Winter puts on a show of color: the manzanita trunks glisten burgundy, while those of the huge madrones reflect a warm orange hue, and the ground is covered in manzanita snow comprised of the small urn-shaped blossoms that have fallen to the ground. In full bloom these corollas attract droves of bumblebees who do their work to help these manzanitas produce the seeds of the next generation.
However, during any season Sobrante Ridge provides delightful encounters. In the spring Indian warrior (*Pedicularis densiflora*) can blanket the oak understory with its deep red color complementing the vibrant blue of the hound's tongue (*Cynoglossum grande*). Out in the scrub, the bright yellow-orange of the bush monkeyflower (*Mimulus aurantiacus*) is appealing not only to the human eye but also to the energetic hummingbirds that drink the sweet nectar. Watching the fog roll over San Pablo Ridge in the summer reminds you of how close you are to the coast as it chills you to the bone. And during the fall months even the common native plants provide you with special treats to your senses such as the scent of coyote brush (*Baccharis pilularis*) in bloom.

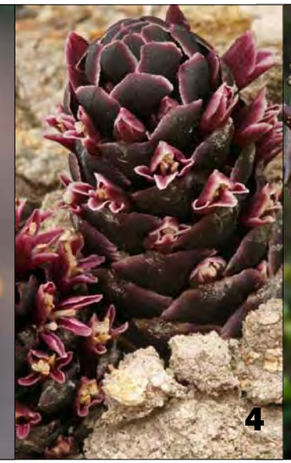


EAST BAY
CNPS











Botanical Hot Spots

Near the northern end of the Bay Hills lies the Sobrante Ridge BPPA. Here, sandstone from the Miocene provides the foundation of support for a community of plants known as Northern Maritime Chaparral. The combination of geology and plant associations equals a hot spot that is nearly unrivaled in diversity and rarity along this western corridor of relief. The most notable member of this community is the pallid manzanita (*Arctostaphylos pallida*). Sobrante Ridge is the northernmost station for this East Bay endemic. One of the earliest flowering shrubs in our chapter area, the beautifully distinctive western leatherwood (*Dirca occidentalis*), is known from nearby Wildcat Canyon. Another woody associate of this BPPA is Shreve's oak (*Quercus parvula* var. *shrevei*). Sobrante Ridge is the only place where this oak grows in the East Bay. Bent-flowered fiddleneck (*Amsinckia lunaris*) can be found on the ecotone of scrub and woodland communities. California groundcone (*Boschniakia strobilacea*), named after the Russian botanist, Boschniaki, has also been observed here. California groundcone is a root parasite that uses *Arctostaphylos* or *Arbutus* species as its host.

Sensitive Natural Community

Northern Maritime Chaparral (1)

Rare and Unique Plant Species

Pallid manzanita — *Arctostaphylos pallida* (2)

Bent-flowered fiddleneck — *Amsinckia lunaris* (3)

Boschniakia — *Boschniakia strobilacea* (4)

Western leatherwood — *Dirca occidentalis* (5)

Shreve's oak — *Quercus parvula* var. *shrevei*

Threats, Opportunities and Constraints

Sobrante Ridge is tucked away in the northwestern part of the East Bay. Its Spanish name refers to its historical designation as surplus land by the Mexican government. Now the ridge and the surrounding area are under tremendous development pressure. Located on the rural boundary of Contra Costa County and the cities of Richmond and Pinole, this 288-acre preserve could be a cornerstone of a larger reserve network of important areas of native plant communities and floral diversity. Although these priority protection areas are located primarily on steep, undevelopable lands, urbanization is affecting the local environment. Many of the rare taxa are found in the maritime chaparral ecosystem, located on the cooler northern and eastern slopes. As more land becomes developed, local temperatures can increase significantly, producing an urban heat-island effect. Exposure to warmer temperatures and the shading effects of a rapidly intruding overstory put the plants of this system at greater risk of population decline. Although prescribed fire at the urban-wildland interface carries risks to public health and safety, many of the plants, including the pallid manzanita, require fire to germinate their seeds and maintain open exposure to sunlight. Additionally, a new *Phytophthera* pathogen (related to sudden oak death) has been found to infect and kill the pallid manzanita. In the past, well intentioned efforts have had detrimental effects on the vegetation. About ten years ago, grazing was introduced into this area and the goats managed to consume the only known patch of naked-stem buckwheat (*Eriogonum nudum* var. *auriculatum*), which has not reappeared since. In its place, yellow star thistle has exploded onto the ridge. This small but important patch of maritime chaparral serves as a critical repository for many endemic and unusual plants, but unless the site is actively managed, including preventing the alteration of the local climate by too much development, its botanic value may soon disappear.

Botanical Priority Protection Area	
Foothills of South Oakland	
Size	1,440 Acres
Watershed Information	
Watershed Based	NO
Watersheds	Country Club Branch San Leandro Creek
Significant Substrates	
Not Applicable	
Botanical Attributes	
Locally Rare Plant Occurrences	7
CNDDB Plant Occurrences	4
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	1

Redwood Regional Park

Leona Heights Regional Open Space

EBMUD

Oakland

Knight Estate

Anthony Chabot Regional Park

Dunsmuir Estate Park

MLK Regional Shoreline

Legend

Botanical Priority Protection Area
Foothills of South Oakland

Public Land and Conservation Easements
Access
- Open Access
- Restricted Access
- No Access

Foothills of South Oakland

Botanical Priority Protection Areas

East Bay Chapter
California Native Plant Society

1:36,000
0 1,500 3,000
Feet

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council.
Water body and waterway data furnished by Contra Costa information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Oakland, Alameda County, California

A Sense of Place

Guest Author
Mike Preston

These hills are dominated by an extensive and beautiful oak woodland, of fairly low stature but probably great age, considering the many ring-clones, some up to a dozen trunks, evidence of past fire cycles. The woodland is a prominent and pleasant feature as seen from eastbound 580 near the confluence with highway 13: the Leona Greenbelt. It is punctuated with pockets of chaparral constiuents (*Adenostoma fascicularis* and *Arctostaphylos tomentosa*) and grassland on the the steep southern exposures, and some fine patches of softer coastal scrub and grassland on more mesic western slopes.

What I most love about my explorations here is the feeling of wildness, in a place bracketed by two freeways and a ridgeline full of houses. It's hardly pristine; there is evidence of past mining activity throughout, and a sewer right-of-way cuts down from the housing towards Mountain Boulevard, attended by acacia, pampas grass, broom and other camp-followers.

"wildness, in a place bracketed by two freeways"

But there are many, many special spots that almost are pristine. It sports a glorious slope of *Festuca californica* that is not far from the biggest patch of *Trillium choropetalum* I've ever seen in the East Bay. There is a goodly patch of *Silene californica,* dazzling in the scrub near an oak-covered knob worthy of any druid. A steep canyon face I-580 with native snapdragon, most-beautiful jewelflower, Venus thistle, California melic, mules ears, and many other grassland species. Much of the place is rugged like this, and it's easy to feel thoroughly alone, especially since most of it is accessible only on deer trails. And it is changeable: probably as a function of its highly dissected terrain and its fire and mining history, there are many transitions between closed and open vegetation of various types and mixtures. An intriguing place.



EAST BAY
CNPS











Botanical Hot Spots

These hills overlooking the San Francisco and Oakland skylines support a profusion of native bunchgrasses. Knowland Park is a hot spot for the native Valley Needlegrass Grassland, which is dominated by the official state grass of California, purple needlegrass (*Nassella pulchra*). In these hills small unmapped lenses of serpentinite that support chaparral and open woodlands provide the preferred habitat for Oakland star tulip (*Calochortus umbellatus*). It is only within this BPPA that two sedge species which are locally uncommon--many ribbed sedge (*Carex multicostata*) and Dudley's sedge (*Carex dudleyi)* make an appearance in dry and mesic grasslands. A seldom seen plant species in the East Bay that prefers a variety of habitats including seeps, dry streambeds, scrub, or woodland habitats throughout the California Floristic Province is grayleaf skullcap (*Scutellaria siphocampyloides*). This species has been recorded from Hayward, possibly occurring within the boundaries of the South Oakland BPPA. Somewhere in the Leona Hills in 1891 Katherine Brandegee collected knotweed spineflower (*Chorizanthe polygonoides* var. *polygonoides*), one of the few spineflowers known from our chapter area.

Sensitive Natural Community

Valley Needlegrass Grassland (1)

Rare and Unique Plant Species

Oakland star tulip — *Calochortus umbellatus* (2)

Dudley's sedge —*Carex dudleyi*

Many ribbed sedge —*Carex multicostata* (3)

Gray-leaved skullcap —*Scutellaria siphocampyloides* (4)

Historic Occurrence

Knotweed spineflower —*Chorizanthe polygonoides* ssp. *polygonoides* (1891) (5)

Threats, Opportunities and Constraints

The hills of Oakland overlook an expansive urban area that provides habitat for a population of nearly 750,000 people. The ridgeline serves as a remnant of a once vibrant natural landscape, much of which has been preserved by the East Bay Regional Park District and local cities. Despite considerable development, there are still surprisingly intact yet unprotected viable natural areas that continue to thrive. With active city parks departments and the regional park district and with recent funding from the passage of Measure WW, there are opportunities to raise awareness about these areas and to preserve and manage them before they fall prey to developers interested in building low density suburban housing. These lands are potential open spaces and parks that retain value for people seeking recreational opportunities near the cities where they live. They also provide habitat for native plants and wildlife. In addition to development, a second major threat is fire at the urban-wildland interface. Many parks have become hotbeds of weed invasion, and numerous unmanaged non-native eucalyptus and pine plantations have created a build-up of dangerous fuels that, in combination with the incursion of homes pressing into wildland areas, creates an increased risk of catastrophic fire. With this BPPA we hope to connect some of the fragments of native landscape to the existing matrix of parks on the urban fringe. We also are encouraging the wise management of vegetation at the interface to promote healthy native plant communities and combat the invasion of weeds.

Botanical Priority Protection Area	
Springtown	
Size	23,593 Acres
Watershed Information	
Watershed Based	YES
Watersheds	Cayetano Brushy Peak Altamont
Significant Substrates	
Total Alkaline Soils	2,313 Acres
Alkaline Soils Extirpated	28%
Alkaline Soils Extant	72%
Botanical Attributes	
Locally Rare Plant Occurrences	29
CNDDB Plant Occurrences	24
State or Federally Listed Plant Populations	9
CNDDB Community Occurrences	1



Vasco Caves

Vasco Caves Land Bank

Los Vaqueros Watershed

Bethany Reservoir

Los Vaqueros Reservoir

Brushy Peak

Brushy Peak Regional Preserve

Livermore Monitoring Station

Springtown Wetlands Preserve

Springtown Preserve

Caravanda Wetlands Preserve

580

Livermore

Legend

Botanical Priority Protection Area
- Springtown

Significant Substrates
- Alkaline Soils Extant
- Alkaline Soils Extirpated

Public Land and Conservation Easements
Access
- Open Access
- Restricted Access
- No Access

East Bay Chapter
California Native Plant Society

1:57,600
0 2,400 4,800
Feet

Springtown

Botanical Priority Protection Areas

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council.
Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North.

Livermore, Alameda County, California

A Sense of Place

Guest Author
Mary Ann Showers

The Springtown Alkali Sink is unique both in setting and in its assemblage of plants. Although it shares similar characteristics with other alkali sinks found in the northern part of the Central, as well as the San Joaquin Valley, it's disjunct from them. The most genetically diverse population of the endangered palmate-bracted bird's-beak is found at Springtown, which also supports a number of special status animal species.

There are many appealing aspects to Springtown. Four major types of vegetation are found at there: vernal pools and swales, alkali grassland, annual grassland, and Iodine Bush Scrub. Vernal pools and swales occur in low areas between mounds of iodine bush and in the grasslands. In early spring, the yellow blooms of stickyseed and goldfields provide a vivid display along with other native grassland wildflowers including blankets of rose and pink checkerbloom, sky blue lupine, fiddleneck, and clover. Late flowering annual plants include spikeweed, so named for its spiny stems, and the gray-leaved alkali weed.

"resinous scent of yellow tarplants in flower"

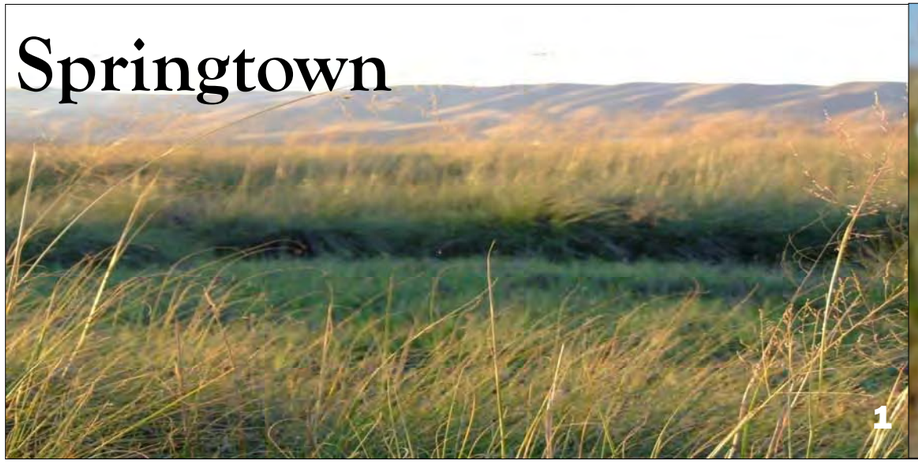
Drought tolerant flowering plants come into prominence with the onset of summer. The resinous scent of yellow tarplants in flower hangs heavy in the air. Springtown supports the unique late-flowering Livermore tarplant. Palmate-bracted bird's beak is in full bloom with pinkish-purple flowers and glistening wet flower stalks. Hispid bird's beak, which has small white flowers set in a bristly flower stem, is also in bloom.

There have been many changes that have threatened the complex ecology of Springtown including grading, off-road vehicle and bicycle use and illegal dumping. Increased development has changed the hydrology of the sink, especially with the deepening and concrete lining of Altamont Creek. Overland flows of water have been decreased, altering the vegetation.

Springtown is an important site to protect and restore. In addition to its open space values, the botanical resources are unique and it provides habitat for many species of wildlife in an increasingly developed region.



EAST BAY CNPS









Botanical Hot Spots

While the entire Springtown area supports a unique diversity of local endemics, natural communities, and state and federally listed rare plants, the hot spot of botanical diversity in this BPPA is within and around the City of Livermore's Springtown Wetlands Preserve. This area is bound by the Springtown subdivision to the south, Raymond Road to the north, Lorraine Road to the west, and Ames Road to the east. The population of palmate-bracted bird's beak found at the Wetlands Preserve is the western-most occurrence of this taxon. Equally as important, one of the few Livermore tarplant occurrences is located in an isolated lot along Greenville Road, which is in desperate need of conservation. Also, Hoover's downingia was last collected by Rimo Bacigalupi in this area in 1957. It hasn't been seen since.

Sensitive Natural Community

Alkali Sacaton Grassland (1)

Rare and Unique Plant Species

Heartscale - *Atriplex cordulata* (2)

Hispid bird's beak - *Cordylanthus mollis* ssp. *hispidus*

Palmate-bracted bird's beak - *Cordylanthus palmatus* (3)

Livermore tarplant - *Deinandra bacigalupi*

Historic Occurrence

Hoover's downingia - *Downingia bella* (1957) (4)

Threats, Opportunities and Constraints

The Springtown alkali sink ecosystem occupies lands immediately north of Livermore's "Springtown" subdivision. Sadly, since 1962 Springtown has been disced, used as a city dump, used for placement of fill, and for residential development. Its main tributary, Altamont Creek, has also been realigned and widened for flood control purposes. Development proposals for vineyards and orchards regularly press upon the boundaries of Springtown's core alkali area, as well as up watershed from the Sink proper. As the Livermore Valley continues to grow, the protection of this resource and its surrounding hills will become more difficult as development activity closes in on the populations of rare plants and threatens the sink's supporting hydrology. Additional threats to this area include invasive weeds, especially grasses, that have invaded the sink in areas where the hydrology was modified. These annual grasses, which desiccate in the early summer, now fill in the open spaces between the iodine bush individuals. The carpet of grasses make the fuels more continuous throughout the site, thus this area is more fire prone.

Although a management plan has been written by qualified biologists, it has not been implemented. A group of local citizens concerned about the health of this area has recently formed an organization called Friends of Springtown Preserve. The mission of the organization is to create a greater awareness about this invaluable resource and aid in efforts to conserve it. Recent efforts to create a regional conservation strategy (the Eastern Alameda County Conservation Strategy) are underway which may hopefully help increase regional involvement in preserving this important area.

Botanical Priority Protection Area	
Warm Springs	
Size	2,605 Acres
Watershed Information	
Watershed Based	NO
Watersheds	Newark Slough
Significant Substrates	
Not Applicable	
Botanical Attributes	
Locally Rare Plant Occurrences	0
CNDDB Plant Occurrences	9
State or Federally Listed Plant Populations	0
CNDDB Community Occurrences	1

Fremont

Fremont Central Park

Newark

880

Mission Peak Regional Preserve

Rancho Higuera Park

San Francisco Bay

Don Edwards National Wildlife Refuge

Santa Clara

Legend

Botanical Priority Protection Area
- Warm Springs

Public Land and Conservation Easements

Access
- Open Access
- Restricted Access
- No Access

Warm Springs

Botanical Priority Protection Areas

East Bay Chapter
California Native Plant Society

N
W E
S

1:43,200

0 1,800 3,600

Feet

Soil information created from the Natural Resouce Conservation Service SSURGO data and the State of California's Farmland Mapping and Monitoring Program. Public land and easement data provided by the Bay Area Open Space Council.
Water body and waterway data furnished by Contra Costa Information Technology Department and the U.S. Geologic Survey. Road and place name data provided by ESRI. Projection: NAD 1983 UTM 10 North

Fremont, Alameda County, California

A Sense of Place

Guest Author
Peter Baye

Warm Springs is the last remnant of alkali grasslands bordering South San Francisco Bay. This bayside habitat represents a taste of our South Bay alluvial grassland legacy, a once dominant landscape feature of the San Francisco Estuary, where wet grasslands intergraded with estuarine brackish or saline marshes. Although currently severed from the Bay by dikes and railways, Warm Springs has retained or regenerated much of its bay-edge seasonal wetland legacy: vernal marshes and pools, creeping wildrye and sedge meadows, intergrading with salt marsh vegetation.

"a once dominant landscape feature"

The Warm Springs grassland remnants are far from pristine. In fact, even the extant grasslands are a mosaic of "unmodified" areas and other fields that are regenerated from a long history of agricultural land use. Additionally, the grasslands are highly modified by naturalized and invasive species, soil and drainage modifications, but they still support very significant and persistent populations of vernal pool/salt marsh and alkali grassland species that are now either uncommon or rare in San Francisco Baylands: Contra Costa goldfields (*Lasthenia conjugens*), downingia (*Downingia pulchella*), large meadows dominated by creeping wildrye (*Leymus triticoides*), spikerush marsh swales (*Eleocharis macrostachya*), seepweed (*Suaeda moquinii*), water-clover fern (*Marsilea vestita)*, and shrubby pickleweed (*Arthrocnemum subterminale*).

Warm Springs has little or no public access, but the spring wildflower blooms in alkali-subsaline vernal pools are quite spectacular. These blooms have historic importance as well: they convey a sense of place that can otherwise be grasped only through historic documentation. Even as this piece is written, additional proposals are being made that will impact these habitats. The ongoing fragmentation, incursions of development and compensatory mitigation, degradation due to nutrient accumulation and invasive plants, and constraints of infrastructure impede proper management and restoration of the greater ecosystem.

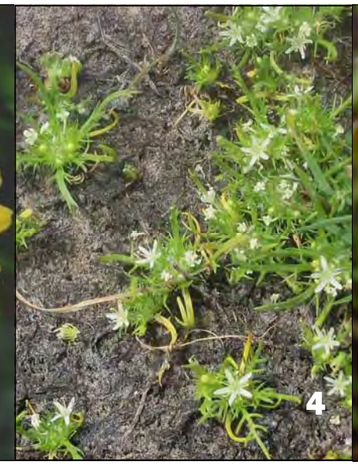


EAST BAY
CNPS











Botanical Hot Spots

The vernal pools of Warm Springs are the definitive hotspot for this area. One of these species is an annual milk-vetch (*Astragalus tener* var. *tener*), which is more commonly found in the Great Valley, is at one of two of its westernmost stations here. An uncommon member of the Carrot Family, Hoover's button-celery (*Eryngium aristulatum* var. *hooveri*), a near vernal pool obligate, makes its northernmost appearance here. Contra Costa goldfields (*Lasthenia conjugens*), one of California's most rare plant species, have also been recorded from this vicinity. Another associate of the vernal pools is prostrate navarretia (*Navarretia prostrata*). A member of the phlox family, it was recorded as an associate of Contra Costa goldfields within this BPPA and is known only from one other station in the East Bay. David Keck last collected smooth tidy tips (*Layia chrysanthemoides*) from this portion of our chapter in 1933.

Sensitive Natural Community

Northern Claypan Vernal Pool (1)

Rare and Unique Plant Species

Alkali milk-vetch - *Astragalus tener* var. *tener* (2)

Hoover's eryngium - *Eryngium artistulatum* var. *hooveri*

Contra Costa goldfields - *Lasthenia conjugens* (3)

Prostrate navarretia - *Navarretia prostrate* (4)

Historic Occurrence

Smooth tidytips - *Layia chrysanthemoides* (1931)(5)

Threats, Opportunities and Constraints

Warm Springs represents some of the last relatively intact areas of bayside flatlands that transition to tidal ecosystems in the East Bay. Surrounded by industrially abused lands of Newark and Fremont, this BPPA still supports Northern Claypan Vernal Pools that were formerly abundant in this transition zone prior to European settlement. The perched water tables, soils with elevated pH, and vernal hydrology of these pools invite species characteristic of this habitat. Warm Springs is a small but important site situated within the US Fish and Wildlife Service Don Edwards National Wildlife Refuge near Fremont in one of the largest tracts of contiguous salt marsh in the Bay Area. The expanse of bay shoreline stretching from Richmond to San Jose is afforded to various levels of protection by federal, state, and local agencies. Regulation and management by multiple agencies presents a challenge in working together effectively to achieve consensus, but also offers exciting opportunities for partnerships. The US Fish and Wildlife Service is preparing a Bay Area Salt Ponds Restoration Plan which will help provide a regional context to protecting local sites supporting sensitive botanical resources. Once a prominent stronghold of industry in the East Bay, these wetlands are now being reconstructed into natural habitat. Many of these transfers from industry to protected lands come at a cost. Tradeoffs usually allow some degree of encroachment upon these remnant wetlands through development such as residential subdivisions, commercial areas, and ballparks. A network of environmental groups and agencies has come together to help preserve the best of the remaining bay shoreline, with particular emphasis on retaining important habitat for migrating birds. Given that Warm Springs includes a significant and potentially imperiled botanical hot spot, we hope that its protection will also be secured.

About the Contributors and Authors

David Amme is the Wildlands Vegetation Program Manager for the East Bay Regional Park District. David has a MS degree in Range Management from U.C. Berkeley. He is a long time member of the California Native Plant Society (CNPS) and collector of many native plant cultivars. David is one of the founding members of the California Native Grass Association (CNGA), the California chapter of the Society for Ecological Restoration (SERCAL), and the California Invasive Plant Council (Cal-IPC).

Laura Baker is in her fifth year as chair of the Conservation committee of the East Bay Chapter of CNPS. After completing her MA in Biology at SFSU in 1976, she worked with Friends of the Earth to defeat a proposed petrochemical plant downstream from Suisun marsh in Solano County. He experience there sparked a decades-long interest in volunteering with a variety of organizations to protect and preserve the East Bay's remaining natural resources.

Bruce Baldwin is Curator of the Jepson Herbarium and Professor of Integrative Biology at UC Berkeley, where he oversees the Jepson Flora Project and studies evolutionary diversification of California plants. Revision of The Jepson Manual has been one of his major priorities in recent years.

Heath Bartosh is acting chair of the Rare Plant Committee of East Bay CNPS and on the State Rare Plant Program Committee. He ensures these programs continue to develop current, accurate information on the distribution, ecology and conservation status of California's rare and endangered plants. He helps to promote the use of this information to influence plant conservation. He is Founding Principal and Senior Botanist at Nomad Ecology.

Peter Baye, Ph.D., is a coastal plant ecologist with 30 years professional experience in conservation and management of coastal vegetation. He currently works as an independent applied ecologist providing technical support for coastal vegetation and habitat restoration projects, endangered species recovery projects in the California coast region.

Stephen W. Edwards, Ph.D., has been director of the Regional Parks Botanic Garden of the East Bay Regional Park District since 1983. His interests include field botany, earth sciences, horticulture, and conservation.

John Game is associated with the UC and Jepson herbaria and is on the Board of Directors of Calflora. He was actively involved with CNPS for many years and is a noted plant photographer.

David Gowen is a self-trained botanist who has recently discovered a new species of *Navarretia* in the East Bay. He volunteers at the Jepson Herbarium regularly.

Gudrun Kleist is a native of Germany but has lived in the East Bay for many years where she has been transforming my back yard in El Sobrante into a Native plant garden and wildlife habitat. She gets her inspiration from many hikes at Sobrante Ridge and our other beautiful East Bay Parks.

Dianne Lake is the Rare and Unusual Plant Committee Chair and East Bay CNPS board member of many years. Dianne published the "Locally Rare and Unusual Plants Guide to the East Bay", a publication that is heavily cited in the region.

Erin McDermott is a Principal, Botanist, Arborist, and Wetland Specialist with Nomad Ecology. Erin serves as Chairperson of the Vegetation Committee of the East Bay Chapter of CNPS and is on the Vegetation Committee at the state level of CNPS.

Lech Naumovich promotes community-driven conservation efforts in the East Bay. By leading tours, meeting with stakeholders, and providing technical comments, Lech communicates important information onto decision-makers. He also works as an independent botanical and conservation consultant. Lech is a Founding Director of Golden Hour Restoration Institute.

Brad Olson is Environmental Programs Manager at the East Bay Regional Park District. He has developed and managed ecological restoration projects for the past twenty years. Brad served for ten years as Rare Plant Chair for the East Bay Chapter of the California Native Plant Society and he has contributed to numerous botanical publications and conducted studies of the East Bay flora for more than twenty years.

Mike Park is a graduate student at the University of California at Berkeley. His research focuses on the phylogeography and evolution of *Eryngium* and the floristics of Western North America.

Mike Preston is a retired horticulturalist/landscaper who got hooked on native plants through the many classes and workshops on their garden uses offered around the Bay Area. That gave increasing focus to his regular hikes in the wild areas over the years, motivating him to become a decent amateur botanist. He is still wandering the hills.

Mary Ann Showers serves as the lead botanist in the California Department of Fish and Game Rare Plant Program. In this role, Mary Ann works with botanists statewide to conserve listed plant species. Mary Ann has had a long interest in the conservation of palmate-bracted bird's-beak which occurs at Springtown Alkali Sink and several other locations in the Central Valley.

Christopher Thayer is a California botanist and naturalist based in the East Bay, where he has lived and explored for nearly half a century. He has a special interest in the unique ecological niches provided by isolated or unusual vegetation communities, in frequent association with locally noteworthy geological features.
He works independently as a biological consultant, with an emphasis on field studies of rare plants, animals, wetlands, and other habitats.

Mike Wood is co-chair of the rare plant committee of the Yerba Buena Chapter (San Francisco) of CNPS and is currently developing the chapter's significant plant species list. He writes the regular feature "Focus on Rarities" for the chapter newsletter. He has worked as a professional botanist and vegetation ecologist in the Bay Area for over 20 years.

Elizabeth H. Zacharias, Ph.D., is the Vascular Plant Research and Curatorial Associate at the Harvard University Herbaria. She studies evolution and systematics with a particular focus on the California flora, plants in alkaline areas, and conservation.

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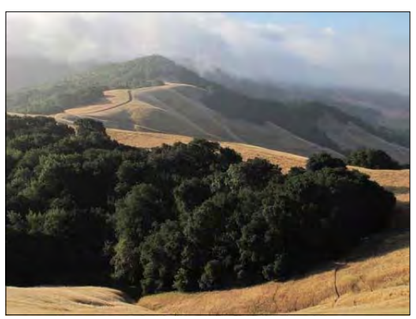

EAST BAY
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Photography Credits

Aaron Schusteff - - *California macrophylum, Delphinium recurvatum, Trifolium depauperatum* var. *hydrophilum, Fraxinus dipetala*

A"Don"is Tate - *Atriplex serenana* var. *serenana*

Beatrice Howitt - *Caulanthus coulteri* var. *lemmonii*

Christopher Christie - *Delphinium hansenii, Downingia bella*

Carol Witham - *Microseris campestris, Navarretia leucocephala* var. *leucocephala, Triphysaria versicolor* var. *faucibarbata, Astragalus tener* var. *tener, Layia chrysanthemoides*

Doreen L. Smith - *Dichondra donnelliana, Amsinckia lunaris*

David Tharp - *Madia radiata*

George Hartwell - *Delphinium graciolentum, Atriplex cordulata*

Heath Bartosh – Credits page photo – Mt. Diablo

Ivette Loretto - *Navarretia prostrata*

John Game – All page 1 photos, *Calochortus invenustrus, Fritilaria falcata, Navarretia nigelliformis* ssp. *nigelliformis, Fritillaria liliacea*

Laura Eliassen - *Tropidocarpum capparideum, Pentachaeta exilis* ssp. *exilis*

Lara Hartley - *Camissonia boothii* ssp. *decorticans*

Lech Naumovich – All page 2 photos, Valley Sink Scrub, Akali Meadow, *Fritillaria agrestis,* Desert Olive Scrub, *Cirsium fontinale* var. *campylon,* Northern Coastal Salt Marsh, Stabilized Interior Dunes, *Oenothera deltoides* ssp. *howelli,* Northern Claypan Vernal Pool, *Centromadia parryii* ssp. *congdonii,* Wildflower Field, *Streptanthus albidus* ssp. *peramoenus,* Serpentine Bunchgrass Grassland, Coastal Terrace Prairie, Northern Maritime Chaparral, *Arctostaphylos pallida,* Valley Needlegrass Grassland, Alkali Sacaton Grassland, *Cordylanthus palmatus,* Northern Claypan Vernal Pool (2)

Margaret Ely - *Aster lentus*

Mark Fogiel - *Lathyrus jepsonii* var. *jepsonii*

Marguerite Gregory - *Dudleya farinosa*

Neal Kramer - *Grindelia stricta* var. *platyphylla, Dirca occidentalis, Calochortus umbellatus*

Rob Preston - *Atriplex depressa, Blepharizonia plumosa, Cordylanthus mollis* ssp. *mollis*

Steve Edwards – Northern Interior Cypress Forest

Scott Hein - *Calochortus pulchellus, Delphinium californicum* ssp. *interius, Eriogonum truncatum*

Steve Matson - *Malacothrix coulteri, Nitrophilia occidentalis, Phacelia douglasii, Arctostaphylos auriculata, Boschniakia strobilacea, Carex multicostata*

Toni Corelli – Serpentine Chaparral

Yulan Tong - *Streptanthus breweri*

Appendix 5.4-2 California Department of Fish and Wildlife: RareFind Report, Contra Costa County

Appendices

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CALIFORNIA DEPARTMENT OF FISH and WILDLIFE **RareFind**

Query Summary:
County IS (Contra Costa)

Print Close

CNDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Accipiter cooperii	Cooper's hawk	Birds	ABNKC12040	118	2	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Cismontane woodland, Riparian forest, Riparian woodland, Upper montane coniferous forest
Acipenser medirostris pop. 1	green sturgeon - southern DPS	Fish	AFCAA01031	14	2	Threatened	None	G2T1	S1	null	AFS_VU-Vulnerable, IUCN_EN-Endangered	Aquatic, Estuary, Marine bay, Sacramento/San Joaquin flowing waters
Agelaius tricolor	tricolored blackbird	Birds	ABPBXB0020	955	11	None	Threatened	G1G2	S1S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Marsh & swamp, Swamp, Wetland
Alkali Meadow	Alkali Meadow	Herbaceous	CTT45310CA	8	6	None	None	G3	S2.1	null	null	Meadow & seep, Wetland
Alkali Seep	Alkali Seep	Herbaceous	CTT45320CA	10	1	None	None	G3	S2.1	null	null	Meadow & seep, Wetland
Ambystoma californiense pop. 1	California tiger salamander - central California DPS	Amphibians	AAAAA01181	1271	216	Threatened	Threatened	G2G3T3	S3	null	CDFW_WL-Watch List, IUCN_VU-Vulnerable	Cismontane woodland, Meadow & seep, Riparian woodland, Valley & foothill grassland, Vernal pool, Wetland
Amsinckia grandiflora	large-flowered fiddleneck	Dicots	PDBOR01050	9	4	Endangered	Endangered	G1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Cismontane woodland, Valley & foothill grassland
Amsinckia lunaris	bent-flowered fiddleneck	Dicots	PDBOR01070	93	25	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_UCBG-UC Botanical Garden at Berkeley, SB_UCSC-UC Santa Cruz	Cismontane woodland, Coastal bluff scrub, Valley & foothill grassland
Andrena blennospermatis	Blennosperma vernal pool andrenid bee	Insects	IIHYM35030	15	1	None	None	G2	S1	null	null	Vernal pool
Anniella pulchra	Northern California legless lizard	Reptiles	ARACC01020	383	8	None	None	G3	S2S3	null	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Chaparral, Coastal dunes, Coastal scrub
Anomobryum julaceum	slender silver moss	Bryophytes	NBMUS80010	13	1	None	None	G5?	S2	4.2	null	Broadleaved upland forest, Lower montane coniferous forest, North coast coniferous forest
Anthicus antiochensis	Antioch Dunes anthicid beetle	Insects	IICOL49020	6	1	None	None	G3	S3	null	null	Interior dunes
Antrozous pallidus	pallid bat	Mammals	AMACC10010	420	12	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-	Chaparral, Coastal scrub, Desert wash, Great Basin grassland, Great

											Least Concern, USFS_S-Sensitive	Basin scrub, Mojavean desert scrub, Riparian woodland, Sonoran desert scrub, Upper montane coniferous forest, Valley & foothill grassland
Apodemia mormo langei	Lange's metalmark butterfly	Insects	IILEPH7012	1	1	Endangered	None	G5T1	S1	null	null	Interior dunes
Aquila chrysaetos	golden eagle	Birds	ABNKC22010	325	16	None	None	G5	S3	null	BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, CDFW_WL-Watch List, IUCN_LC-Least Concern	Broadleaved upland forest, Cismontane woodland, Coastal prairie, Great Basin grassland, Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands, Upper montane coniferous forest, Valley & foothill grassland
Archoplites interruptus	Sacramento perch	Fish	AFCQB07010	5	3	None	None	G1	S1	null	AFS_TH-Threatened, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered	Aquatic, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters
Arctostaphylos auriculata	Mt. Diablo manzanita	Dicots	PDERI04040	17	17	None	None	G2	S2	1B.3	SB_UCSC-UC Santa Cruz	Chaparral, Cismontane woodland
Arctostaphylos manzanita ssp. laevigata	Contra Costa manzanita	Dicots	PDERI04273	10	10	None	None	G5T2	S2	1B.2	SB_UCSC-UC Santa Cruz	Chaparral
Arctostaphylos pallida	pallid manzanita	Dicots	PDERI04110	9	6	Threatened	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Chaparral, Cismontane woodland, Closed-cone coniferous forest, Coastal scrub
Arizona elegans occidentalis	California glossy snake	Reptiles	ARADB01017	260	1	None	None	G5T2	S2	null	CDFW_SSC-Species of Special Concern	null
Asio flammeus	short-eared owl	Birds	ABNSB13040	11	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Great Basin grassland, Marsh & swamp, Meadow & seep, Valley & foothill grassland, Wetland
Astragalus tener var. tener	alkali milk-vetch	Dicots	PDFAB0F8R1	65	4	None	None	G2T1	S1	1B.2	SB_UCSC-UC Santa Cruz	Alkali playa, Valley & foothill grassland, Vernal pool, Wetland
Athene cunicularia	burrowing owl	Birds	ABNSB10010	2011	110	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland
Atriplex cordulata var. cordulata	heartscale	Dicots	PDCHE040B0	66	1	None	None	G3T2	S2	1B.2	BLM_S-Sensitive	Chenopod scrub, Meadow & seep, Valley & foothill grassland
Atriplex depressa	brittlescale	Dicots	PDCHE042L0	60	11	None	None	G2	S2	1B.2	null	Alkali playa, Chenopod scrub, Meadow & seep, Valley &

												foothill grassland, Vernal pool, Wetland
Blepharizonia plumosa	big tarplant	Dicots	PDAST1C011	53	28	None	None	G1G2	S1S2	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Valley & foothill grassland
Bombus caliginosus	obscure bumble bee	Insects	IIHYM24380	181	8	None	None	G2G3	S1S2	null	IUCN_VU-Vulnerable	null
Bombus crotchii	Crotch bumble bee	Insects	IIHYM24480	437	2	None	Candidate Endangered	G2	S2	null	IUCN_EN-Endangered	null
Bombus occidentalis	western bumble bee	Insects	IIHYM24252	306	20	None	Candidate Endangered	G3	S1	null	IUCN_VU-Vulnerable, USFS_S-Sensitive	null
Branchinecta longiantenna	longhorn fairy shrimp	Crustaceans	ICBRA03020	23	2	Endangered	None	G1	S2	null	IUCN_EN-Endangered	Valley & foothill grassland, Vernal pool, Wetland
Branchinecta lynchi	vernal pool fairy shrimp	Crustaceans	ICBRA03030	796	19	Threatened	None	G3	S3	null	IUCN_VU-Vulnerable	Valley & foothill grassland, Vernal pool, Wetland
Branchinecta mesovallensis	midvalley fairy shrimp	Crustaceans	ICBRA03150	144	3	None	None	G2	S2S3	null	null	Vernal pool, Wetland
Branta hutchinsii leucopareia	cackling (=Aleutian Canada) goose	Birds	ABNJB05035	19	1	Delisted	None	G5T3	S3	null	CDFW_WL-Watch List	Artificial standing waters, Sacramento/San Joaquin standing waters, Valley & foothill grassland
Buteo regalis	ferruginous hawk	Birds	ABNKC19120	107	2	None	None	G4	S3S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Great Basin grassland, Great Basin scrub, Pinon & juniper woodlands, Valley & foothill grassland
Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2561	41	None	Threatened	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland
Calochortus pulchellus	Mt. Diablo fairy-lantern	Monocots	PMLIL0D160	52	50	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Riparian woodland, Valley & foothill grassland
Calystegia purpurata ssp. saxicola	coastal bluff morning-glory	Dicots	PDCON040D2	42	1	None	None	G4T2T3	S2S3	1B.2	BLM_S-Sensitive, SB_UCSC-UC Santa Cruz	Coastal bluff scrub, Coastal dunes, Coastal scrub, North coast coniferous forest
Campanula exigua	chaparral harebell	Dicots	PDCAM020A0	50	5	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Ultramafic
Carex comosa	bristly sedge	Monocots	PMCYP032Y0	31	1	None	None	G5	S2	2B.1	IUCN_LC-Least Concern	Coastal prairie, Freshwater marsh, Marsh & swamp, Valley & foothill grassland, Wetland
Centromadia parryi ssp. congdonii	Congdon's tarplant	Dicots	PDAST4R0P1	96	22	None	None	G3T2	S2	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Valley & foothill grassland
Chloropyron molle ssp. molle	soft salty bird's-beak	Dicots	PDSCR0J0D2	27	6	Endangered	Rare	G2T1	S1	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Marsh & swamp, Salt marsh, Wetland
Cicuta maculata var. bolanderi	Bolander's water-hemlock	Dicots	PDAPI0M051	17	4	None	None	G5T4T5	S2?	2B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Marsh & swamp, Salt marsh, Wetland

Circus hudsonius	northern harrier	Birds	ABNKC11011	54	2	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal scrub, Great Basin grassland, Marsh & swamp, Riparian scrub, Valley & foothill grassland, Wetland
Cirsium andrewsii	Franciscan thistle	Dicots	PDAST2E050	31	2	None	None	G3	S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub, Ultramafic
Cismontane Alkali Marsh	Cismontane Alkali Marsh	Marsh	CTT52310CA	4	1	None	None	G1	S1.1	null	null	Marsh & swamp, Wetland
Coastal Brackish Marsh	Coastal Brackish Marsh	Marsh	CTT52200CA	30	5	None	None	G2	S2.1	null	null	Marsh & swamp, Wetland
Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	Marsh	CTT52410CA	60	2	None	None	G3	S2.1	null	null	Marsh & swamp, Wetland
Coelus gracilis	San Joaquin dune beetle	Insects	IICOL4A020	11	1	None	None	G1	S1	null	BLM_S-Sensitive, IUCN_VU-Vulnerable	Interior dunes
Cordylanthus nidularius	Mt. Diablo bird's-beak	Dicots	PDSCR0J0F0	2	2	None	Rare	G1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Ultramafic
Corynorhinus townsendii	Townsend's big-eared bat	Mammals	AMACC08010	635	4	None	None	G4	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Broadleaved upland forest, Chaparral, Chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, Lower montane coniferous forest, Meadow & seep, Mojavean desert scrub, Riparian forest, Riparian woodland, Sonoran desert scrub, Sonoran thorn woodland, Upper montane coniferous forest, Valley & foothill grassland
Coturnicops noveboracensis	yellow rail	Birds	ABNME01010	45	1	None	None	G4	S1S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, NABCI_RWL-Red Watch List, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Meadow & seep
Cryptantha hooveri	Hoover's cryptantha	Dicots	PDBOR0A190	4	1	None	None	GH	SH	1A	null	Interior dunes, Valley & foothill grassland
Danaus plexippus plexippus pop. 1	monarch - California overwintering population	Insects	IILEPP2012	389	2	Candidate	None	G4T1T2Q	S2	null	IUCN_EN-Endangered, USFS_S-Sensitive	Closed-cone coniferous forest
Delphinium californicum ssp. interius	Hospital Canyon larkspur	Dicots	PDRAN0B0A2	28	6	None	None	G3T3	S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Coastal scrub, Meadow & seep
Delphinium recurvatum	recurved larkspur	Dicots	PDRAN0B1J0	119	3	None	None	G2?	S2?	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden	Chenopod scrub, Cismontane woodland, Valley & foothill grassland
Dipodomys heermanni berkeleyensis	Berkeley kangaroo rat	Mammals	AMAFD03061	8	5	None	None	G4T1	S2	null	null	Chaparral, Cismontane woodland

Dirca occidentalis	western leatherwood	Dicots	PDTHY03010	90	24	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Chaparral, Cismontane woodland, Closed-cone coniferous forest, North coast coniferous forest, Riparian forest, Riparian woodland
Efferia antiochi	Antioch efferian robberfly	Insects	IIDIP07010	4	2	None	None	G1G2	S1S2	null	null	Interior dunes
Egretta thula	snowy egret	Birds	ABNGA06030	20	1	None	None	G5	S4	null	IUCN_LC-Least Concern	Marsh & swamp, Meadow & seep, Riparian forest, Riparian woodland, Wetland
Elanus leucurus	white-tailed kite	Birds	ABNKC06010	184	8	None	None	G5	S3S4	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern	Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill grassland, Wetland
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1424	61	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Eremophila alpestris actia	California horned lark	Birds	ABPAT02011	94	2	None	None	G5T4Q	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Marine intertidal & splash zone communities, Meadow & seep
Eriastrum ertterae	Lime Ridge eriastrum	Dicots	PDPLM030F0	2	2	None	Candidate Endangered	G1	S1	1B.1	null	Chaparral
Eriogonum nudum var. psychicola	Antioch Dunes buckwheat	Dicots	PDPGN0849Q	1	1	None	None	G5T1	S1	1B.1	null	Interior dunes
Eriogonum truncatum	Mt. Diablo buckwheat	Dicots	PDPGN085Z0	7	6	None	None	G1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Coastal scrub, Valley & foothill grassland
Eryngium jepsonii	Jepson's coyote-thistle	Dicots	PDAPI0Z130	19	7	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Valley & foothill grassland, Vernal pool
Eryngium racemosum	Delta button-celery	Dicots	PDAPI0Z0S0	26	1	None	Endangered	G1	S1	1B.1	null	Riparian scrub, Wetland
Eryngium spinosepalum	spiny-sepaled button-celery	Dicots	PDAPI0Z0Y0	108	1	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden	Valley & foothill grassland, Vernal pool, Wetland
Erysimum capitatum var. angustatum	Contra Costa wallflower	Dicots	PDBRA16052	4	4	Endangered	Endangered	G5T1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Interior dunes
Eschscholzia rhombipetala	diamond-petaled California poppy	Dicots	PDPAP0A0D0	12	2	None	None	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Valley & foothill grassland
Eucerceris ruficeps	redheaded sphecid wasp	Insects	IIHYM18010	4	2	None	None	G1G3	S2	null	null	Interior dunes

Euphydryas editha bayensis	Bay checkerspot butterfly	Insects	IILEPK4055	30	1	Threatened	None	G5T1	S3	null	null	Coastal dunes, Ultramafic, Valley & foothill grassland
Extriplex joaquinana	San Joaquin spearscale	Dicots	PDCHE041F3	127	45	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Alkali playa, Chenopod scrub, Meadow & seep, Valley & foothill grassland
Falco mexicanus	prairie falcon	Birds	ABNKD06090	451	6	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland
Falco peregrinus anatum	American peregrine falcon	Birds	ABNKD06071	73	1	Delisted	Delisted	G4T4	S3S4	null	CDF_S-Sensitive, CDFW_FP-Fully Protected	null
Fritillaria agrestis	stinkbells	Monocots	PMLIL0V010	32	7	None	None	G3	S3	4.2	null	Chaparral, Cismontane woodland, Pinon & juniper woodlands, Ultramafic, Valley & foothill grassland
Fritillaria liliacea	fragrant fritillary	Monocots	PMLIL0V0C0	82	8	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Cismontane woodland, Coastal prairie, Coastal scrub, Ultramafic, Valley & foothill grassland
Geothlypis trichas sinuosa	saltmarsh common yellowthroat	Birds	ABPBX1201A	112	5	None	None	G5T3	S3	null	CDFW_SSC-Species of Special Concern, USFWS_BCC-Birds of Conservation Concern	Marsh & swamp
Gilia millefoliata	dark-eyed gilia	Dicots	PDPLM04130	54	1	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal dunes
Gonidea angulata	western ridged mussel	Mollusks	IMBIV19010	157	1	None	None	G3	S2	null	IUCN_VU-Vulnerable	Aquatic
Grimmia torenii	Toren's grimmia	Bryophytes	NBMUS32330	13	2	None	None	G2	S2	1B.3	BLM_S-Sensitive	Chaparral, Cismontane woodland, Limestone, Lower montane coniferous forest
Haliaeetus leucocephalus	bald eagle	Birds	ABNKC10010	332	1	Delisted	Endangered	G5	S3	null	BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth
Helianthella castanea	Diablo helianthella	Dicots	PDAST4M020	107	96	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Chaparral, Cismontane woodland, Coastal scrub, Valley & foothill grassland
Helminthoglypta nickliniana bridgesi	Bridges' coast range shoulderband	Mollusks	IMGASC2362	6	6	None	None	G3T1	S1S2	null	IUCN_DD-Data Deficient	Valley & foothill grassland
Hesperolinon breweri	Brewer's western flax	Dicots	PDLIN01030	29	21	None	None	G2	S2	1B.2	null	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Dicots	PDMAL0H0R3	173	36	None	None	G5T3	S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Freshwater marsh, Marsh & swamp, Wetland

Hoita strobilina	Loma Prieta hoita	Dicots	PDFAB5Z030	37	2	None	None	G2?	S2?	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Riparian woodland, Ultramafic
Holocarpha macradenia	Santa Cruz tarplant	Dicots	PDAST4X020	37	13	Threatened	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Coastal prairie, Coastal scrub, Valley & foothill grassland
Hydroprogne caspia	Caspian tern	Birds	ABNNM08020	3	1	None	None	G5	S4	null	IUCN_LC-Least Concern	null
Hygrotus curvipes	curved-foot hygrotus diving beetle	Insects	IICOL38030	21	11	None	None	G2	S2	null	null	Aquatic
Hypomesus transpacificus	Delta smelt	Fish	AFCHB01040	29	8	Threatened	Endangered	G1	S1	null	AFS_TH-Threatened, IUCN_CR-Critically Endangered	Aquatic, Estuary
Idiostatus middlekauffi	Middlekauff's shieldback katydid	Insects	IIORT31010	1	1	None	None	G1G2	S1	null	IUCN_CR-Critically Endangered	Interior dunes
Isocoma arguta	Carquinez goldenbush	Dicots	PDAST57050	14	1	None	None	G1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Valley & foothill grassland
Lanius ludovicianus	loggerhead shrike	Birds	ABPBR01030	110	1	None	None	G4	S4	null	CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened	Broadleaved upland forest, Desert wash, Joshua tree woodland, Mojavean desert scrub, Pinon & juniper woodlands, Riparian woodland, Sonoran desert scrub
Lasionycteris noctivagans	silver-haired bat	Mammals	AMACC02010	139	1	None	None	G3G4	S3S4	null	IUCN_LC-Least Concern	Lower montane coniferous forest, Oldgrowth, Riparian forest
Lasiurus cinereus	hoary bat	Mammals	AMACC05032	238	3	None	None	G3G4	S4	null	IUCN_LC-Least Concern	Broadleaved upland forest, Cismontane woodland, Lower montane coniferous forest, North coast coniferous forest
Lasiurus frantzii	western red bat	Mammals	AMACC05080	128	1	None	None	G4	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Cismontane woodland, Lower montane coniferous forest, Riparian forest, Riparian woodland
Lasthenia conjugens	Contra Costa goldfields	Dicots	PDAST5L040	36	4	Endangered	None	G1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Alkali playa, Cismontane woodland, Valley & foothill grassland, Vernal pool, Wetland
Laterallus jamaicensis coturniculus	California black rail	Birds	ABNME03041	303	30	None	Threatened	G3T1	S1	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_EN-Endangered, NABCI_RWL-Red Watch List	Brackish marsh, Freshwater marsh, Marsh & swamp, Salt marsh, Wetland
Lathyrus jepsonii var. jepsonii	Delta tule pea	Dicots	PDFAB250D2	133	27	None	None	G5T2	S2	1B.2	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Freshwater marsh, Marsh & swamp, Wetland
Lepidurus packardi	vernal pool tadpole shrimp	Crustaceans	ICBRA10010	329	1	Endangered	None	G4	S3	null	IUCN_EN-Endangered	Valley & foothill grassland, Vernal pool, Wetland

Lilaeopsis masonii	Mason's lilaeopsis	Dicots	PDAPI19030	198	69	None	Rare	G2	S2	1B.1	null	Freshwater marsh, Marsh & swamp, Riparian scrub, Wetland
Limosella australis	Delta mudwort	Dicots	PDSCR10030	59	18	None	None	G4G5	S2	2B.1	null	Brackish marsh, Freshwater marsh, Marsh & swamp, Riparian scrub, Wetland
Linderiella occidentalis	California linderiella	Crustaceans	ICBRA06010	508	11	None	None	G2G3	S2S3	null	IUCN_NT-Near Threatened	Vernal pool
Lytta molesta	molestan blister beetle	Insects	IICOL4C030	17	2	None	None	G2	S2	null	null	Vernal pool, Wetland
Madia radiata	showy golden madia	Dicots	PDAST650E0	100	2	None	None	G3	S3	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Cismontane woodland, Valley & foothill grassland
Malacothamnus hallii	Hall's bush-mallow	Dicots	PDMAL0Q0F0	46	8	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Coastal scrub, Ultramafic
Masticophis flagellum ruddocki	San Joaquin coachwhip	Reptiles	ARADB21021	96	1	None	None	G5T2T3	S3	null	CDFW_SSC-Species of Special Concern	Chenopod scrub, Valley & foothill grassland
Masticophis lateralis euryxanthus	Alameda whipsnake	Reptiles	ARADB21031	167	97	Threatened	Threatened	G4T2	S2	null	null	Chaparral, Cismontane woodland, Coastal scrub, Valley & foothill grassland
Meconella oregana	Oregon meconella	Dicots	PDPAP0G030	9	4	None	None	G2G3	S2	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Coastal prairie, Coastal scrub
Melospiza melodia maxillaris	Suisun song sparrow	Birds	ABPBXA301K	36	14	None	None	G5T3	S3	null	CDFW_SSC-Species of Special Concern	Marsh & swamp, Wetland
Melospiza melodia pop. 1	song sparrow ("Modesto" population)	Birds	ABPBXA3013	92	14	None	None	G5T3?Q	S3?	null	CDFW_SSC-Species of Special Concern	Artificial flowing waters, Freshwater marsh, Riparian forest, Riparian scrub, Riparian woodland, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters
Melospiza melodia pusillula	Alameda song sparrow	Birds	ABPBXA301S	38	3	None	None	G5T2T3	S2S3	null	CDFW_SSC-Species of Special Concern, USFWS_BCC-Birds of Conservation Concern	Salt marsh
Melospiza melodia samuelis	San Pablo song sparrow	Birds	ABPBXA301W	41	6	None	None	G5T2	S2	null	CDFW_SSC-Species of Special Concern, USFWS_BCC-Birds of Conservation Concern	Salt marsh
Metapogon hurdi	Hurd's metapogon robberfly	Insects	IIDIP08010	3	1	None	None	G1G2	S1S2	null	null	Interior dunes
Microtus californicus sanpabloensis	San Pablo vole	Mammals	AMAFF11034	8	8	None	None	G5T1T2	S1S2	null	CDFW_SSC-Species of Special Concern	Marsh & swamp, Valley & foothill grassland, Wetland
Monolopia gracilens	woodland woollythreads	Dicots	PDAST6G010	68	8	None	None	G3	S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Chaparral, Cismontane woodland, North coast coniferous forest, Ultramafic, Valley & foothill grassland

Myrmosula pacifica	Antioch multilid wasp	Insects	IIHYM15010	4	1	None	None	GH	SH	null	null	Interior dunes
Nannopterum auritum	double-crested cormorant	Birds	ABNFD01020	39	1	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest, Riparian scrub, Riparian woodland
Navarretia gowenii	Lime Ridge navarretia	Dicots	PDPLM0C120	3	2	None	None	G1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Chaparral
Navarretia nigelliformis ssp. radians	shining navarretia	Dicots	PDPLM0C0J2	102	3	None	None	G4T2	S2	1B.2	BLM_S-Sensitive	Cismontane woodland, Valley & foothill grassland, Vernal pool, Wetland
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	Mammals	AMAFF08082	42	5	None	None	G5T2T3	S2S3	null	CDFW_SSC-Species of Special Concern	Chaparral, Redwood
Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	Herbaceous	CTT44120CA	21	1	None	None	G1	S1.1	null	null	Vernal pool, Wetland
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	Marsh	CTT52110CA	53	6	None	None	G3	S3.2	null	null	Marsh & swamp, Wetland
Northern Maritime Chaparral	Northern Maritime Chaparral	Scrub	CTT37C10CA	17	3	None	None	G1	S1.2	null	null	Chaparral
Nycticorax nycticorax	black-crowned night heron	Birds	ABNGA11010	37	1	None	None	G5	S4	null	IUCN_LC-Least Concern	Marsh & swamp, Riparian forest, Riparian woodland, Wetland
Nyctinomops macrotis	big free-tailed bat	Mammals	AMACD04020	32	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	null
Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	Dicots	PDONA0C0B4	10	9	Endangered	Endangered	G5T1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Interior dunes
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	Fish	AFCHA0209K	31	2	Threatened	None	G5T2Q	S2	null	AFS_TH-Threatened	Aquatic, Sacramento/San Joaquin flowing waters
Pandion haliaetus	osprey	Birds	ABNKC01010	504	3	None	None	G5	S4	null	CDF_S-Sensitive, CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest
Perdita scitula antiochensis	Antioch andrenid bee	Insects	IIHYM01031	2	2	None	None	G1T1	S2	null	null	Interior dunes
Perognathus inornatus	San Joaquin pocket mouse	Mammals	AMAFD01060	140	6	None	None	G2G3	S2S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Cismontane woodland, Mojavean desert scrub, Valley & foothill grassland
Phacelia phacelioides	Mt. Diablo phacelia	Dicots	PDHYD0C3Q0	16	6	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Ultramafic
Philanthus nasalis	Antioch specid wasp	Insects	IIHYM20010	4	1	None	None	G2	S2	null	null	Interior dunes
Phrynosoma blainvillii	coast horned lizard	Reptiles	ARACF12100	784	4	None	None	G3	S4	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Chaparral, Cismontane woodland, Coastal bluff scrub, Coastal scrub, Desert wash, Pinon & juniper woodlands, Riparian scrub, Riparian woodland, Valley & foothill grassland
Polygonum marinense	Marin knotweed	Dicots	PDPGN0L1C0	32	1	None	None	G2Q	S2	3.1	null	Brackish marsh, Marsh & swamp, Salt marsh, Wetland

Pomatiopsis californica	Pacific walker	Mollusks	IMGASJ9020	4	1	None	None	G1	S1	null	IUCN_DD-Data Deficient	null
Potamogeton zosteriformis	eel-grass pondweed	Monocots	PMPOT03160	20	1	None	None	G5	S3	2B.2	null	Marsh & swamp, Wetland
Puccinellia simplex	California alkali grass	Monocots	PMPOA53110	80	4	None	None	G2	S2	1B.2	BLM_S-Sensitive	Chenopod scrub, Meadow & seep, Valley & foothill grassland, Vernal pool
Rallus obsoletus obsoletus	California Ridgway's rail	Birds	ABNME05011	99	12	Endangered	Endangered	G3T1	S1	null	CDFW_FP-Fully Protected, NABCI_RWL-Red Watch List	Brackish marsh, Marsh & swamp, Salt marsh, Wetland
Rana boylii pop. 4	foothill yellow-legged frog - central coast DPS	Amphibians	AAABH01054	178	9	Proposed Threatened	Endangered	G3T2	S2	null	BLM_S-Sensitive, USFS_S-Sensitive	Aquatic, Riparian forest, Riparian scrub, Riparian woodland, South coast flowing waters
Rana draytonii	California red-legged frog	Amphibians	AAABH01022	1685	210	Threatened	None	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable	Aquatic, Artificial flowing waters, Artificial standing waters, Freshwater marsh, Marsh & swamp, Riparian forest, Riparian scrub, Riparian woodland, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Reithrodontomys raviventris	salt-marsh harvest mouse	Mammals	AMAFF02040	144	9	Endangered	Endangered	G1G2	S1S2	null	CDFW_FP-Fully Protected, IUCN_EN-Endangered	Marsh & swamp, Wetland
Rhaphiomidas trochilus	San Joaquin Valley giant flower-loving fly	Insects	IIDIP05010	6	1	None	None	G1	S1	null	null	Interior dunes
Sanicula saxatilis	rock sanicle	Dicots	PDAPI1Z0H0	9	4	None	Rare	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Chaparral, Valley & foothill grassland
Scutellaria galericulata	marsh skullcap	Dicots	PDLAM1U0J0	39	1	None	None	G5	S2	2B.2	null	Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Wetland
Senecio aphanactis	chaparral ragwort	Dicots	PDAST8H060	98	2	None	None	G3	S2	2B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank	Chaparral, Cismontane woodland, Coastal scrub
Serpentine Bunchgrass	Serpentine Bunchgrass	Herbaceous	CTT42130CA	22	3	None	None	G2	S2.2	null	null	Valley & foothill grassland
Sorex vagrans halicoetes	salt-marsh wandering shrew	Mammals	AMABA01071	12	2	None	None	G5T1	S1	null	CDFW_SSC-Species of Special Concern	Marsh & swamp, Wetland
Spergularia macrotheca var. longistyla	long-styled sand-spurrey	Dicots	PDCAR0W062	22	10	None	None	G5T2	S2	1B.2	null	Marsh & swamp, Meadow & seep
Sphecodogastra antiochensis	Antioch Dunes halcitid bee	Insects	IIHYM78010	1	1	None	None	G1	S1	null	null	Interior dunes
Spirinchus thaleichthys	longfin smelt	Fish	AFCHB03010	46	10	Candidate	Threatened	G5	S1	null	IUCN_LC-Least Concern	Aquatic, Estuary
Stabilized Interior Dunes	Stabilized Interior Dunes	Dune	CTT23100CA	2	1	None	None	G1	S1.1	null	null	Interior dunes
Sternula antillarum browni	California least tern	Birds	ABNNM08103	75	2	Endangered	Endangered	G4T2T3Q	S2	null	CDFW_FP-Fully Protected,	Alkali playa, Wetland

											NABCI_RWL-Red Watch List	
Streptanthus albidus ssp. peramoenus	most beautiful jewelflower	Dicots	PDBRA2G012	103	5	None	None	G2T2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Streptanthus hispidus	Mt. Diablo jewelflower	Dicots	PDBRA2G0M0	8	8	None	None	G2	S2	1B.3	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Valley & foothill grassland
Stuckenia filiformis ssp. alpina	northern slender pondweed	Monocots	PMPOT03091	21	2	None	None	G5T5	S2S3	2B.2	null	Marsh & swamp, Wetland
Suaeda californica	California seablite	Dicots	PDCHE0P020	18	1	Endangered	None	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Freshwater marsh, Marsh & swamp, Wetland
Symphyotrichum lentum	Suisun Marsh aster	Dicots	PDASTE8470	175	35	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture	Brackish marsh, Freshwater marsh, Marsh & swamp, Wetland
Taxidea taxus	American badger	Mammals	AMAJF04010	594	11	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, Ione formation, Joshua tree woodland, Limestone, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Mojavean desert scrub, Montane dwarf scrub, North coast coniferous forest, Oldgrowth, Pavement plain, Redwood, Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran desert scrub, Sonoran thorn woodland, Ultramafic, Upper montane coniferous forest, Upper Sonoran scrub, Valley & foothill grassland
Thaleichthys pacificus	eulachon	Fish	AFCHB04010	10	2	Threatened	None	G5	S1	null	IUCN_LC-Least Concern	Aquatic, Klamath/North

												coast flowing waters
Thamnophis gigas	giant gartersnake	Reptiles	ARADB36150	373	5	Threatened	Threatened	G2	S2	null	IUCN_VU-Vulnerable	Marsh & swamp, Riparian scrub, Wetland
Trifolium hydrophilum	saline clover	Dicots	PDFAB400R5	56	2	None	None	G2	S2	1B.2	null	Marsh & swamp, Valley & foothill grassland, Vernal pool, Wetland
Triquetrella californica	coastal triquetrella	Bryophytes	NBMUS7S010	13	1	None	None	G2	S2	1B.2	USFS_S-Sensitive	Coastal bluff scrub, Coastal scrub
Tropidocarpum capparideum	caper-fruited tropidocarpum	Dicots	PDBRA2R010	20	5	None	None	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Valley & foothill grassland
Valley Needlegrass Grassland	Valley Needlegrass Grassland	Herbaceous	CTT42110CA	45	3	None	None	G3	S3.1	null	null	Valley & foothill grassland
Valley Sink Scrub	Valley Sink Scrub	Scrub	CTT36210CA	29	2	None	None	G1	S1.1	null	null	Chenopod scrub
Viburnum ellipticum	oval-leaved viburnum	Dicots	PDCPR07080	39	6	None	None	G4G5	S3?	2B.3	null	Chaparral, Cismontane woodland, Lower montane coniferous forest
Vulpes macrotis mutica	San Joaquin kit fox	Mammals	AMAJA03041	1020	24	Endangered	Threatened	G4T2	S2	null	null	Chenopod scrub, Valley & foothill grassland
Xanthocephalus xanthocephalus	yellow-headed blackbird	Birds	ABPBXB3010	13	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Marsh & swamp, Wetland

CNPS Rare Plant Inventory

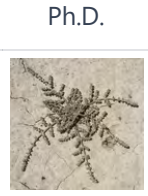
California Native Plant Society

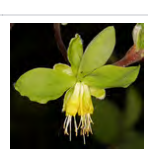
Search Results

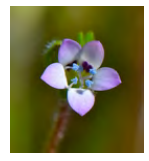
97 matches found. Click on scientific name for details

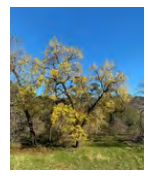
Search Criteria: CRPR is one of [**1A:1B:2A:2B:3:4**] , County or Island is one of [**CCA**]

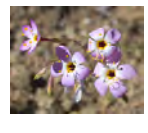
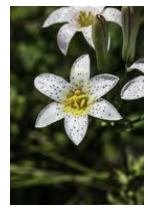
▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Amsinckia grandiflora	large-flowered fiddleneck	Boraginaceae	annual herb	(Mar)Apr-May	FE	CE	G1	S1	1B.1	Yes	1974-01-01	 © 2015 Zoya Akulova
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	None	None	G3	S3	1B.2	Yes	1974-01-01	 © 2011 Neal Kramer
Androsace elongata ssp. *acuta*	California androsace	Primulaceae	annual herb	Mar-Jun	None	None	G5?T3T4	S3S4	4.2		1994-01-01	 © 2008 Aaron Schusteff
Anomobryum julaceum	slender silver moss	Bryaceae	moss		None	None	G5?	S2	4.2		2001-01-01	 © 2013 Scot Loring
Arabis blepharophylla	coast rockcress	Brassicaceae	perennial herb	Feb-May	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2011 Neal Kramer
Arctostaphylos auriculata	Mt. Diablo manzanita	Ericaceae	perennial evergreen shrub	Jan-Mar	None	None	G2	S2	1B.3	Yes	1974-01-01	 © 2006 Steve Matson
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	Ericaceae	perennial evergreen shrub	Jan-Mar(Apr)	None	None	G5T2	S2	1B.2	Yes	1984-01-01	 © 2019 Susan McDougall
Arctostaphylos pallida	pallid manzanita	Ericaceae	perennial evergreen shrub	Dec-Mar	FT	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available

Astragalus tener var. *tener*	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	Yes	1994-01-01	No Photo Available
Atriplex cordulata var. *cordulata*	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex coronata var. *coronata*	crownscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4T3	S3	4.2	Yes	1994-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1994-01-01	 © 2009 Zoya Akulova
Blepharizonia plumosa	big tarplant	Asteraceae	annual herb	Jul-Oct	None	None	G1G2	S1S2	1B.1	Yes	1994-01-01	No Photo Available
Calandrinia breweri	Brewer's calandrinia	Montiaceae	annual herb	(Jan)Mar-Jun	None	None	G4	S4	4.2		1994-01-01	No Photo Available
Calochortus pulchellus	Mt. Diablo fairy-lantern	Liliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Calochortus umbellatus	Oakland star-tulip	Liliaceae	perennial bulbiferous herb	Mar-May	None	None	G3?	S3?	4.2	Yes	1980-01-01	No Photo Available
Calystegia purpurata ssp. *saxicola*	coastal bluff morning-glory	Convolvulaceae	perennial herb	(Mar)Apr-Sep	None	None	G4T2T3	S2S3	1B.2	Yes	2001-01-01	No Photo Available
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	None	None	G5	S2	2B.1		1994-01-01	 Dean Wm. Taylor 1997
Castilleja ambigua var. *ambigua*	johnny-nip	Orobanchaceae	annual herb (hemiparasitic)	Mar-Aug	None	None	G4T4	S3S4	4.2		2009-02-04	 ©2011 Dylan Neubauer
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	None	None	G3T2	S2	1B.1	Yes	1994-01-01	No Photo Available

Chloropyron molle ssp. *molle*	soft salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Nov	FE	CR	G2T1	S1	1B.2	Yes	1974-01-01	No Photo Available
Cicuta maculata var. *bolanderi*	Bolander's water-hemlock	Apiaceae	perennial herb	Jul-Sep	None	None	G5T4T5	S2?	2B.1		1974-01-01	No Photo Available
Cirsium andrewsii	Franciscan thistle	Asteraceae	perennial herb	Mar-Jul	None	None	G3	S3	1B.2	Yes	1974-01-01	No Photo Available
Collomia diversifolia	serpentine collomia	Polemoniaceae	annual herb	May-Jun	None	None	G4	S4	4.3	Yes	1974-01-01	 ©2019 Zoya Akulova
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2		1994-01-01	No Photo Available
Cordylanthus nidularius	Mt. Diablo bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Aug	None	CR	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Cryptantha hooveri	Hoover's cryptantha	Boraginaceae	annual herb	Apr-May	None	None	GH	SH	1A	Yes	1974-01-01	No Photo Available
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	Ranunculaceae	perennial herb	Apr-Jun	None	None	G3T3	S3	1B.2	Yes	1984-01-01	No Photo Available
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	1B.2	Yes	1988-01-01	No Photo Available
Dirca occidentalis	western leatherwood	Thymelaeaceae	perennial deciduous shrub	Jan-Mar(Apr)	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2017 Steve Matson
Eleocharis parvula	small spikerush	Cyperaceae	perennial herb	(Apr)Jun-Aug(Sep)	None	None	G5	S3	4.3		1980-01-01	 ©2018 Ron Vanderhoff
Eriastrum ertterae	Lime Ridge eriastrum	Polemoniaceae	annual herb	Jun-Jul	None	CC	G1	S1	1B.1	Yes	2013-12-19	 © 2013 John Doyen
Eriogonum nudum var. *psychicola*	Antioch Dunes buckwheat	Polygonaceae	perennial herb	Jul-Oct	None	None	G5T1	S1	1B.1	Yes	2010-06-21	No Photo Available
Eriogonum truncatum	Mt. Diablo buckwheat	Polygonaceae	annual herb	Apr-Sep(Nov-Dec)	None	None	G1	S1	1B.1	Yes	1974-01-01	No Photo Available

Eriogonum umbellatum var. *bahiiforme*	bay buckwheat	Polygonaceae	perennial herb	Jul-Sep	None	None	G5T3	S3	4.2	Yes	2001-01-01	No Photo Available
Eriophyllum jepsonii	Jepson's woolly sunflower	Asteraceae	perennial herb	Apr-Jun	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
Eryngium jepsonii	Jepson's coyote-thistle	Apiaceae	perennial herb	Apr-Aug	None	None	G2	S2	1B.2	Yes	2016-09-13	No Photo Available
Eryngium racemosum	Delta button-celery	Apiaceae	annual/perennial herb	(May)Jun-Oct	None	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1980-01-01	No Photo Available
Erysimum capitatum var. *angustatum*	Contra Costa wallflower	Brassicaceae	perennial herb	Mar-Jul	FE	CE	G5T1	S1	1B.1	Yes	1974-01-01	No Photo Available
Erythranthe inconspicua	small-flowered monkeyflower	Phrymaceae	annual herb	May-Jun	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2017 Debra L. Cook
Eschscholzia rhombipetala	diamond-petaled California poppy	Papaveraceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	1980-01-01	No Photo Available
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1988-01-01	No Photo Available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	Yes	1980-01-01	 © 2016 Aaron Schusteff
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2004 Carol W. Witham
Galium andrewsii ssp. *gatense*	phlox-leaf serpentine bedstraw	Rubiaceae	perennial herb	Apr-Jul	None	None	G5T3	S3	4.2	Yes	1994-01-01	 © 2021 Steve Matson
Gilia millefoliata	dark-eyed gilia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2		2001-01-01	 © 2017 John Doyen

Grimmia torenii	Toren's grimmia	Grimmiaceae	moss		None	None	G2	S2	1B.3	Yes	2014-05-14	 ©2021 Scot Loring
Helianthella castanea	Diablo helianthella	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2013 Christopher Bronny
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2017 John Doyen
Hesperolinon breweri	Brewer's western flax	Linaceae	annual herb	May-Jul	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2014 Neal Kramer
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	G5T3	S3	1B.2	Yes	1974-01-01	 © 2020 Steven Perry
Hoita strobilina	Loma Prieta hoita	Fabaceae	perennial herb	May-Jul(Aug-Oct)	None	None	G2?	S2?	1B.1	Yes	2001-01-01	 © 2004 Janell Hillman
Holocarpha macradenia	Santa Cruz tarplant	Asteraceae	annual herb	Jun-Oct	FT	CE	G1	S1	1B.1	Yes	1974-01-01	 © 2011 Dylan Neubauer
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May(Jun)	None	None	G3	S3	4.2	Yes	2006-10-12	 © 2014 Aaron Schusteff
Isocoma arguta	Carquinez goldenbush	Asteraceae	perennial shrub	Aug-Dec	None	None	G1	S1	1B.1	Yes	1994-01-01	No Photo Available
Juglans californica	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	None	None	G4	S4	4.2	Yes	1994-01-01	 © 2020 Zoya Akulova

Lasthenia conjugens	Contra Costa goldfields	Asteraceae	annual herb	Mar-Jun	FE	None	G1	S1	1B.1	Yes	1974-01-01	 © 2013 Neal Kramer
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	Feb-May	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2009 Zoya Akulova
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	Fabaceae	perennial herb	May-Jul(Aug-Sep)	None	None	G5T2	S2	1B.2	Yes	1974-01-01	 © 2003 Mark Fogiel
Leptosiphon ambiguus	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	Yes	1994-01-01	 © 2010 Aaron Schusteff
Leptosiphon grandiflorus	large-flowered leptosiphon	Polemoniaceae	annual herb	Apr-Aug	None	None	G3G4	S3S4	4.2	Yes	1994-01-01	 © 2003 Doreen L. Smith
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	None	CR	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
Lilium rubescens	redwood lily	Liliaceae	perennial bulbiferous herb	(Mar)Apr-Aug(Sep)	None	None	G3	S3	4.2	Yes	1974-01-01	 Gerald and Buff Corsi © 2022 California Academy of Sciences
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	May-Aug	None	None	G4G5	S2	2B.1		1994-01-01	 © 2020 Richard Sage
Lupinus albifrons var. *abramsii*	Abrams' lupine	Fabaceae	perennial herb	Apr-Jun	None	None	G5T3?Q	S3?	3.2	Yes	1974-01-01	No Photo Available
Madia radiata	showy golden madia	Asteraceae	annual herb	Mar-May	None	None	G3	S3	1B.1	Yes	1988-01-01	No Photo Available
Malacothamnus hallii	Hall's bush-mallow	Malvaceae	perennial deciduous shrub	(Apr)May-Sep(Oct)	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2017 Keir Morse

Meconella oregana	Oregon meconella	Papaveraceae	annual herb	Mar-Apr	None	None	G2G3	S2	1B.1		1974-01-01	 © 2021 Scot Loring
Microseris sylvatica	sylvan microseris	Asteraceae	perennial herb	Mar-Jun	None	None	G4	S4	4.2	Yes	2001-01-01	No Photo Available
Monardella antonina ssp. *antonina*	San Antonio Hills monardella	Lamiaceae	perennial rhizomatous herb	Jun-Aug	None	None	G4T1T3Q	S1S3	3	Yes	1980-01-01	No Photo Available
Monolopia gracilens	woodland woollythreads	Asteraceae	annual herb	(Feb)Mar-Jul	None	None	G3	S3	1B.2	Yes	2010-04-06	 © 2016 Richard Spellenberg
Myosurus minimus ssp. *apus*	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1		1980-01-01	No Photo Available
Navarretia gowenii	Lime Ridge navarretia	Polemoniaceae	annual herb	May-Jun	None	None	G1	S1	1B.1	Yes	2008-05-15	No Photo Available
Navarretia heterandra	Tehama navarretia	Polemoniaceae	annual herb	Apr-Jun	None	None	G4	S4	4.3		1974-01-01	 ©2021 Scot Loring
Navarretia nigelliformis ssp. *radians*	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	None	None	G4T2	S2	1B.2	Yes	1994-01-01	No Photo Available
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	Onagraceae	perennial herb	Mar-Sep	FE	CE	G5T1	S1	1B.1	Yes	1974-01-01	No Photo Available
Phacelia phacelioides	Mt. Diablo phacelia	Hydrophyllaceae	annual herb	Apr-May	None	None	G2	S2	1B.2	Yes	1974-01-01	 ©2019 Steve Matson
Piperia michaelii	Michael's rein orchid	Orchidaceae	perennial herb	Apr-Aug	None	None	G3	S3	4.2	Yes	1984-01-01	No Photo Available
Polygonum marinense	Marin knotweed	Polygonaceae	annual herb	(Apr)May-Aug(Oct)	None	None	G2Q	S2	3.1	Yes	1974-01-01	No Photo Available
Potamogeton zosteriformis	eel-grass pondweed	Potamogetonaceae	annual herb (aquatic)	Jun-Jul	None	None	G5	S3	2B.2		1994-01-01	No Photo Available
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	1B.2		2015-10-15	No Photo Available

Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	Feb-May	None	None	G4	S3	4.2		1974-01-01	No Photo Available
Ravenella exigua	chaparral harebell	Campanulaceae	annual herb	May-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Sanicula saxatilis	rock sanicle	Apiaceae	perennial herb	Apr-May	None	CR	G2	S2	1B.2	Yes	1974-01-01	 © 1998 John Game
Scutellaria galericulata	marsh skullcap	Lamiaceae	perennial rhizomatous herb	Jun-Sep	None	None	G5	S2	2B.2		1994-01-01	 © 2021 Scot Loring
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2		1994-01-01	No Photo Available
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	Caryophyllaceae	perennial herb	Feb-May	None	None	G5T2	S2	1B.2	Yes	2017-06-16	No Photo Available
Streptanthus albidus ssp. *peramoenus*	most beautiful jewelflower	Brassicaceae	annual herb	(Mar)Apr-Sep(Oct)	None	None	G2T2	S2	1B.2	Yes	1988-01-01	 © 1994 Robert E. Preston, Ph.D.
Streptanthus hispidus	Mt. Diablo jewelflower	Brassicaceae	annual herb	Mar-Jun	None	None	G2	S2	1B.3	Yes	1974-01-01	 © 2011 Aaron Schusteff
Stuckenia filiformis ssp. *alpina*	northern slender pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	May-Jul	None	None	G5T5	S2S3	2B.2		1994-01-01	 Dana York (2016)
Suaeda californica	California seablite	Chenopodiaceae	perennial evergreen shrub	Jul-Oct	FE	None	G1	S1	1B.1	Yes	1988-01-01	No Photo Available
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	2001-01-01	No Photo Available
Triquetrella californica	coastal triquetrella	Pottiaceae	moss		None	None	G2	S2	1B.2		2001-01-01	No Photo Available

Tropidocarpum capparideum	caper-fruited tropidocarpum	Brassicaceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Viburnum ellipticum	oval-leaved viburnum	Viburnaceae	perennial deciduous shrub	May-Jun	None	None	G4G5	S3?	2B.3		1974-01-01	 © 2006 Tom Engstrom

Showing 1 to 97 of 97 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 18 April 2023].

Appendix 5.5-1 Contra Costa County General Plan Update: Cultural Resources Existing Conditions Report

Appendices

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DRAFT

CONTRA COSTA COUNTY GENERAL PLAN UPDATE: CULTURAL RESOURCES EXISTING CONDITIONS REPORT

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JANUARY 2019



ICF. 2019. *Contra Costa County General Plan Update: Cultural Resources Existing Conditions Report*. Draft. January. (ICF 671.18.) San Francisco, CA. Prepared for Contra Costa County Department of Conservation and Development, Martinez, CA.

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Acronyms and Abbreviations

2005–2020 General Plan	Contra Costa County General Plan 2005–2020
cal BP	calibrated years before the present
Delta	Sacramento River–San Joaquin River Delta
Existing Conditions Report	Contra Costa County General Plan Update: Cultural Resources Existing Conditions Report
HLAC	Historic Landmarks Advisory Committee
HRI	Historic Resources Inventory
NWIC	Northwest Information Center

Chapter 1
Introduction

This *Contra Costa County General Plan Update: Cultural Resources Existing Conditions Report* (Existing Conditions Report) describes and maps existing cultural resources conditions in Contra Costa County. The county covers 513,569 acres and includes 19 incorporated cities and towns.

This Existing Conditions Report documents the following:

- Built historic resources
- Archaeological resources
- Tribal communities

This report is intended to support both preparation of the *Contra Costa County General Plan Update*, which will include a comprehensive review and update of *Contra Costa County General Plan 2005–2020* (2005–2020 General Plan), and analysis of impacts on existing cultural resources within the General Plan 2020 Environmental Impact Report.

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Chapter 2
Built Historic Resources

This chapter describes previously identified built historic resources located in the unincorporated areas of the county.

The 2005–2020 General Plan references a Historic Resources Inventory (HRI), the result of a 1976 collaboration between Contra Costa County local historical societies (Contra Costa County 2005). The HRI is the official approved list of historical resources within the unincorporated areas of the county.[1] The most recent update to the HRI was approved and published by the Contra Costa County Historic Landmarks Advisory Committee (HLAC) in 2016 (Contra Costa County 2016). The 2016 Draft HRI identifies a total of 376 built historic resources in the unincorporated areas of the county. Each built historic resource included in the HRI includes the following evaluation categories:

- Structure of Historical Significance,
- Architectural Specimen,
- Site of Historic Event,
- Site Relating to Important Person in History, and
- Building of Significance.

These terms, original to the 1976 Draft HRI, appear to align with the HLAC's designating criteria (Nelson pers. comm.).

Three additional built historic resources in the county were identified for inclusion in the HRI since publication of the 2016 Draft HRI. The Contra Costa County Board of Supervisors added the three resources to the HRI per resolution at a February 7, 2017, meeting.

One additional built historic resource in the county was identified for inclusion as a result of a records search conducted in December 2018 at the Northwest Information Center (NWIC). The 2018 updated records search was limited to properties documented in the county between 2016 and 2018 to capture any properties that were formally documented since publication of the 2016 Draft HRI.

There are 380 built historical resources in the unincorporated areas of the county, including the 376 built historic resources identified in the 2016 Draft HRI, three built historic resources added to the HRI by the Contra Costa Board of Supervisors, and one built historic resources identified in the 2018 updated records search. The built historic resources identified in the unincorporated areas of the county, which are included in the table in Appendix A and shown in Figure 2-1, are categorized as follows:

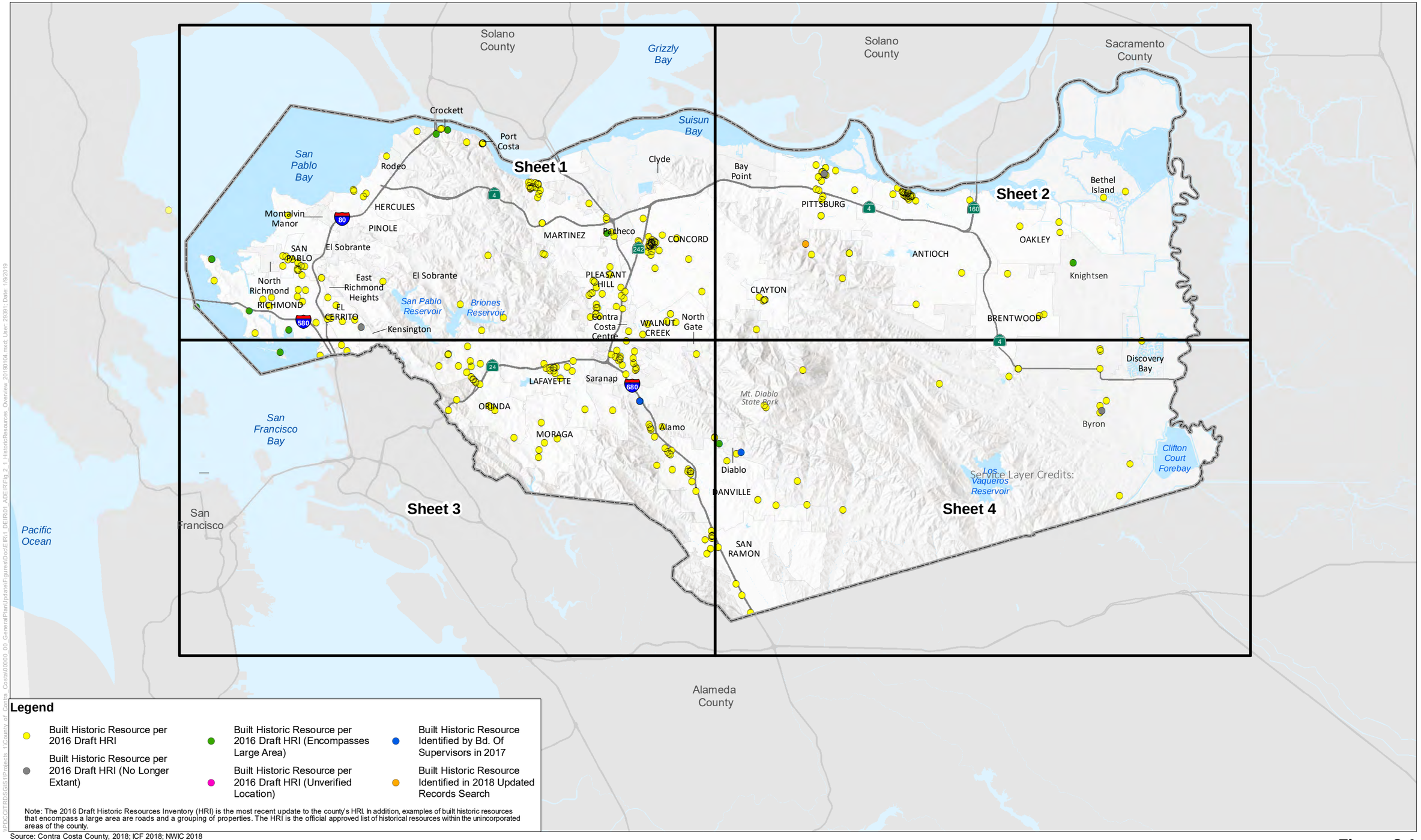
- The 376 resources identified in the 2016 Draft HRI (no color code in the table in Appendix A; color coded yellow in Figure 2-1);

[1] In some instances, older entries in the HRI include properties that have since been incorporated and therefore are noted as such in the HRI. Thus, not all resources identified in the HRI are located in unincorporated areas of the county.

- The 23 resources identified in the 2016 Draft HRI whose locations could not be verified and therefore were approximated (color coded pink);
- The three former structures of significance identified in the 2016 Draft HRI that are no longer extant[2] and now sites of significance (color coded grey);
- The 11 resources identified in the 2016 Draft HRI that encompass a larger area, such as a road or grouping of properties (color coded green);
- The three resources that were added by the HLAC subsequent to publication of the 2016 Draft HRI (color coded blue); and
- The one resource that was identified in the 2018 updated records search but has not yet been evaluated for inclusion in the HRI (color coded orange).

Development of the table in Appendix A and Figure 2-1, which relied on existing historic resource recordation, is intended to provide a baseline for the identification of resources in the unincorporated areas of the county and inform future planning and development decisions. A comprehensive inventory of all potentially eligible historic resources was not completed for this report. For cases in which prior evaluation has been completed or existing evaluations are out of date, age-eligible properties may require new or updated evaluations. New properties may be found to be eligible historic resources through the project-level environmental review process.

[2] Extant resources are still in existence.



Legend

- Built Historic Resource per 2016 Draft HRI
- Built Historic Resource per 2016 Draft HRI (Encompasses Large Area)
- Built Historic Resource Identified by Bd. Of Supervisors in 2017
- Built Historic Resource per 2016 Draft HRI (No Longer Extant)
- Built Historic Resource per 2016 Draft HRI (Unverified Location)
- Built Historic Resource Identified in 2018 Updated Records Search

Note: The 2016 Draft Historic Resources Inventory (HRI) is the most recent update to the county's HRI. In addition, examples of built historic resources that encompass a large area are roads and a grouping of properties. The HRI is the official approved list of historical resources within the unincorporated areas of the county.

Source: Contra Costa County, 2018; ICF 2018; NWIC 2018

0 2.5 5 10 Miles

N

Note: The following sheets provide a detailed map of each quadrant of the County.

Figure 2-1
Overview Map
Previously Identified Built Historic Resources

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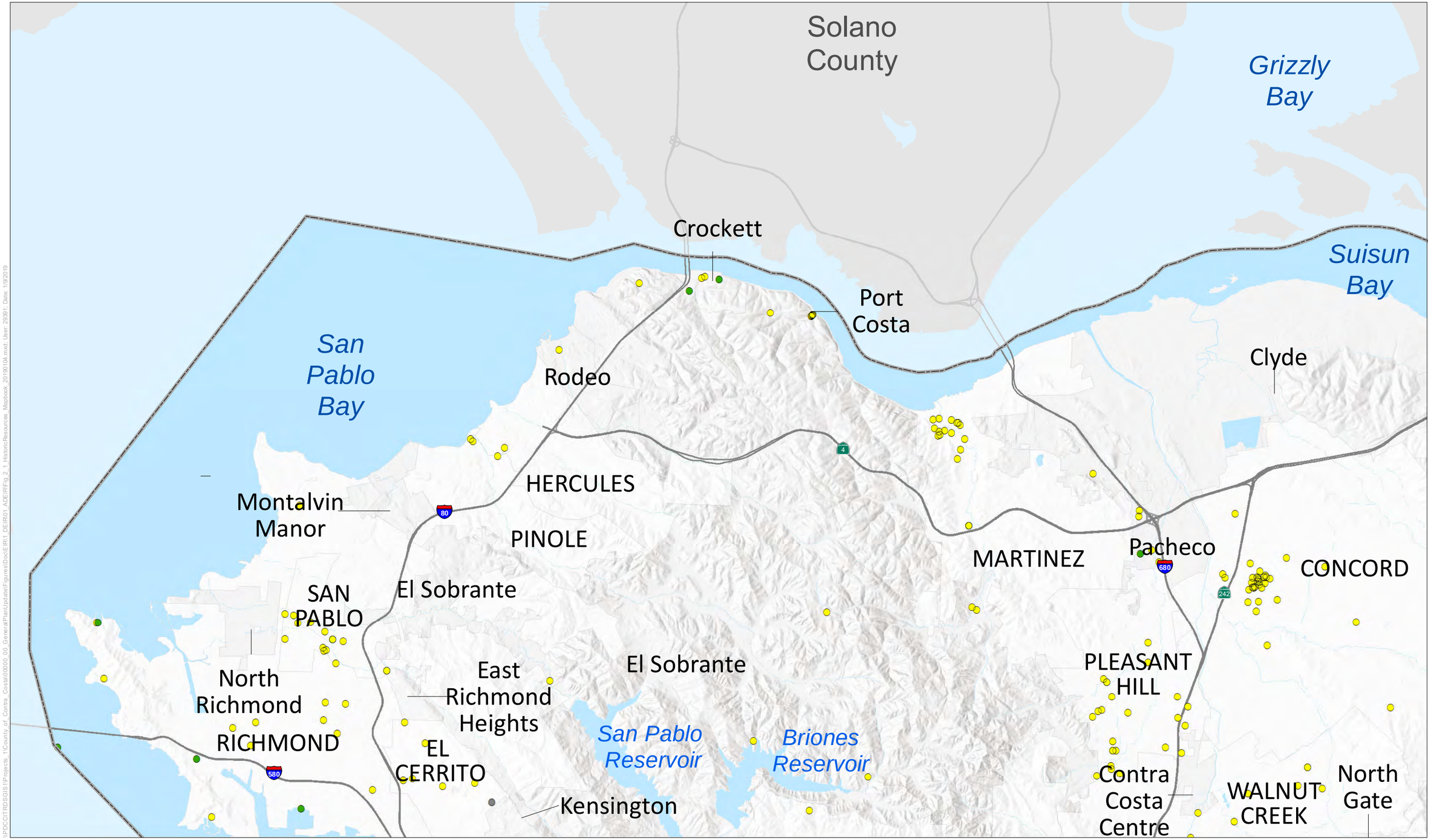

Source: Contra Costa County, 2018; ICF 2018; NWIC 2018

0 0.75 1.5 3 Miles

N

Note: See legend on Overview Map

Figure 2-1
Sheet 1
Previously Identified Built Historic Resources

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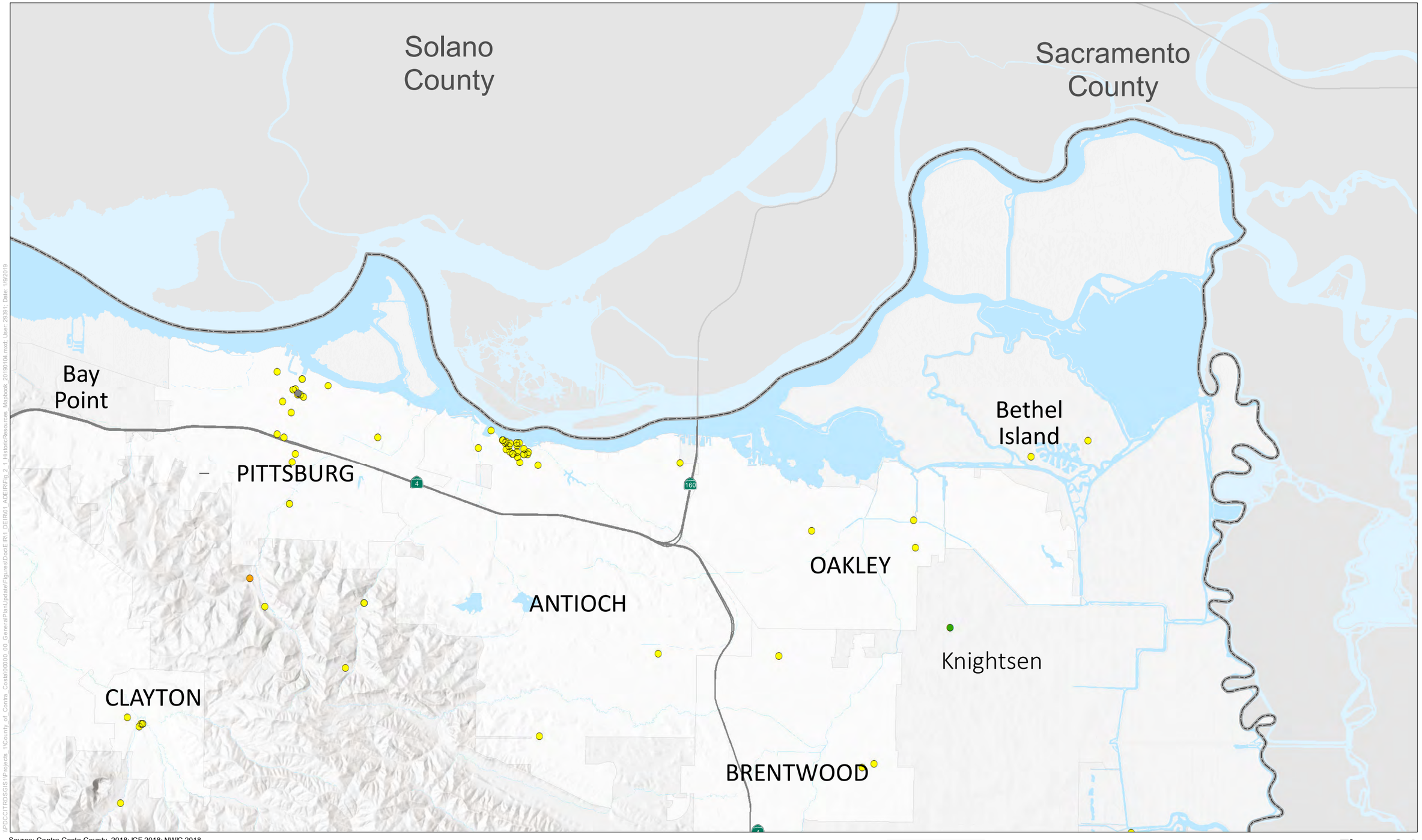

Source: Contra Costa County, 2018; ICF 2018; NWIC 2018

0 0.75 1.5 3 Miles

N

1 2 3 4

Note: See legend on Overview Map

Figure 2-1
Sheet 2
Previously Identified Built Historic Resources

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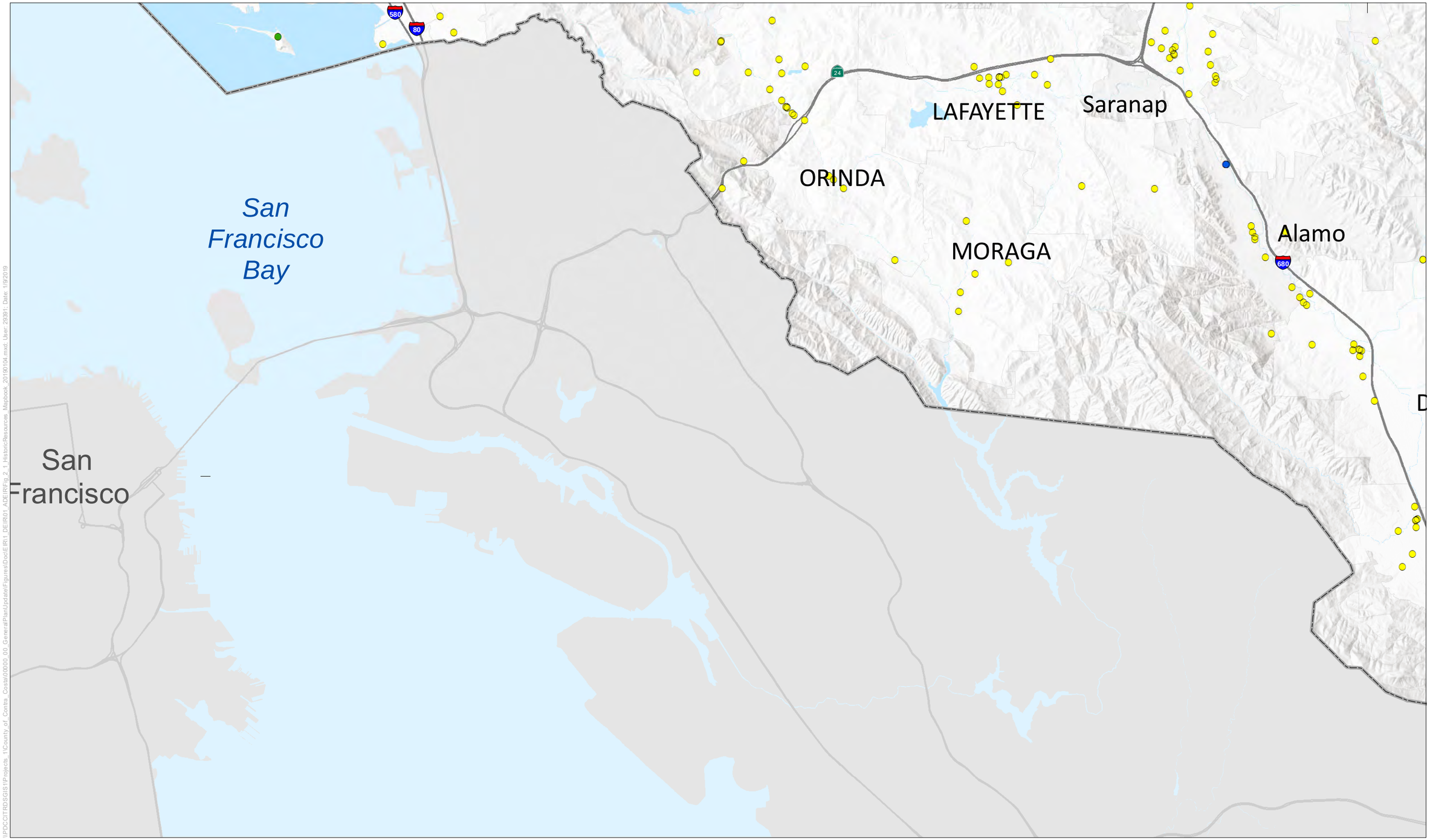

Source: Contra Costa County, 2018; ICF 2018; NWIC 2018

0 0.75 1.5 3 Miles

N

Note: See legend on Overview Map

1 2 3 4

Figure 2-1
Sheet 3
Previously Identified Built Historic Resources

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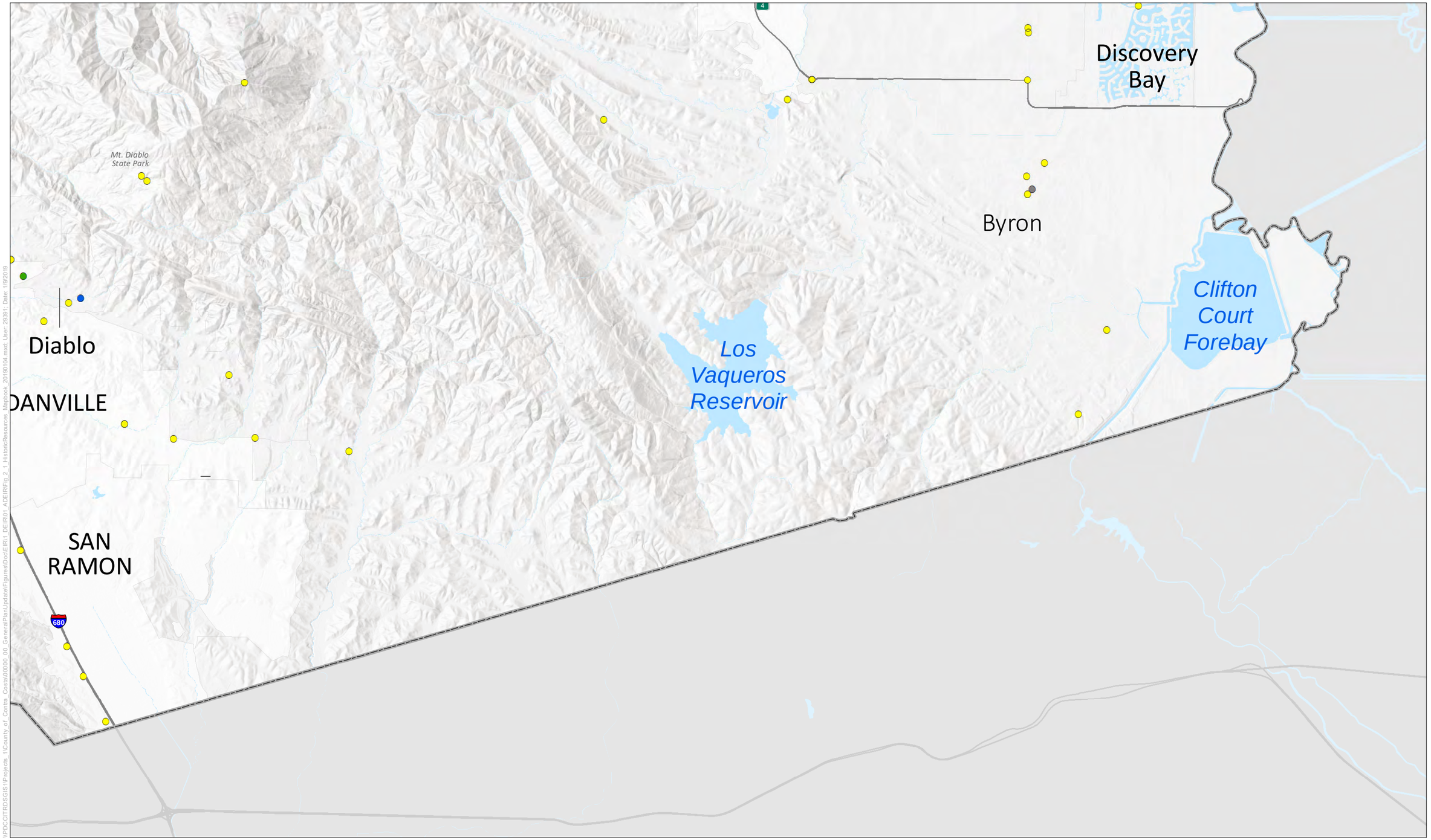

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Source: Contra Costa County, 2018; ICF 2018; NWIC 2018

0 0.75 1.5 3 Miles

N

1 2 3 4

Note: See legend on Overview Map

Figure 2-1
Sheet 4
Previously Identified Built Historic Resources

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Chapter 3
Archaeological Resources

This chapter describes the archaeological context, updated records search results, and sensitivity of the county.

Prehistoric Context

The cultural chronology of the Bay Area has been summarized by numerous reviewers (Beardsley 1948, 1954; Groza et al. 2011; Heizer and Fenenga 1939; Lillard et al. 1939; Lillard and Purves 1936; Moratto 1992; Schenck and Dawson 1929). These summaries have divided the prehistoric cultural sequence into multiple phases or periods, which are delineated by changes in regional patterns of land use, subsistence, and tool types over time. The sequence includes the following four periods, as described in detail below:

- Terminal Pleistocene (13,500–11,600 calibrated years before the present [cal BP]),
- Early Holocene (11,600–7700 cal BP),
- Middle Holocene (7700–3800 cal BP), and
- Late Holocene (3800 cal BP onward), with further divisions of the Late Holocene based on Groza et al. (2011).

These periods are academic constructs and do not necessarily reflect Native American viewpoints.

Terminal Pleistocene (13,500–11,600 cal BP)

Across the United States, the Terminal Pleistocene is generally considered to be represented by wide-ranging mobile hunters and gatherers who periodically exploited large game (Haynes 2002). Archaeological sites from this period are typically very sparse lithic assemblages with few or no archaeological features or large, fluted projectile points—a diagnostic tool type for this period.

Early Holocene (11,600–7700 cal BP)

The Early Holocene landscape of central California is characterized by semi-mobile hunter-gatherers who exploited a wide range of food resources from marine, lacustrine, and terrestrial contexts (Erlandson et al. 2007; Jones & Stokes 2002; Moratto 2002). Diagnostic artifact types from the Early Holocene often include stemmed points, crescents, and formed steep-edged flake tools (Byrd et al. 2010).

Two sites dated to the Early Holocene have been recorded in the county, including CA-CCO-696 and CA-CCO-637. Both sites are near Los Vaqueros Reservoir. A projectile point, *Olivella* beads, ground and flaked stone, and burials were found in association with both sites. However, radiocarbon dates returned from CA-CCO-696 identified one of the oldest human burials ever dated in the region (Meyer and Rosenthal 1998).

Middle Holocene (7700–3800 cal BP)

The Middle Holocene is characterized by a diverse range of habitation sites and artifact assemblages, which suggest higher population levels, more complex adaptive strategies, and longer seasonal occupation than took place during the Early Holocene. The presence of seasonal waterfowl within assemblages dated to the Middle Holocene suggests more diverse, local-niche based exploitation strategies. Diagnostic artifact types from this period include ground stone; side-notched dart points; cobble (large stone sized) chopping, scraping, and pounding implements; and shell beads and ornaments (Fitzgerald 1993; Meyer and Rosenthal 1998).

Two sites dated to the Middle Holocene have been recorded in the county: the Marsh Creek site in the northern Diablo Range (CA-CCO-18/548) and CA-CCO-474/H near the eastern edge of the San Pablo Bay. Grooved rectangular *Olivella* beads present at CA-CCO-474/H indicate an extensive regional interaction sphere between the Bay Area, the Great Basin to the east, and the Channel Islands to the southwest.

Late Holocene (3800–170 cal BP)

The Late Holocene is generally divided into three sub-periods: Early (4500/3800–2450 cal BP), Middle (2050–900 cal BP), and Late (700–170 cal BP), as discussed below.

Early Sub-period of the Late Holocene (4500/3800–2450 cal BP)

The Early sub-period of the Late Holocene marks the establishment of a number of large shell mounds. Bay margin sites, not surprisingly, revealed a strong emphasis on marine shellfish (particularly bay mussel and oyster), marine fish, and marine mammals, whereas interior sites revealed a strong emphasis on freshwater fish and shellfish, along with terrestrial mammals (Byrd et al. 2010). Diagnostic artifact types from this period include stemmed and short broad-leaf projectile points, square-based knife blades, both unshaped and cylindrical mortars, both short and cylindrical pestles, crescentic stones, perforated charmstones, bone awls, polished ribs, notched and grooved net sinkers, rectangular and spire-lopped *Olivella* beads, rectangular abalone beads, various pendant types, antler wedges, and stone bars or "pencils" (Lightfoot 1997:138).

Two sites dated to the Early sub-period of the Late Holocene have been recorded in the county: the Ellis Landing site (CA-CCO-295) and the Stege Mound (CA-CCO-298) (Banks and Orlins 1981).

Middle Sub-period of the Late Holocene (2050–900 cal BP)

The Middle sub-period of the Late Holocene is characterized by greater settlement permanence (either sedentary or multi-season occupation), mound building, and social complexity and ritual elaboration (Lightfoot 1997; Lightfoot and Luby 2002). New artifact types for this subdivision include barbless and single-barbed bone fishing spears, large mortars, ear spools (or adornments), and varied forms of *Haliotis* and *Olivella* shell ornaments. Some male burials yielded thousands of shell beads. Isotopic analyses of human bone and food remains indicate that terrestrial (faunal) resources were exploited more than shellfish, and the use of the acorn also increased (Bartelink 2006; Bickel 1978; Greengo 1951; Simons 1992; Wohlgemuth 2004; Byrd et al. 2010).

No sites dated to the Middle sub-period of the Late Holocene have been recorded in the county.

Late Sub-period of the Late Holocene (700–170 cal BP)

The Late sub-period of the Late Holocene is the best-documented Late Holocene division throughout the greater Bay Area. New artifact types included clamshell disk beads, distinctive *Haliotis* shell pendants, flanged steatite pipes, chevron-etched bone whistles and tubes, elaborately finished stone "flower pot" mortars, and needle-sharp coiled basketry awls (Milliken et al. 2007:99). Seed exploitation increased, as evidenced by archaeobotanical remains, and sea otters, rabbits, deer, clams, and horn snails were frequently exploited as foodstuffs. The bow and arrow first appeared during the Late period, and extensive trade relations with neighboring groups continued. Funerary rituals were strongly patterned and included flexed interments and "killed" grave offerings, along with occasional cremations (Byrd et al. 2010).

Two sites in dated to the Late sub-period of the Late Holocene have been recorded in the county: the Fernandez site (CA-CCO-259) and the Stone Valley site (CA-CCO-308). An interpretation of data returned from excavations at both sites indicates an evolution to an egalitarian society as well as increased sedentism (Moratto 1992:231–232, 261–264).

Historic Context (1772–present)

Although the Spanish explored the county as early as 1772, significant settlements were not established until the 19th century. In 1822, the newly independent Mexican government began issuing land grants, called ranchos, to its citizens in California. Sixteen of 813 ranchos fell within the current boundaries of the county (U.S. Fish and Wildlife Service 2006:3–70). Most of the land was used for grazing or growing wheat. One such rancho was later purchased by a settler named John Marsh in 1837. It became known as Marsh's Landing and grew into an important commercial center along the San Joaquin River during the California Gold Rush (1848–1852). The success of Marsh's Landing encouraged other American immigrants to purchase land in the area, and permanent communities began to take shape (City of Antioch 2003:4.4–3).

Following California's admittance to the United States in 1850, settlers who stayed in the county focused their economic pursuits on agriculture, which was boosted by the Southern Pacific Railroad's expansion into the region (Contra Costa County 2019). The first packing houses in the county were built in 1910. In addition to wheat, farmers grew olives, almonds, asparagus, apricots, and peaches, although the area suffered during the Great Depression and subsequent droughts (City of Antioch 2015:4.4–5). Coal mining began during the 1960s along the eastern slope of Mount Diablo (U.S. Fish and Wildlife Service 2006:3–70). When the mines closed decades later, the population centers at Pittsburg, Antioch, and Brentwood survived because of an established agriculture-based economy (City of Antioch 2008:171). Today, the county's location along a Bay Area Rapid Transit line allows it to continue to grow; in recent years, it has seen rapid expansion of suburban residential development.

As detailed below in the *Records Search Results* section, 274 historic-era archaeological sites have been recorded in the county; 54 sites have both historic-era and prehistoric components.

Records Search Results

The 2005–2020 General Plan identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the 2005–2020

General Plan. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The results of the 2018 records search for archaeological sites are included in the table in Appendix B.

The archaeological resources summarized above and in the table in Appendix B were identified through small sporadic studies conducted in association with development activities in the county. As of the date of preparation of this report, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Archeological Sensitivity

Figure 3-1, which was originally prepared for the 2005-2020 General Plan, depicts areas of archaeological sensitivity within the county. This figure was prepared using several different data sets, including the locations of previously recorded archaeological sites, proximity to freshwater sources, slope, and areas that have been subject to development. Archaeological sensitivity consists of the following five categories:

- Extremely Sensitive: Areas where archaeological sites exist;
- Highly Sensitive: Areas in proximity to fresh water;
- Medium Sensitivity: Areas that are accessible to waterways;
- Moderate Sensitivity: Areas that were likely to support prehistoric settlement (e.g., the plains and the Delta); and
- Low Sensitivity: Areas that consist mostly of ridge tops due to the steep slope, although special use sites[3] may still exist in these areas.

Urbanized areas are also depicted in Figure 3-1. Although urbanized areas have been subject to development, as-yet undocumented archaeological resources may exist within these areas.

[3] Special use sites were occupied for short periods of time for a particular purpose, such as ceremonial or religious events.

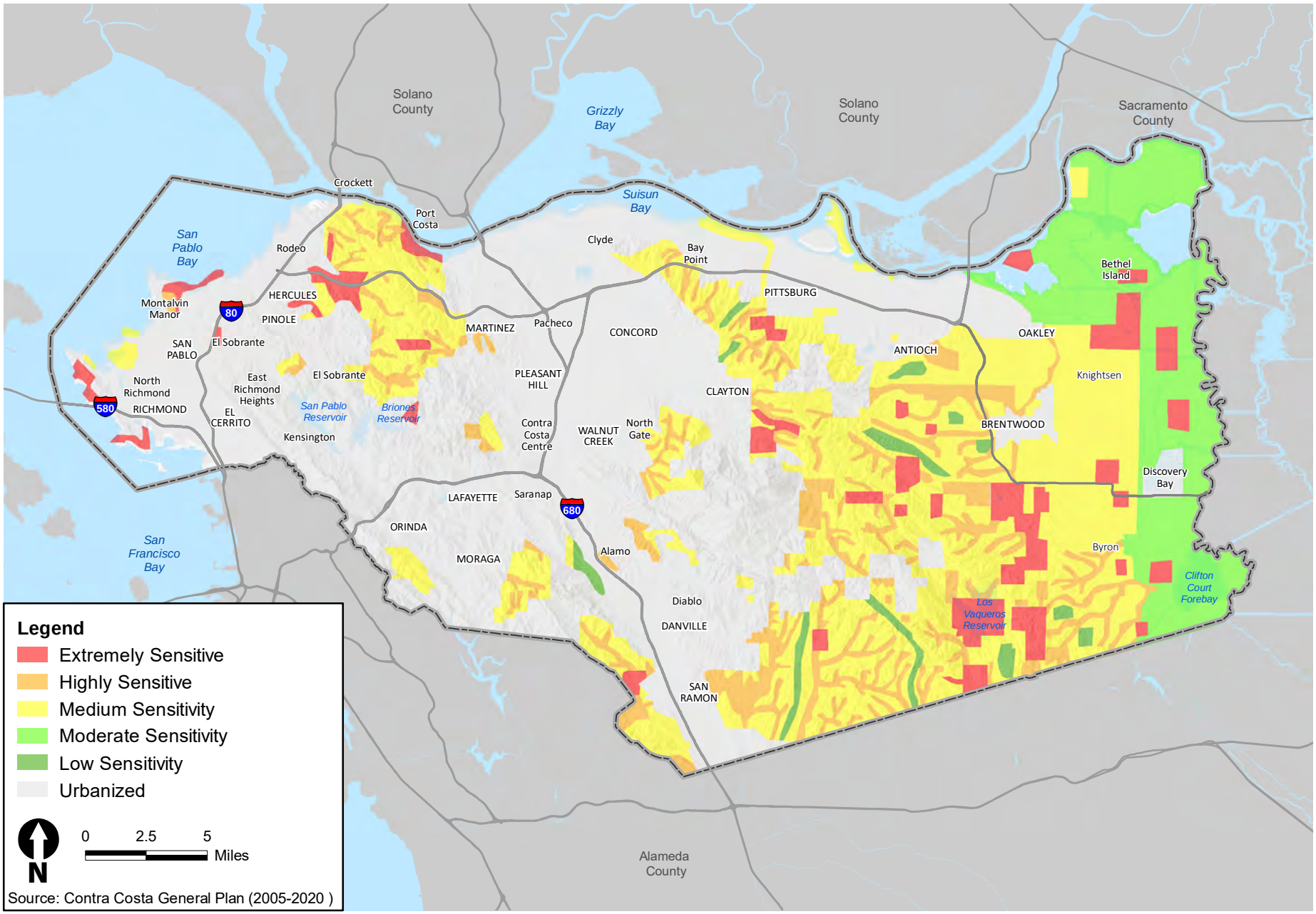

Figure 3-1
Archaeological Sensitivity

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Chapter 4
Tribal Communities

This chapter describes tribal communities that existed within the county, both historically and in the present day.

The county is located in an area where the traditional territories of three tribal communities converged: Bay Miwok, Northern Valley Yokuts, and Ohlone. The territory and characteristics of the tribal communities are described below.

Figure 4-1 depicts ethnographically identified[4] villages and their Native American group affiliation.

Bay Miwok

The Bay Miwok are considered part of the Eastern Miwok, one of two major divisions in the Miwokan language. The Miwokan language groups are further broken down into five distinct groups: Plains, Bay, Northern Sierra, Central Sierra, and Southern Sierra (Levy 1978a:398).

The Bay Miwok inhabited the inner Coast Range, with territory stretching through eastern Contra Costa County, from Mount Diablo to the Delta, as shown in Figure 4-1. The Bay Miwok were politically organized by tribelet, with each having a designated territory. A tribelet, which consisted of one or more villages or camps within a territory, was designated by physiographic features. Each tribelet was treated as an independent entity that controlled the geographic region as well as the resources within the region. Lineage was very important to the Bay Miwok; each tribelet comprised several lineages and often included permanently settled habitation areas (Levy 1978a:398–402).

The Bay Miwok were primarily hunter-gatherers. Terrestrial game such as mule deer, tule elk, pronged antelope, and mountain lion were hunted, and traps were set for smaller game such as rabbit and quail. Waterfowl were a very important part of the tribal diet and trapped along the rivers and sloughs of the Delta. Plant resources were of particular importance to the Bay Miwok. Groups would travel seasonally into the foothills or plains to gather particular resources. Acorns of several varieties were collected as well as nuts such as buckeye, hazelnut, and pine nut. Seeds, roots, and berries were also valued (Levy 1978a:402–402).

The Bay Miwok first encountered the Spanish in the late 18th century as the foreigners explored the Sacramento-San Joaquin Valley. Although missionization occurred later than it did bayward of the Coast Range, the Bay Miwok were the first of the Eastern Miwok to experience forced conversion. The Bay Miwok neophytes, along with those of the Plains Miwok, were transported to Mission San Jose. These expeditions often resulted in the neophytes fleeing back to their villages, and the Spanish sending military expeditions to bring them back. The Bay Miwok suffered greatly as a consequence of Spanish missionization, with a large portion of the population dying after exposure to diseases or military conflict (Levy 1978a:400–401). Although the Bay Miwok are not currently federally recognized, many descendants still reside in the Bay Area.

[4] Ethnographically villages are identified through cultural observation and by collecting oral histories.

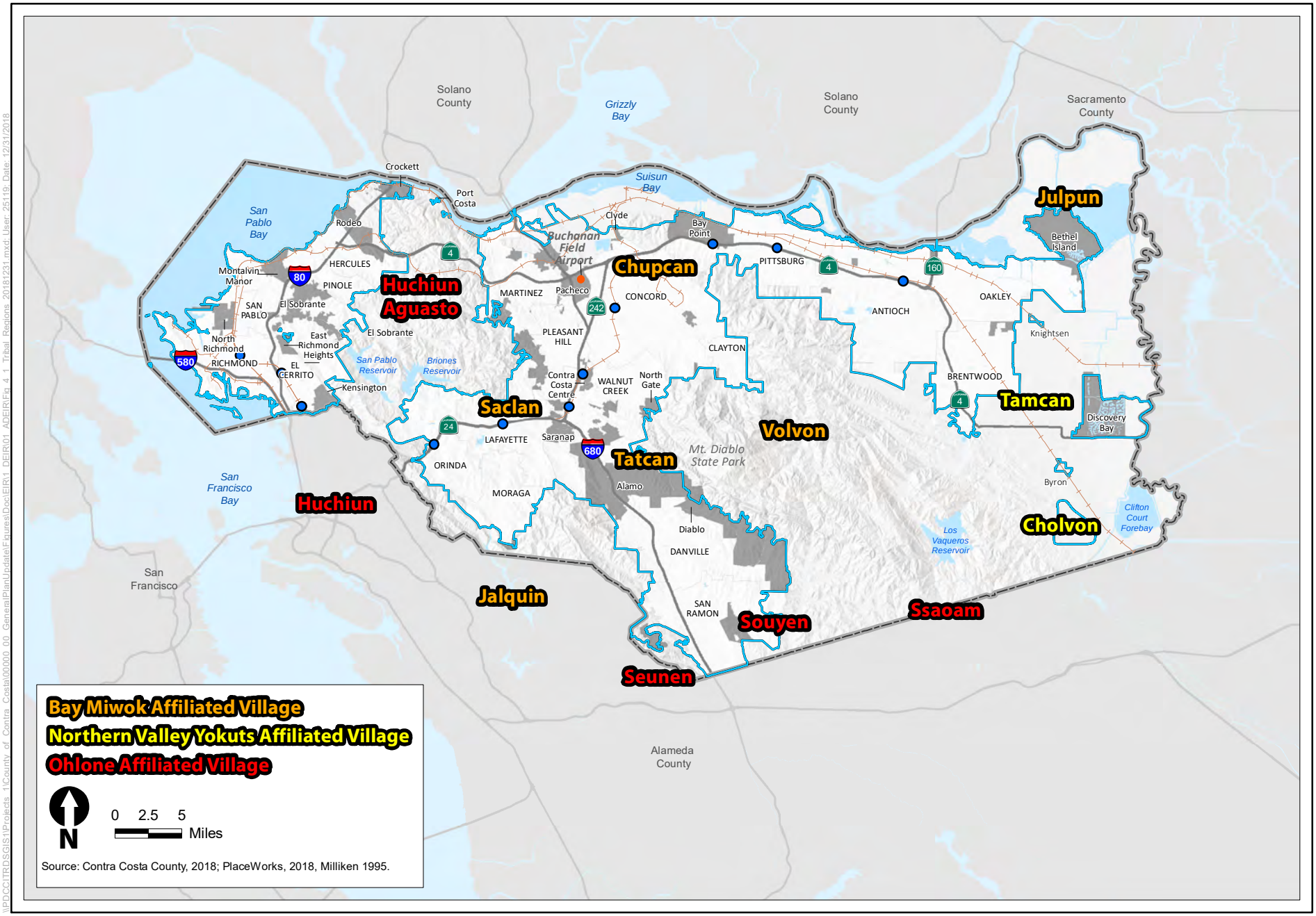

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Figure 4-1
Native American Groups and Affiliated Villages

Northern Valley Yokuts

The Northern Valley Yokuts are the historical occupants of the central and northern San Joaquin Valley. Their territory extended from near the area where the San Joaquin River bends northward to a line midway between the Calaveras and Mokelumne Rivers, including the southeastern portion of the county, as shown in Figure 4-1 (Wallace 1978:462). Villages were typically located along primary water sources, such as the San Joaquin River. The Northern Valley Yokuts gained much of their livelihood through fishing, hunting waterfowl, and harvesting acorns, tule root, and seeds (Wallace 1978:464). Most settlements, or at least the principal ones, were built atop low mounds on or near the banks of large watercourses for protection against spring flooding (Schenck 1926:132; Schenck and Dawson 1929:308; Cook 1960:242, 259, 285). Each tribe had a headman, and populations averaged around 300. Family houses were round or oval, with a conically shaped pole frame that was sunk into the ground and covered with tule mats. Each village typically had a community lodge and a sweathouse (Wallace 1978:465).

The Northern Valley Yokuts suffered a great population decline and cultural breakdown when they were drawn into the mission system. Compelled to work at unfamiliar tasks and subjected to severe discipline, neophytes deserted the missions and returned to their traditional homes; however, they were usually brought back, sometimes by force (Wallace 1978:468). Following the mission period, Northern Valley Yokuts continued to clash with the white settlers, and as a result, many villages were burned, and the population declined. This decline continued through the Early American period, as the rich soils of the Delta and Central Valley attracted many former miners and other settlers to farming. As settler populations grew, the remaining Yokuts were driven off their hunting and food-gathering lands (Wallace 1978:468–469).

The demoralizing conditions suffered by the Yokuts gave way in 1870 to widespread but short-lived participation in the Ghost Dance. The Ghost Dance promised the return of dead relatives, freedom from sickness and death, peace and prosperity, and the disappearance of whites. By 1875, interest in the Ghost Dance had died after the new world envisioned by the cult failed to materialize. Today, the descendants of the Yokuts live on the Tule River Reservation, established in 1873 near Porterville, California, and the Santa Rosa Rancheria, established in 1921 near Lemoore, California (World Culture Encyclopedia 2008).

Ohlone

The Ohlone are a linguistically defined group, composed of several autonomous tribelets that spoke eight different but related languages. The Ohlone languages, together with Miwok, compose the Utian language family of the Penutian stock. The territory of the Ohlone people extended along the coast from the Golden Gate to just below Carmel and as far inland as 60 miles, encompassing several inland valleys (Levy 1978b:485–486). The Ohlone occupied the western portion of the county, as shown in (Figure 4-1).

The Ohlone were hunter-gatherers and relied heavily on acorns and seafood. They also exploited a wide range of other foods, including various seeds, the growth of which was promoted by controlled burning; buckeye; berries; roots; land and sea mammals; waterfowl; reptiles; and insects. The Ohlone used tule balsas for watercraft and bow and arrow, cordage, bone tools, and twined basketry to procure and process their foodstuffs (Levy 1978b:491–493).

Prior to contact, the Ohlone were politically organized by tribelet, with each having a designated territory. A tribelet, which consisted of one or more villages or camps within a territory, was designated by physiographic features. This type of organization was prevalent in precontact California (Kroeber 1962). The office of tribelet chief was inherited patrilineally but could be occupied by a man or a woman. Duties of the chief included providing for visitors, overseeing ceremonial activities, and directing fishing, hunting, gathering, and warfare expeditions. The chief served as the leader of a council of elders that functioned primarily in an advisory capacity to the community (Harrington 1933:3 in Levy 1978b:487).

Ohlone villages typically had four types of structures. Dwellings were generally domed structures with central hearths. They were thatched with tule, grass, or other vegetal material and bound with willow withes. Sweathouses were used by men and women and usually located along streambanks. A sweathouse consisted of a pit that was excavated into the streambank, with a thatched portion constructed against the bank. Dance structures were circular or oval in plan and enclosed by a woven fence of brush or laurel branches, standing approximately 1.5 meters. The assembly house was a thatched structure that was domed and large enough to accommodate all of the inhabitants of the village (Crespi 1927:219; Levy 1978b:492).

Seven Spanish missions were founded in Ohlone territory between 1776 and 1797. While living within the mission system, the Ohlone commingled with other groups, including the Esselen, Yokuts, Miwok, and Patwin. Mission life was devastating to the Ohlone population (Milliken 1995). It has been estimated that the Ohlone population numbered around 10,000 in 1776, when the first mission was established in Ohlone territory. By 1832, the Ohlone population was less than 2,000 as a result of introduced disease, harsh living conditions, and reduced birth rates (Cook 1943a, 1943b in Levy 1978b:486).

Although they have yet to receive formal recognition from the federal government, the Ohlone are becoming increasingly organized as a political unit and developing an active interest in preserving their ancestral heritage. In the later part of the 20th century, the Galvan family of Mission San Jose worked closely with the American Indian Historical Society and "successfully prevented destruction of a mission cemetery that lay in the path of a proposed freeway. These descendants incorporated as the Ohlone Indian tribe, and now hold title to the Ohlone Indian Cemetery in Fremont" (Yamane 1994 in Bean 1994:xxiv). Many Ohlone are active in maintaining their traditions and advocating for Native American issues.

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Personal Communication

Nelson, William R. Principal planner, Contra Costa County, Department of Conservation and Development. December 27, 2018—email to ICF.

Appendix A
Historic Resources in Contra Costa County

Table A-1: Historic Resources Inventory for the Unincorporated Areas of Contra Costa County

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
ANTIOCH AREA	ANTIOCH LUMBER CO. 340 West Second Street Incorporated	340 W 2nd St	Antioch	CA	94509	Structure of Historical Significance/Architectural Specimen	One of the oldest mercantile firms in Antioch, founded in 1864 and thought to be the oldest lumber concern in California still in the business of selling lumber. Structure exhibits good planning and design and relates to early American architecture.
ANTIOCH AREA	R.B. HARD BUILDING 815 First Street Moved to 809 First Street Incorporated	809 1st St	Antioch	CA	94509	Structure of Historical Significance	This building was built in the mid-1860s by R.B. Hard, the first chairman and later president of the Antioch Board of Trustees in 1872.
ANTIOCH AREA	DONLON HOME 606 West Third Street Moved to Coal Mine (Regional Park District) Incorporated	5175 Somersville Rd	Antioch	CA	94509	Structure of Historical Significance	This structure, built in the late 1870s was the birthplace of James D. Donlon, former Mayer of Antioch and City councilman for many years.
ANTIOCH AREA	ANTIOCH PIONEERS LANDING SITE Foot of "F" Street at Waterfront	416 W 2nd St	Antioch	CA	94509	Site of Historic Event	Monument erected to denote the landing site of the pioneers that landed with Captain George W. Kimball and the birthplace of the City of Antioch on September 16, 1850.
ANTIOCH AREA	FIRST CONGREGATIONAL CHURCH West Sixth and "F" Streets	518 W 6th St	Antioch	CA	94509	Structure of Historical Significance	On June 12, 1865, Captain G.W. Kimball, pioneer settler, chaired a meeting for all those interested in forming a church. A. constitution was adopted and the First Congregational church was founded. The original Church was dedicated May 16, 1869. The present structure, erected in 1891, is the oldest church building in Antioch.
ANTIOCH AREA	WILLS RANCH HOUSE 319 W. Ninth St	319 W 9th	Antioch	CA	94509	Structure of Historical Significance	In 1868, T.N. Wills moved to Antioch and purchased 280 acres of land for farming. His home was built in 1871 and was the ancestral home of the Wills family and Helen Wills Moody, the tennis star.
ANTIOCH AREA	EMPIRE RAILROAD SITE MOUNMENT & SECTION OF TRACKS Foot of "F" Street at Riverfront. Tracks removed & stored at Antioch streets yard.	416 W 2nd St	Antioch	CA	94509	Site of Historic Event	Monument erected to denote the narrow gauge railroad tracks of the Empire Railroad and the coal mining industry of 1877 to 1902. Coal was transported from mines to the coal wharf at Antioch by this railroad.
ANTIOCH AREA	CHARLES MARSH HOUSE 601 West Fourth Street Incorporated	601 W 4th St	Brentwood	CA	94513	Site of Historic Significance	Although no longer standing, the home of Charles Marsh, son of pioneer John Marsh, built in 1887, was located here. Charles was a Justice of the Peace and a butcher. The structure was later the home of Judge Harley, famous jurist and lawyer in Contra Costa County.
ANTIOCH AREA	JOSLIN HOME 502 West Second Street Incorporated	502 W 2nd St	Oakley	CA	94561	Structure of Historical Significance	Noted as an early business in Antioch. The structure was the residence and harness shop of J.B. Joslin.
ANTIOCH AREA	ODD FELLOWS HALL W. Third and "H" Streets	625 W 3rd St	Antioch	CA	94509	Structure of Historical Significance	Structure was first known as Union Hall and was also the City Bakery. Later the San Joaquin Lodge #151 of Independent Order of Odd Fellows and Antioch Lodge #175 of Free and Accepted Masons held meetings here.

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
ANTIOCH AREA	ATCHISON-TOPEKA AND SANTA FE DEPOT 816 West First Street	816 W 1st St	Antioch	CA	94509	Structure of Historical Significance/Architectural Specimen	H.F. Beede of Rouse, Forman and Beede Lumber Company obtained the right-of-way for the railroads in 1899. The San Francisco and San Joaquin Valley Railroad now known as the Atchison-Topeka and Santa Fe had its Eastern Terminal in Antioch for many years. The depot was built about 1902 and until destroyed by fire was an example of style and architecture familiar to the Atchison-Topeka and Santa Fe Railroad.
ANTIOCH AREA	McKELLIPS HOUSE 504 West Sixth Street	504 W 6th St	Antioch	CA	94509	Structure of Historical Significance	Built in 1886 as the home of S. McKellips, locomotive engineer in charge of the rolling stock for the Empire Railroad. He fired up the "Empire" September 22, 1877, a 15-ton Baldwin Engine, the first engine to turn a wheel in Antioch.
ANTIOCH AREA	ANTIOCH CITY HALL West Third and "H" Streets Incorporated	200 H St	Antioch	CA	94509	Site of Historic Significance	Although no longer standing, this structure was built in 1919 as City Hall and Jail. Structure was a two-story cut stone building with a medium hip roof, decorated boxed cornice frieze and brackets. Structural window detail varied from molded arch top and balcony shelf at bottom at the second story to Victorian style on the first floor. Door opening was arched with decorated flat columns attached flush to wall.
ANTIOCH AREA	BROWN HOUSE 219 West Sixth Street Incorporated	219 W 6th St	Antioch	CA	94509	Structure of Historical Significance	Built about 1890, this structure housed the G.W. Brown family and later Henry E. Beede. Both men were quite active in civic affairs and the development of Antioch.
ANTIOCH AREA	REMFREE HOUSE 512 "E" Street Incorporated	512 E St	Antioch	CA	94509	*Architectural** Specimen	Built about 1870, as home of Remfree, a local barber. It is a 1-½ story wood frame structure with a two-story tower at one corner having a conical shape roof. Gabled dormer extends from a medium hip roof. A bay window extends the height of the first story on the south side of the structure.
ANTIOCH AREA	BEEDE HOUSE 119 Beede Way Incorporated	119 Beede Way	Antioch	CA	94509	Structure of Historical Significance/Architectural Specimen	About 1895, a Mr. Sloan built a home for Mr. H.F. Beede, known as "Country Home." The structure has two stories with medium hip roof and open verandas at the first and second story. Mr. Beede, a businessman and civic leader, is credited with forming the Riverview Union High School.
ANTIOCH AREA	COX HOUSE 119 West Sixth Street Incorporated	119 W 6th St	Antioch	CA	94509	*Architectural** Specimen	A two story wood frame structure with high gable composition shingle roof, and combination of patterned wood shingle, board and batten and composition shingle siding. A plain horizontal band is located between floor levels to provide a wall design. Two large palm trees in front add to the overall appearance.
ANTIOCH AREA	STAMM HOUSE 501 "B" Street Incorporated	501 B St	Antioch	CA	94509	*Architectural** Specimen	A one story wood frame structure with a medium gable roof and low center gable over the front entrance. Main floor is elevated over a basement and platform type stairs to an open porch provides entrance. The structure reflects the architectural style circa 1910.
ANTIOCH AREA	CASINO THEATER West First and "H" Streets	809 W 1st St	Antioch	CA	94509	Structure of Historical Significance	Circa 1870s this site was the warehouse of one of the oldest mercantile firms in Antioch, now known as the Antioch Lumber Company, founded in 1864. Warehouse was later torn down for the Casino Theater circa 1910.

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
ANTIOCH AREA	ANTIOCH GRAMMAR SCHOOL West Fifth and "G" Streets Incorporated	1259, 510 G St	Antioch	CA	94509	Site of Historic Event	The site of a very fine brick school building in 1880. It was replaced by a wooden building in 1890. Site is now occupied by the present Administration Offices of the Antioch School District.
ANTIOCH AREA	MULHARE HOUSE West Second and "I" Streets	720 W 2nd St	Antioch	CA	94509	Site of Historic Event	Catholic services were first held in 1864 at this homesite. Part of the original home is enclosed within the present structure.
ANTIOCH AREA	KIMBALL HOME West Third near "E" Street	400 W 3rd St	Antioch	CA	94509	Site Relating to Important Person in History	Site of Captain G.W. Kimball's home that he built in the Fall of 1850. One of the first settlers of Antioch, he was a Postmaster and served as a Justice of the Peace.
ANTIOCH AREA	SMITH'S LANDING Fulton shipyard Road	1 Marina Plaza	Antioch	CA	94509	Site Relating to Important Person in History	Site of W.W. Smith's home, an early settler and founder of Antioch. The first wharf built in Antioch known as Smith's Landing was located at this site.
ANTIOCH AREA	EMPIRE BASIN AREA Empire Mine Road	Empire Mine Rd and Starmine Tr	Antioch	CA	94531	Site of Historic Event	Served by the Empire Narrow Gauge Railroad to Antioch, 1878 to 1903. Sites of Judsonville, Empire Mine, Stewartsville and Star Mine.
ANTIOCH AREA	HARKINSON HOUSE West Fourth and "D" Streets	220 W 4th St	Antioch	CA	94509	*Architectural** Specimen	A one-story wood frame structure with high gable roof and gable dormer. A turret with windows and conical roof is located over a porch that is semicircular in design and extends from the front of the structure, circa 1890.
ANTIOCH AREA	GEORGE HOUSE 223 West Sixth Street Incorporated	223 W 6th St	Antioch	CA	94509	Site Relating to Important Person in History	Although no longer standing, this structure was built for Dr. W.S. George, physician and surgeon. He was City Health officer, member of the City Trustees, a School Trustee, member of the Antioch Board of Trade and surgeon for the Southern Pacific and Santa Fe Railroad.
ANTIOCH AREA	BAKER HARDWARE AND PAINT STORE West Second and "G" Streets	205 G St	Antioch	CA	94509	Structure of Historical Significance	Structure housed an early general hardware business in Antioch, circa 1880. The Antioch Post Office was located in the rear of the building periodically depending on which political party was in office.
ANTIOCH AREA	PIONEER HOSPITAL West Fifth and "H" Streets	414 H St	Antioch	CA	94509	Structure of Historical Significance	Opened in 1930 by Dr. Nevino and operated by Mrs. Brooks, a nurse from San Francisco, for a few years. Now a residence.
ANTIOCH AREA	RIVERVIEW UNION HIGH West FOURTH Street and Somersville Road Incorporated	1500 W 4th St	Antioch	CA	94509	Structure of Historical Significance/Architectural Specimen	The Riverview Union High School District was established June 1, 1903, and the school opened in 1910 with thirty-two pupils. This District included Antioch, Black Diamond, Somersville, Carbondale, and later the Live Oak area. Structure is a two story brick building with quoin wall design, flat roof with parapet and decorated window detail.
ANTIOCH AREA	BELSHAW HOUSE West Seventh and "E" Streets	705 E St	Antioch	CA	94509	Structure of Historical Significance	Mr. Charles M. Belshaw was an active participant in local and state activities. He was a member of the State Assembly in 1894 and a State Senator in 1900.
ANTIOCH AREA	MARSH LANDING Pacific Gas Electric	3307 Wilbur Ave	Antioch	CA	94509	Site Relating to Important Person in History	Site of John Marsh's Ranch shipping center with a blacksmith shop, warehouse, smokehouse and landing area.
ANTIOCH AREA	WILLIAMSON RANCH Lone Tree Road	4900 Lone Tree Way	Antioch	CA	94531	Structure of Historical Significance/Architectural Specimen	This house was built by Williamson, one of the first settlers along Lone Tree Way. It was recently included on the National Register of Historic Places.
CLAYTON AREA	CLAYTON COMMUNITY HALL Oak and Center Streets Incorporated	6008 Center St	Clayton	CA	94517	Structure of Historical Significance	This structure was built in the late 1860s and left to the community by Joel Clayton, for use as a church and a community hall. Throughout the years it has been the scene of religious worship, private and public celebrations, community dances, election balloting, City Council and Planning Commission meetings.

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
CLAYTON AREA	JOEL CLAYTON HOME Keller Property Incorporated	6101 Main St	Clayton	CA	94517	Structure of Historical Significance	Home of Joel Clayton, founder of Clayton. A patent on 1,200 acres of land was granted to Joel Clayton by governor of State, Newton Booth, the eighth day of February 1872. Joel Clayton, an English immigrant, had mapped the Clayton Townsite in 1857, expecting it to prosper as a center for mining developments.
CLAYTON AREA	DE MARTINI WINERY Clayton Road Incorporated	5919 Clayton Rd	Clayton	CA	94517	Structure of Historical Significance	In the middle 1860s Joel Clayton, founder of Clayton, planted 28 acres with a variety of grapes and built a small winery which became known as "The Sherry House." After Joel Clayton's death in 1872, his property was bought by Paul De Martini, who expanded the vineyards and built the large stone winery that produced prize-winning Port and Sherry—first place at St. Louis Exposition in 1903.
CLAYTON AREA	MT. DIABLO WINERY Marsh Creek Road					Structure of Historical Significance	Mt. Diablo Winery, built in the 1880s, was the largest in Clayton Valley with a capacity of 300,000 gallons. It operated as a winery in the 1940s, making it the last producing winery in Clayton.
CLAYTON AREA	LA COCOTTE RESTAURANT 6115 Main Street Incorporated	6115 Main St	Clayton	CA	94517	Structure of Historical Significance/Architectural Specimen	Structure was originally a home. Use changed to a post office between 1908-1910, (Clayton's first), then a barber shop, and later a saloon. Historic name, "The Growler." Architecture is early western with a false front roof.
CLAYTON AREA	EASLEY HOME Marsh Creek Road					Architectural* Specimen	A two-story rectangular wood-frame structure with wood shingled medium hip roof. An open porch at the first and second story extends completely around the building. French-style doors open from porch. Prior it was used as bunk house and later a tavern.
CLAYTON AREA	PIONEER INN Main Street Incorporated	6055 Main St	Clayton	CA	94517	Structure of Historical Significance	Once a coach stop on the route from Oakland to Stockton, the "Clayton Hotel" as it was known at that time, has a notorious history of "wild and wooly: characters of the growing west.
CLAYTON AREA	COPPER AND SILVER MINES Mt. Zion Mitchell Canyon Road	96 Mitchell Canyon Rd	Clayton	CA	94517	Site of Historic Event	In 1863 the discovery of copper in the Clayton area brought in many prospectors. According to one assay, there was $48.33 in gold and $243 in silver to the ton. Copper contact varied between 8-12%.
CLAYTON AREA	MT. DIABLO QUICKSILVER CLAIM Marsh Creek Road	On Google Maps: "North Peak"	Clayton	CA	94517	Site of Historic Event	The Mt. Diablo Quicksilver Mine was discovered in 1862.
CLAYTON AREA	MORGAN HOUSE Morgan Territory Road					Site Related to Important Person in History	Jeremiah Morgan settled in this area, known as Morgan Territory, in 1856. He claimed and fenced 10,000 acres for the raising of Black Angus cattle. He also built a granary. Morgan built his home, circa 1857, of lumber that he hauled by oxen teams from the Santa Cruz Mountains. The old home burned down in 1932.
CONCORD AREA	SALVIO PACHECO ADOBE 2050 Adobe Street Incorporated	2050 Adobe St	Concord	CA	94520	Structure of Historical Significance/Architectural Specimen	Don Salvio Pacheco—soldier-surveyor of Pueblo Public Lands—settled here in 1828. Was awarded this grant called "Monte Del Diablo" in 1835 by Governor Jose Figueroa. The adobe was completed June 24, 1853. In 1853, settlers located west of here and named the place Pacheco. Pacheco was destroyed by great floods. Don Salvio Pacheco gave land surrounding the adobe in 1868 to the Pacheco flood refugees and the settlement became known as "Todos Santos"—now known as Concord. California Historical Landmark #515.

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
CONCORD AREA	FERNANDO PACHECO ADOBE 3119 Grant Street Incorporated	3119 Grant St	Concord	CA	94520	Structure of Historical Significance/Architectural Specimen	Home of Don Fernando Pacheco, son of Don Salvio Pacheco and second home to be built in the valley, circa 1844. The structure is still in use as a museum and also a social club. It was restored in 1941 as a landmark of a typical Spanish-California home. California Historical Landmark #455.
CONCORD AREA	FRANCISCO GALINDO HOME Incorporated	1721 Amador Ave	Concord	CA	94520	Structure of Historical Significance/Architectural Specimen	The two-story early Victorian-style structure built in the 1850s and remodeled in the 1880s is the home of descendants of early day Spanish soldiers and colonists whose exploits eventually led to the founding of Concord by Don Salvio Pacheco and his son-in-law Francisco Galindo who moved a small building to the present site in 1860 and through additions to the structure remodeled it to its present appearance.
CONCORD AREA	TODOS SANTOS PLAZA Willow Pass Road and Grant Street Incorporated	2175 Willow Pass Rd	Concord	CA	94520	Site Relating to Important Person in History	In 1868 Don Salvio Pacheco, Francisco Galindo and Fernando Pacheco donated land to for the town of Todos Santos, "All Saints," now Concord. The land was formerly part of Rancho Monte del Diablo, a grant by Mexico in 1834.
CONCORD AREA	THE LAGUNA 1860 Laguna Street Incorporated	1860 Laguna St	Concord	CA	94520	Site Relating to Important Person in History	A natural lake which Don Salvio Pacheco marked on his original diseno when he petitioned for the land grant Rancho Monte del Diablo. The lake shores are now abutted by residential apartments and roadways. Boating and fishing takes place on the lake.
CONCORD AREA	FIRE HALL 1982 Concord Avenue Incorporated	1982 Concord Ave	Concord	CA	94520	*Architectural** Specimen	Built in 1833 on Mt. Diablo Street as a fire house. Moved in 1911 to 2080 Willow Road to make room for the construction of Concord Inn. Structure is wood frame with a false front and a decorated roof and front wall trim. A molded arch with center keystone surrounds semi-circular windows. Plain wood shingles, board and batten and shiplap finish the outside walls. The structure has been moved to Concord Avenue.
CONCORD AREA	MALTBY HOUSE 3033 Bonifacio Street Incorporated	3033 Bonifacio St/church	Concord	CA	94519	Structure of Historical Significance/Architectural Specimen	Home of Adolphus Maltby who donated land to the town for the high school. He was one of the original promoters of the Oakland, Antioch and Eastern Railroad. Home is presently being restored to its original appearance as a two-story stucco structure with a tiled truncated hip roof and three dormers. Balconies with wrought iron railings are featured throughout the first and second stories with French doors opening onto them. Large pillars support an open porch and breezeway.
CONCORD AREA	L.B. McKINNON HOME 2360 East Street Incorporated	2350 Pacheco St	Concord	CA	94520	Structure of Historical Significance	First Adolphus Maltby house built on the Maltby Ranch.
CONCORD AREA	WEBB-SOTO HOUSE 2243 Mt. Diablo Street Incorporated	2243 Mt Diablo St	Concord	CA	94520	Structure of Historical Significance/Architectural Specimen	A Victorian-style structure built around 1880-1890 by Captain Barney Webb. It was occupied for many years by Presentacion M. de Soto whose ancestors were among those who arrived in California with Captain de Anza in 1776.
CONCORD AREA	KABLE HOUSE 2108 Grant Street Incorporated	2108 Grant St	Concord	CA	94520	Structure of Historic Significance	One of the earliest houses in Concord. In the 1870's it was the residence of Thomas Kable at the corner of Pacheco and Grant Streets it was moved to the rear of the Bibber house at 2108 Grant Street.
CONCORD AREA	CONCORD GRAMMAR SCHOOL Southeast corner of Bonifacio and Grant Streets	2190 Grant St	Concord	CA	94520	Site Relating to Important Person in History	Site of the Concord Grammar School, built in 1870 on land donated by Fernando Pacheco, one of the founders of Concord.

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
CONCORD AREA	BIBBER HOUSE 2108 Grant Street Incorporated	2108 Grant St	Concord	CA	94520	Structure of Historical Significance/Architectural Specimen	The Home of Charles Bibber, a Deputy County Assessor for over 50 years. The structure is representative of a New England-style house of the early 1900s with a stucco siding.
CONCORD AREA	BEEBE HOUSE 1465 Concord Avenue Incorporated	1465 Concord Ave	Concord	CA	94520	Structure of Historical Significance	Home of Mr. Beebe, an early settler in Concord in 1868, a farmer and merchandiser with Concord firm of Navas and Beebe.
CONCORD AREA	FIRST PRESBYTERIAN CHURCH BUILDING Galindo Street between Pacheco and Bonifacio Street	2130 Galindo St	Concord	CA	94520	Site of Historic Event	In 1882, Mr. Samuel Bacon, one of the first merchants to move from the flooded town of Pacheco to Concord, donated the land for the First Presbyterian Church. The church was later used as a boarding house.
CONCORD AREA	IVEY HOUSE 2061 Grant Street Incorporated	2061 Grant St	Concord	CA	94520	*Architectural** Specimen	A one-story wood frame structure built in 1870 or 1880. A cottage-style structure.
CONCORD AREA	SAM BACON'S STORE Galindo and Salvio Streets Incorporated	2033 Salvio St	Concord	CA	94520	Site of Historic Event	Site of one of the first stores to move from Pacheco to the new town of Todos Santos, now Concord. Sam Bacon was the owner of the store and accepted Don Salvio Pacheco's invitation to move into the new town.
CONCORD AREA	CONCORD HOTEL OR KLEIN AND LORING'S Mt. Diablo and Salvio Streets	2151 Salvio St	Concord	CA	94520	Site of Historic Event	Site of one of Concord's first hotels, built in 1869 by Henry Loring. Purchased by Philip Klein in 1870. Structure removed in 1970.
CONCORD AREA	LAMBERT BAKERY North side of Salvio Street near Concord Avenue Incorporated	2031 Salvio St	Concord	CA	94520	Site of Historic Event	Site of first bakery in Concord built before 1884 by John Lambert. A brick structure dated 1884 was added to frame structure. Bother structures were demolished in 1967.
CONCORD AREA	SACRAMENTO NORTHERN RAILROAD DEPOT Clayton Road and East Street Incorporated	1451 Oakland Ave	Concord	Ca	94520	Site of Historic Event	Site of Sacramento Northern Railroad Depot, known as the Oakland, Antioch and Eastern Railway. In 1911 the first car completed its run from Baypoint (Port Chicago) to Concord.
CONCORD AREA	COUNTY FAIR GROUNDS North side of Concord Avenue and Bisso Lane Incorporated	2333 Bisso Ln	Concord	Ca	94520	Site of Historic Event	Concord became the location for the fairs in 1861.
CONCORD AREA	CONCORD RACE TRACK Junction Parkside, Sinclair and Clayton Roads					Site of Historic Event	Concord race track in the early 1900s was one of the fastest tracks in the state. It closed about 1915.
CONCORD AREA	FIRST AIR FIELD North of Clayton Road between West Street and Denkinger Road	1506 West St	Concord	CA	94520	Site of Historic Event	Air field opened in 1925 and became the western terminus of the trans-continental mail service. In 1927 Boeing took over the airport and Concord became an auxiliary landing field in 1933.
CONCORD AREA	McKENZIE HOUSE 2460 Salvio Street	2460 Salvio St	Concord	CA	94520	Structure of Historical Significance	The McKenzie house was built in the 1870s by Mr. Goodale, an early merchant. Dr. George McKenzie lived here and used the facility as his office.
CONCORD AREA	COWELL CEMENT PLANT SITE – SMOKE STACK Ygnacio Valley and Cowell Roads Incorporated	5150 Montecito Dr	Concord	CA	94521	Site of Historic Event	A smokestack stands as a remaining monument to the Cowell Cement Plant, and also as of the last landmarks one of the town of Cowell.
CONCORD AREA	ST. STEPHENS CEMETERY Monument Boulevard and Monument Court Incorporated	2701 Monument Ct	Concord	CA	94520	Site of Historic Event	St. Stephens's cemetery was established in 1903 on land that was part of Francisco Galindo's holdings.

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CONCORD AREA	CONCORD ODD FELLOWS Salvio and Colfax Streets	1965 Colfax St	Concord	CA	94520	Site of Historic Event	Hall first stood in Pacheco in 1871. It was moved to Concord on rollers in 1895.
CONCORD AREA	ALVES HOUSE 2190 Grant Street Incorporated	2190 Grant St	Concord	CA	94520	*Architectural** Specimen	This is a Victorian residence of the "Italianate"-style, probably dating from around 1880. Special features of the site are the surrounding picket fence and the barn whose false front design echoes the façade of the residence.
CONCORD AREA	ELWORTHY HOUSE 2118 East Street Incorporated	2118 East St	Concord	CA	94520	Structure of Historical Significance	A California version of the "Prairie School" style popular around 1920. It is now being restored. Mr. Elworthy was a banker, rancher and civic leader.
CONCORD AREA	BARNETT HOUSE East Street	2080 East St	Concord	CA	94520	Structure of Historical Significance	"Prairie House" of the 2080 early 20th Century. One of a row of large houses along East Street. Residence originally of civic leader in Concord.
CONCORD AREA	NEUSTAEDTER HOUSE 2156 Grant Street Incorporated	2156 Grant St	Concord	CA	94520	Structure of Historical Significance	Built for Bernhardt "Barney" Neustaedter in 1906 by L.V. Perry, a local contractor. Was built when merchants were getting more established in town. Their "Pioneer Store" on Salvio Street was a busy center.
CONCORD AREA	FOSKETT FOSKEH-ELWORTHY (OLD BANK BUILDING) 2001 Salvio Street Incorporated	2001 Salvio St	Concord	CA	94520	*Architectural** Specimen	Constructed in 1911-1912 on a triangular lot facing Galindo and Salvio Streets. The two-story mission-style architecture was notable as one of the first "modern" structures to replace wooden buildings in the downtown area. Owners were prominent in business and government.
CONCORD AREA	PERRY HOUSE 1990 Concord Avenue Incorporated	1990 Concord Ave	Concord	CA	94520	Structure of Historical Significance	Originally located on Clayton Road off Colfax, the house was built in 1911 by its owner, Lawrence V. Perry, who constructed a number of other notable buildings in Concord.
CONCORD AREA	KELLER HOUSE 1760 Clayton Road Incorporated	1760 Clayton Rd	Concord	CA	94520	Structure of Historical Significance	The house was built just before the turn of the century for Charles and Elodia Keller. After about 10 years they bought and moved to a larger ranch in Clayton. Charles' younger brother, Paul, moved in with his wife. Founder of P.L. Keller which later became Keller Hardware. Paul was active in the community and renowned for his interest in and love of plants. Moved out of its downtown redevelopment area to its present site in Ellis Lake Park in 1984.
CONCORD AREA	MALTHY MOUND	1858 St Phillip Ct	Concord	CA	94519	Site of Historic Event	The site of an Indian Village on the Malthy Ranch on the east side of Concord. Was one of the largest in the Concord area and was located about 1908. The site was not recorded until 1937 when Mr. Ernest Johnson informed the University of California.
CONCORD AREA	ELWORTHY-KELLER HOUSE 2156 Pacheco Street Incorporated	2156 Pacheco St	Concord	CA	94520	Structure of Historical Significance	A simple cottage of the late Victorian era. Notable are the fish scale shingles on the gables, beveled siding and fanciful millwork. Residence of two prominent families before each had built larger, more expensive homes.
CONCORD AREA	NUNEZ HOUSE 2334 Almond Avenue Incorporated	2334 Almond Ave	Concord	CA	94520	Structure of Historical Significance	Mr. Nunez operated a saloon on the west side of the house which was originally located on the south side of Salvio Street between Grant and Colfax. The house was apparently built in the 1890s and is distinctive in being the fullest expression of the then popular Queen Anne style.

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CONCORD AREA	MT. DIABLO HIGH SCHOOL 2455 Grant Street Incorporated	2455 Grant St	Concord	CA	94520	Structure of Historical Significance	The area's first high school when voters formed the Mt. Diablo Union High School District in 1901. A.W. Malthy donated the land, a 3.5-acre parcel, bordered by Grant and East Streets. The first building in use from 1905 to 1963 when it was razed. To protect the locale of Concord's first of many high schools, the site was designated a Concord Historical Landmark.
DIABLO AREA	DIABLO HISTORIC DISTRICT This includes the entire Diablo area.	District. Diablo, CA				Site of Historical Significance	The area of Diablo is acknowledged as being an area of historical significance with numerous historical buildings within the area. The Oakwood Stock Farm is a point of historical interest within the area.
DIABLO AREA	1926 ALAMEDA DIABLO (Former Diablo Country Club Clubhouse)	1926 Alameda Diablo	Diablo	CA	94528	Structure of Historical Significance/Architectural Specimen	The building was originally constructed on the site of Railroad Ranch, a large estate established in the 1870s by the owners of the Central Pacific railroads and served as headquarters of the ranch. The building was occupied as a residence in 1889 by Louise Cook Arner and her family. She was a famous American explorer of the Arctic and was the first woman to fly over the north pole. The building was later used as an inn and clubhouse for the Mount Diablo Park Club from 1912 to 1948, which was an exclusive residential park. The building was converted and used as a private residence from 1948 to the present after the construction of the new Country Club Clubhouse.
EAST CONTRA COSTA COUNTY AREA	BETHEL ISLAND FIRE STATION 3045 Ranch Lane, Bethel Island	3045 Ranch Lane	Oakley	CA	94561	Structure of Historical Significance/Architectural Specimen	The fire station was stated to be one of the oldest structures on Bethel Island. It is comprised of a Quonset hut metal building constructed on site circa 1951 with a flat-roofed masonry addition along the front of the building. This building is an example of a pre-fabricated shelter system developed in 1941, originally designed to provide housing for troops during WWII which was later converted after the war for civilian use. The fire station is locally known to be an important early community building, and the first permanent fire station in Bethel Island that housed a fire engine.
EAST CONTRA COSTA COUNTY AREA	EUGENE A. BRIDGFORD HOUSE 4090 Gateway Road, Bethel Island	4090 Gateway Rd	Bethel Island	CA	94511	Structure of Historical Significance/Architectural Specimen/Individual	The Eugene A. Bridgford House was originally located ¼ mile west on Gateway Road, but was relocated to the subject property due to the construction of the Delta Coves subdivision in Bethel Island. The house was originally built from 1913-1916 as a two-story 7,200 square-foot Prairie style residence for Judge Eugene A. Bridgford, a former state legislator, former judge, and successful San Francisco lawyer. He was involved in the reclamation district that encompasses Bethel Island and organized agricultural production on the island.
EAST CONTRA COSTA COUNTY AREA	PRESTON HOUSE Byron Highway near Marsh Creek Road Byron	25987 Marsh Creek Rd	Brentwood	CA	94513	Structure of Historical Significance/Architectural Specimen	Built in 1870 and home of one of the early pioneers. A Victorian-style structure.
EAST CONTRA COSTA COUNTY AREA	BYRON HOT SPRINGS HOTEL Springs Road near County Road J4 Byron	5400 Byron Hot Springs Rd	Byron	CA	94514	Structure of Historical Significance	Center of recreation and health spa in the San Francisco Bay Area in the late 1880s and early 1900s. It has burned down twice. Mud baths, hotel, manager's house and cottages are still there. It was a Japanese prison camp during World War II.
EAST CONTRA COSTA COUNTY AREA	BYERS HOUSE Byers Lane Byron	3275 Byer Rd	Byron	CA	94514	Structure of Historical Significance	Built in the 1860s and home of one of the early pioneers.
EAST CONTRA COSTA COUNTY AREA	PARISH HOUSE OF METHODIST CHURCH Byron	14761 Byron Hwy	Byron	CA	94514	Structure of Historical Significance	Circuit rider house built in 1850s.

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EAST CONTRA COSTA COUNTY AREA	POINT OF TIMBER LANDING Indian Slough off Old River, Byron	37°54′58″N 121°36′18″W	Discovery Bay	CA	94505	Site of Historic Event	Site of warehouse, lumber yard, shipping point for grain harvested in vicinity.
EAST CONTRA COSTA COUNTY AREA	POINT OF TIMBER TRADING CENTER East of Union Cemetery, Point of Timber Road and Highway 4, Byron	11980 Byron Hwy	Brentwood	CA	94513	Site of Historic Event	Site of Wolf and Kahn Store, Lehman and Davis Blacksmith Shop, and post office 1869 to 1882.
EAST CONTRA COSTA COUNTY AREA	BYRON GRANGE HALL Southwest corner of Marsh Creek Road and Highway 4 Byron	Marsh Creek Rd and Vasco Rd	Brentwood	CA	94513	Site of Historic Event	Built in 1873, it housed the Grange at the Town of Point of Timber. The town folded in 1878 with the coming of the Southern Pacific Railroad and the building was moved to Byron.
EAST CONTRA COSTA COUNTY AREA	BYRON I.O.O.F. HALL 3978 Main Street Byron Unincorporated	3978 Main St	Byron	CA	94514	Structure of Historical Significance	Earliest I.O.O.F. hall in the area. Built in 1870. It was the social center through the early 1900s. It is still used and is in good condition.
EAST CONTRA COSTA COUNTY AREA	FRY HOUSE Byer Lane Byron					Structure of Historical Significance	"TO BE DOCUMENTED"
EAST CONTRA COSTA COUNTY AREA	JEWETT HOUSE 600 First Street Byron	600 1st St	Byron	CA	94514	Structure of Historical Significance	"TO BE DOCUMENTED"
EAST CONTRA COSTA COUNTY AREA	VASCO CAVES South of Byron Hot Springs Road Byron	Byron Hot Springs Rd and Holey Rd	Byron	CA	94514	Site of Historic Event	Vasco Caves was a hide-out of Joaquin Murietta, an infamous bandit.
EAST CONTRA COSTA COUNTY AREA	BABBE'S LANDING Foot of Seller Road on Dutch Slough Oakley	7104 Sellers Ave	Oakley	CA	94561	Site of Historic Event	Early boat landing for horse and hay transport to San Francisco. Site of store of Martin Hamburg. Shipping site for Iron House and Eden Plains area.
EAST CONTRA COSTA COUNTY AREA	GEDDES HOUSE Marsh Creek Road, west of Highway 4 Brentwood	Marsh Creek Rd and Vasco Rd	Brentwood	CA	94513	Structure of Historical Significance/Architectural Specimen	Built in 1870 by one of the early settlers in the area. A two-story structure of Victorian style.
EAST CONTRA COSTA COUNTY AREA	IRON HOUSE SCHOOL Cypress Road and Sellers Avenue, Brentwood	975 E Cypress Rd	Oakley	CA	94561	Structure of Historical Significance	Early school built in 1850s. Now used as a residence.
EAST CONTRA COSTA COUNTY AREA	McCABE HOUSE Byron Highway at end of Brent-wood Road, Brentwood	12200 Byron Hwy	Brentwood	CA	94513	Structure of Historical Significance/Architectural Specimen	Home of one of the early pioneers, circa 1860. A much decorated Victorian-style structure with patterned wood shingles and spindle and spool ornamentation.
EAST CONTRA COSTA COUNTY AREA	MURPHY HOME 800 Railroad Avenue, Brentwood	800 Railroad Ave	Brentwood	CA	94514	Structure of Historical Significance/Architectural Specimen	Home of early resident in the area and built around 1909. A Victorian-style structure.
EAST CONTRA COSTA COUNTY AREA	WALLACE HOME 828 Railroad Avenue, Brentwood	38.028727° lat, -121.883884° long	Brentwood	CA	94515	Structure of Historical Significance/Architectural Specimen	Home of early resident in the area and built around 1909. A Victorian-style structure.
EAST CONTRA COSTA COUNTY AREA	COATS HALL Highway 4 near Oak Street, Brentwood					Structure of Historical Significance	An early mansion in Brentwood built in the 1850s. Now used as a hotel and restaurant.
EAST CONTRA COSTA COUNTY AREA	LIBERTY GRAMMAR SCHOOL Deer Valley and Marsh Creek Roads, Brentwood	17701 Marsh Creek Rd	Brentwood	CA	94512	Site of Historic Event	The site of an early grammar school in the area.
EAST CONTRA COSTA COUNTY AREA	JUDGE WALLACE CHAMBERS 300 Oak Street, Brentwood	300 Oak Street	Brentwood	CA	94513	Structure of Historical Significance	One of the oldest buildings in Brentwood and used as Judge Wallace's chambers.

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EAST CONTRA COSTA COUNTY AREA	JOHN MARSH HOME Marsh Creek Road 2-½ miles south of Brentwood	21789 Marsh Creek Rd	Brentwood	CA	94513	Structure of Historical Significance/Architectural Specimen	John Marsh, doctor and first Anglo-American settler in Contra Costa County, was born June 5, 1799, in Danvers, Massachusetts, pioneered westward and eventually bought the Rancho Los Meganos (13,316 acres) from Jose Noriega. He married Abby Tuck in 1851 and in 1852 started the mansion for his bride. The mansion, known as the "Stone House," was completed in 1856; however, it was never lived in by the Marshes. Abby died in 1855 and John was murdered September 24, 1856. The home is listed on the National Register of Historic Places.
EAST CONTRA COSTA COUNTY AREA	"ARBOR" Lone Tree Way at Southern Pacific Railroad Tracts	7021 Lone Tree Way	Brentwood	CA	94513	Site of Historic Event	Although no longer in existence, in 1920 this area was a vital agricultural shipping center known as "Arbor." The focal point of Arbor was the Lone Tree Shipping Company founded in 1926 by Charles Douglas. The shipping company, located on the south side of Lone Tree Way, just east of the tracts, was a cooperative consisting of packing sheds, a large drying yard, and a spur line. The Arbor store and service station were located across Lone Tree Way. Although a residence exists on this site today, remnants of the service station still remain.
EL CERRITO AREA	ALLINIO HOUSE 609 Kearny Street Incorporated	609 Kearney St	El Cerrito	CA	94530	Structure of Historical Significance/Architectural Specimen	This house, constructed circa 1908 by Mr. Allinio, was one of the first two houses upon which stucco was used. Also, the location of the first airplane constructed in the area and the first cockpit plane anywhere.
EL CERRITO AREA	DOWNER HOUSE 5810 Charles Street Incorporated	5810 Charles St	El Cerrito	CA	94530	Structure of Historical Significance/Architectural Specimen	Artisans from Berkeley camped in tents on this hillside while constructing this home for Eddie Downer, founder of Mechanics Bank. Structure is of Spanish and Moorish design and has the boiler of a railroad locomotive in the basement to provide heat.
EL CERRITO AREA	GEORGE FRIEND ESTATE 1101 Arlington Incorporated	1101 Arlington Blvd	El Cerrito	CA	94530	*Architectural** Specimen	"TO BE DOCUMENTED"
EL CERRITO AREA	GILL ESTATE 801 Bates Avenue Incorporated	801 Bates Ave	El Cerrito	CA	94530	Architectural* Specimen	A unique styled mansion located on a promontory overlooking the Bay Area. The structural features include a tower, exterior chimney, large bays with windows, a tiled high gabled roof and a gabled entrance.
EL CERRITO AREA	NAVELLIER HOME 1332 Navellier Street Incorporated	1332 Navellier St	El Cerrito	CA	94530	Structure of Historical Significance	Structure constructed in 1898. Home of one of El Cerrito's former councilmen and Judge in the 1930s.
EL CERRITO AREA	SOLDAVINI HOME 11440 San Pablo Avenue	11440 San Pablo Ave	El Cerrito	CA	94530	Structure of Historical Significance	Structure built about 1912. Home of the proprietor of the first hardware store in El Cerrito located at the same site.
EL CERRITO AREA	BONINNI HOUSE 1710 Liberty Street Incorporated	1710 Liberty St	El Cerrito	CA	94530	Structure of Historical Significance	Structure built in 1907 for one of El Cerrito's pioneering Italian families.
EL CERRITO AREA	JOAQUIN MURIETTA ROCK Arlington and Cutting Boulevards	7120 Cutting Blvd	El Cerrito	CA	94530	Site of Historical Event	An outcropping of rock covering about an acre is the subject of field trips from the University of California. Legend has it that it was a hiding place for bandits who robbed the stagecoaches on the flat lands below. The rock outcropping is of the Franciscan type, and is over 150 million years old.

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EL CERRITO AREA	VICTOR CASTRO ADOBE 1 El Cerrito Plaza Incorporated	1 El Cerrito Plaza	El Cerrito	CA	94530	Site relating to Important Person in History/Site of Historic Event	Don Victor Ramon Castro, one of thirteen children of Don Francisco Castro, chose the very edge of his father's 17,938 acre Rancho San Pablo for his adobe hacienda in 1839. The adobe extended into a U-shape Spanish style home with two wings and a patio. A frame second story was added in the 1850s with an upper and lower veranda on the front or west side. In places the outer walls were 44 inches thick and partition walls 36 inches thick. The adobe was considered one of the most beautiful in California. The adobe was destroyed by fire in 1956. The adobe site is a California Historical Landmark #356.
KNIGHTSEN AREA	ORIGINAL KNIGHTSEN TOWNSITE AREA a.k.a. Downtown Knightsen This area includes all of the properties identified as the "Town of Knightsen" in Book 20, Page 7 of the County Assessor's Map	District. 79 1st St.	Knightsen	CA	94548	Site	The Knightsen Townsite is important to the overall history and settlement of Eastern Contra Costa County. The settlement of Knightsen was closely tied to the Knightsen Train Stop and rail yard. Included in the Knightsen Townsite are a number of single-family residences and commercial buildings that are the original buildings constructed in the early 1900s, which includes the Knightsen Post Office, Knightsen Farm Center Building (1921), Knightsen Saloon (1900), and the Duff Store and first telegraph building (1925).
KNIGHTSEN AREA	NAIL RANCH PROPERTY					Building of significance	The Nail family settled in the Knightsen area in the 1860s and constructed a small home on the property. A second Nail residence was constructed on the property in the 1870s. The Nail family was one of the earliest families to settle in the area. The second Nail residence is a classic example of early Californian farmhouse architecture and has been maintained over time and is in good condition. The East Contra Costa Historical Society uses the second Nail residence and a number of other structures on the property as a museum.
LAFAYETTE AREA	PLAZA PARK Mt. Diablo Boulevard and Moraga Road	3537 Plaza Way	Lafayette	CA	94549	Site relating to Important Person in History	Park Plaza was deeded to the citizens of Lafayette November 19, 1864, by Elam Brown, owner of Rancho Acalanes, founder of Lafayette and second Anglo-American settler in Contra Costa County. This small public park has a millstone from Elam Brown's gristmill on permanent display. Park designated in 1970 as a California Point of Historical Interest, CCo-3 and named Lafayette landmark by a City Council Resolution (36-76) in 1976.
LAFAYETTE AREA	WAY SIDE INN 3521 Golden Gate Way Incorporated	3521 Golden Gate Way	Lafayette	CA	94549	Structure of Historical Significance	Built in 1894 by Edward J. Brady as a tavern and later became an inn and stage coach stop. Site noted as a local historic point of interest by plaque. Named a Lafayette landmark by a City Council Resolution (36-76) in 1976.
LAFAYETTE AREA	PIONEER STORE 3535 Plaza Way Incorporated	3535 Plaza Way	Lafayette	CA	94549	Structure of Historical Significance	Benjamin Shreve, first school teacher and postmaster in Lafayette, built the Pioneer Store, circa 1860. Mr. Schreve named the town of Lafayette. Site noted as local historic point of interest by plaque and named a Lafayette landmark by a City Council Resolution (36-76) in 1976.
LAFAYETTE AREA	GEILS BUILDING 3531 Plaza Way	3531 Plaza Way	Lafayette	CA	94549	Structure of Historical Significance	Fred Geils built the structure as a saloon in 1880. Site is located in same district as Way Side Inn and Pioneer Store. Site noted as local historic point of interest by plaque.

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LAFAYETTE AREA	OLD LAFAYETTE GRAMMAR SCHOOL – METHODIST CHURCH 957 Moraga Road Incorporated	957 Moraga Rd	Lafayette	CA	94549	Structure of Historical Significance	Built in 1893 as a grammar school, the third school house built in town. Served as a school until 1927 when it was purchased by Methodist Church. Site noted as local historic point of interest by plaque and named a Lafayette landmark by a City Council Resolution (85-83) in 1983.
LAFAYETTE AREA	TOWN HALL School Street and Moraga Road	3535 School St	Lafayette	CA	94549	Structure of Historical Significance	Built in 1914 by volunteer labor and financed by the citizens as a town hall. Now used by the dramateurs for little theatre productions. Named a Lafayette landmark by a City Council Resolution (33-78) in 1978.
LAFAYETTE AREA	DALEY HOUSE 3306 Moraga Blvd Incorporated	3306 Moraga Blvd	Lafayette	CA	94549	Structure of Historical Significance	The house is believed to be the oldest house still standing in Lafayette. County records show the existence of this structure in 1869.
LAFAYETTE AREA	COMSTOCK BRONSTON HOUSE 811 Topper Lane Incorporated	811 Topper Ln	Lafayette	CA	94549	Structure of Historical Significance	The first house on St. Mary's Road, built in 1866. Center core of the structure remains as it was originally built. Several additions have been made to the small, two-story house. Miss Comstock, village dressmaker, and her widowed sister, Mrs. Bronston, first lived here.
LAFAYETTE AREA	ELAM AND MARGARET BROWN HOUSE 985 Hough Avenue	985 Hough Ave	Lafayette	CA	94549	Site relating to Important Person in History	Circa 1847, Elam Brown, founder of Lafayette, second American settler in Contra Costa County and early pioneer, built his home by the creek on Hough Avenue. A monument bearing a plaque was placed here by the Lafayette Historical Society in 1981.
LAFAYETTE AREA	ELAM BROWN'S GRIST MILL Golden Gate Way adjacent Park Theater	3491 Mt Diablo Blvd	Lafayette	CA	94549	Site relating to Important Person in History	Built in 1853 by Elam Brown near the center of the valley, the grist mill was the only one in the whole area and farmers came from many miles away to use it. The mill was powered by horses.
LAFAYETTE AREA	ALAMO-LAFAYETTE CEMETERY Mt. Diablo Boulevard	3285 Mt Diablo Blvd	Lafayette	CA	94549	Site relating to Important Person in History/Site of Historic Event	In 1874 Lafayette pioneers bought four and one-half acres on a hillside at the east end of town on Mt. Diablo Boulevard for $100. They formed a cemetery corporation with Elam Brown as chairman. The original Death and Burial Record Book is still on file in the caretakers building. In 1937 a district was formed to insure perpetual care. The cemetery was named and plaqued as a site of historical interest by the Lafayette Historical Society in 1979.
LAFAYETTE AREA	GARRETT BUILDING 3565 Mt. Diablo Boulevard Incorporated	3565 Mt Diablo Blvd	Lafayette	CA	94549	*Architectural** Specimen	A one-story brick structure with bellcast gable roof of slate shingle reminiscent of English architecture.
LAFAYETTE AREA	FRIENDSHIP FARM 3350 Woodland Way Incorporated	3350 Woodland Way	Lafayette	CA	94549	*Architectural** Specimen	Built in 1912 by Miss Sally Hampton, a Southerner, and Miss Mary (Millie) Dyer, a New Englander. Structure features both the Southern and New England influence in its colonial design. A water tower (now a bedroom), creek, beach and garden enhance this site.
LAFAYETTE AREA	LOCUST TREES East side of Happy Valley Road	2 Lois Ln	Lafayette	CA	94549	Site of Historic Event	Three-quarters of a mile up Happy Valley Road, early settlers planted 10 locust trees which now contribute toward beautifying the area. These trees could be classified as "Heritage Trees."
LAFAYETTE AREA	ARTHUR T. BURTON RESIDENCE 549 Arrowhead Drive Incorporated	549 Arrowhead Dr	Lafayette	CA	94549	Site relating to Important Person in History	Arthur Burton, a gold miner, in partnership with John Grant and later a secretary of the Moraga Land Association which owned 12,605 acres, lived in this home from 1887 to the time of his death in 1925.

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LAFAYETTE AREA	FELIPE BRIONES ADOBE Intersection of New Briones Dam Road and Old Bear Creek Road	16 Bear Creek Rd	Lafayette	CA	94549	Site relating to Important Person in History	Felipe Briones petitioned for the Rancho La Boca de la Canada del Pinole in 1839. He lived there for 10 years and maintained his family of eighteen persons in the adobe. The land was granted to Felipe's widow Dona Maria Manuela Valencia on June 21, 1842, by Governor Alvarado.
LAFAYETTE AREA	JAMES BICKER-STAFF HOME 3615 Mt. Diablo Boulevard Incorporated	3615 Mt Diablo Blvd	Lafayette	CA	94549	Site of Historic Interest	Diablo Foods Market on the site. The redwood tree in front of the market was planted by James Bickerstaff's daughter, a pioneer school teacher in this locality.
LAFAYETTE AREA	SACREMENTO-NORTHERN RAILROAD					Site of Historic Interest	This route is now used as a hike and bike trail.
MARTINEZ AREA	JOHN MUIR HOME 4202 Alhambra Avenue Incorporated	4202 Alhambra Ave	Martinez	CA	94553	Structure of Historical Significance/*Architectural** Specimen	Dr. John Strentzel, noted horticulturist, built this 17 room Victorian mansion in 1882. In 1890 it became the home of Strentzel's son-in-law, John Muir, noted conservationist and author. John Muir lived here the last 24 years of his life and wrote many books that had profound effect on conservation and the national system of forests and parks. The home, known as the John Muir home, is now owned by the National Park Service and has been restored to the 1906-1914 era. In recognition of John Muir's contribution to the nature lore of our nation, President Johnson signed a measure in 1964 that established the John Muir National Historic Site on the National Register of Historic Places. Also designated as a California Historical Landmark #312.
MARTINEZ AREA	VINCENTE MARTINEZ ADOBE 4202 Alhambra Avenue Incorporated	4202 Alhambra Ave	Martinez	CA	94553	Structure of Historical Significance/*Architectural** Specimen	In 1849, Vincente Martinez built this adobe which still stands as a reminder of the County's original 57 historic adobes and one of Contra Costa County's oldest Spanish dwellings. The Adobe is part of the John Muir National Historic Site. Other owners of the property included Edward Franklin (1853) after whom Franklin Canyon was named, then Thomas Redfern and later Dr. John Strentzel (1874) whose daughter would later become Mrs. John Muir. It has been stated that the Martinez adobe with its two-story wooden veranda typifies New England-influenced California architecture of the 1840s. California Historic Landmark #511.
MARTINEZ AREA	JOHN SWETT RANCH (HILL GIRT RANCH) Alhambra Valley Road	141 Hill Girt Ranch St	Martinez	CA	94533	Structure of Historical Significance	Home of John Swett, "father of education in California," consisted of 171 acres which he bought originally as a summer home. The Altamirano adobe was part of the purchase. Later Mr. Swett built a 19-room home on the property.
MARTINEZ AREA	BURIAL SITE OF JOHN MUIR Strentzel Lane Unincorporated	4202 Alhambra Ave	Martinez	CA	94553	Site relating to important person in history	Gravesite of John Muir, famous conservationist and author.
MARTINEZ AREA	GRANGERS WHARF Martinez Waterfront Incorporated	On Google Maps: "Grangers Wharf"				Site of Historic Event	In 1876, the wheat and fruit growers built a wharf for handling their shipments. It was also the site of an Italian fishing port. Some original pilings still remain along with evidence of washing tanks for fishnets.
MARTINEZ AREA	MARTINEZ GAZETTE BUILDING Main and Court Streets Incorporated	625 Court St	94553			Structure of Historical Significance	Past home of Martinez Gazette, one of California's first newspapers in continuous publication since 1858.
MARTINEZ AREA	BUNKER HOME 235 Marina Vista Incorporated	235 Marina Vista	Martinez	CA	94553	Structure of Historical Significance	Built in 1877 by the publisher of the Martinez Gazette, R.R. Bunker. The structure is presently being restored.

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MARTINEZ AREA	TENNET HOME Talbart and Escobar Streets Incorporated	608 Talbart St	Martinez	CA	94553	Structure of Historical Significance/*Architectural** Specimen	Dr. John Tennet, son of Dr. S. Tennet of Pinole, built this Victorian-styled structure in 1888. The 2-½-story home has a high hip roof and a tower extends first and second story topped by a turret shaped roof. Main floor is elevated over a full basement.
MARTINEZ AREA	TUCKER HOME Talbart and Escobar Streets Incorporated	110 Escobar St	Martinez	CA	94553	Structure of Historical Significance/*Architectural** Specimen	Circa 1880, a sea captain named Tucker built this Victorian home which is now being restored by its owners. This two-story structure has a truncated roof, a full basement and an open veranda with decorated pillars. Window detail is segmental with decorated labels.
MARTINEZ AREA	PAUL'S PLACE 1521 Alhambra Avenue	1521 Alhambra Ave	Martinez	CA	94553	Structure of Historic Significance/ *Architectural** Specimen	A Victorian home built by Kelly in 1877. The exterior Victorian styling has been maintained although the interior has been altered and used as a restaurant since 1930.
MARTINEZ AREA	WITTENMYER HOME Arreba and Richarson Streets Incorporated	215 Arreba St	Martinez	CA	94553	Structure of Historical Significance	Circa 1890, Lewis Cass Wittenmyer built this home. Wittenmyer was County Clerk in 1876 and instrumental in the incorporation of Martinez as a city in that year.
MARTINEZ AREA	STEWARTS GROCERY Castro and Ward Streets	800 Castro St	Martinez	CA	94553	Structure of Historical Significance/*Architectural** Specimen	Circa 1879, James Stewart built this general grocery and fruit store and engaged in mercantile pursuits after many years of farming. A western-style structure with false front, low gable roof and a stepped parapet for roof trim.
MARTINEZ AREA	SOUTHERN PACIFIC RAILROAD DEPOT Incorporated	401 Ferry St	Martinez	CA	94553	Structure of Historical Significance	Circa 1876, work started on the railroad and on September 25, 1877, the first passenger train with Leland Stanford aboard went through Martinez.
MARTINEZ AREA	ALTAMIRANO ADOBE Alhambra Valley Road	295 Millthwait Drive	Martinez	CA	94553	Structure of Historical Significance/*Architectural** Specimen	Circa 1840, Abelino Altamirano built this adobe with its three foot thick walls. It is considered one of California's finest. John Swett, founder of California's public school system, bought the adobe in 1881.
MARTINEZ AREA	SITE OF JOHN MARSH MURDER 4500 block Pacheco Boulevard Unincorporated	4500 Pacheco Blvd	Martinez	CA	94553	Site relating to important person in history	Site where John Marsh, first American settler and owner of Rancho Los Meganos, was killed by three vaqueros, his former employees on September 24, 1856. Motive was said to be a wage dispute. It was ten years before two of the culprits were caught and tried. The third never was brought to justice. A plaque and monument dedicate the site. California Historical Landmark #722.
MARTINEZ AREA	COUNTY COURT HOUSE Main and Court Streets Incorporated	725 Court Street	Martinez	CA	94553	Site of Historic Event	Original court house for Contra Costa County was built in 1855. It faced Escobar Street and the Carquinez Strait. It has a bell, cast in New York and carried around Cape Horn by a sailing vessel. Original structure was replaced in 1901 by what is now the County Finance Building.
MARTINEZ AREA	MARTINEZ CEMETERIES Carquinez Scenic Drive West of Martinez Incorporated	211 Foster St	Martinez	CA	94553	Site relating to important person in history	Earliest burial ground in the County. Many notable pioneers, including Salvio Pacheco, Fernando Pacheco, the Martinez family, Joseph Reddeford Walker and Elam Brown, are interred here. Catholic Cemetery is on south side of road and Protestant on the north.
MARTINEZ AREA	MARTINEZ-BENICIA FERRY LANDING Foot of Barrellesa Street on Carquinez Strait Incorporated	310 Embarcadero St	Martinez	CA	94553	Site of Historic Event	Site of original ferry crossing established by Robert Semple of Benicia in 1847. It was a principal crossing for 49ers on their way to the mining areas. When the shoreline silted up, the landing for the ferry was shifted east to what became Ferry Street. In1860, the first westbound pony express rider crossed here in route to Oakland.

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MARTINEZ AREA	BERRYESSA ADOBE Escobar and Alhambra Avenue	427 Escobar St	Martinez	CA	94553	Site of Historic Event	Circa 1850, Jose del los Santos Berryessa built his adobe at this site. His wife was Francisca Martinez, daughter of Ignacio Martinez, grantee of Rancho El Pinole. Before the court house was built the second floor was used for County business. First meeting of Martinez Masonic Lodge was held here in 1854.
MARTINEZ AREA	FERNADALE SPRINGS Alhambra Valley Road Vaca Canyon	5830 Alhambra Valley Rd	Martinez	CA	94553	Site of Historic Event	Site of picnic and social center for prominent citizens of the late 1800s. Encompassed 160 acres with hotel and cottages. Resort offered mineral baths of soda, sulphur, and magnesia water as "cure" of rheumatism and other ills.
MARTINEZ AREA	ALHAMBRA SPRINGS RESORT West end of Alhambra Valley					Site of Historic Event	Site of popular resort in late 1800s where people came to bathe and drink mineral waters. In 1900 bought by L.M. Lasell who in 1905 laid a pipeline from the resort to a bottling plant opposite the railroad depot in Martinez and sold "Alhambra Pure Spring Water."
MARTINEZ AREA	ALHAMBRA HIGH SCHOOL 921 Susana St. Incorporated	921 Susana St.	Martinez	CA	94553	Site of Historic Event/ Site relating to important person in history	School classes were held from 1902 to 1921 in the imposing two-story wood structure once on this site. John T. Swett was a member of board of trustees. Site is now occupied by offices of Martinez Unified School District.
MARTINEZ AREA	BORLAND HOME Corner of Court and Escobar Streets Incorporated	1005 Escobar Rd	Martinez	CA	94553	Structure of Historical Significance	Built by Dr. J.S. Moore, D.D.S., in 1890, and left to his daughter who married into the Borland family. Later used as a rental and then became the C.C.C. Community College District Office. Became Martinez Museum in 1973.
MORAGA AREA	THE JOHN COURTER STORE OR MASON'S STORE SITE Larch Avenue and Canyon Road	1003 Larch Avenue	Moraga	CA	94556	Site of Historic Event	Site of a two-story structure built in 1854. Known as John Courter Store or Mason's Store. The two business partners served the needs of travelers as well as residents (teamsters and lumberjacks) working the nearby redwood forests. The structure housed a general merchandise store in front, a saloon at the rear and rooming accommodations upstairs. Structure lasted into the 1920s.
MORAGA AREA	WILLOW SPRING SCHOOL SITE Junction Canyon, Moraga, St. Mary's Road	1455 St Marys Rd	Moraga	CA	94556	Site of Historic Event	The first school erected in the Moraga Valley in 1855. It was incorporated into the County school system in 1857. The school was abandoned in 1918, then moved to the Moraga Company Ranch as a recreation hall for resident laborers. It burnt down in the 1940s. However, the old school bell is preserved in the cupola of the Moraga Ranch Mess Hall which is now a commercial establishment.
MORAGA AREA	ST. MARY'S COLLEGE 1928 St. Mary's Road	1928 St. Mary's Rd.	Moraga	CA	94575	Structure of Historical Significance	One of the oldest colleges in the west being dedicated in San Francisco in 1863. The first 100 acres were donated by James Irvine, President of the Moraga Company. Incorporated and empowered to confer degrees in 1872. Moved to Oakland in 1889 then to Moraga in 1928.
MORAGA AREA	RHEEM ESTATE OR HACIENDA DE LAS 2100 Donald Drive	2100 Donald Dr	Moraga	CA	94556	Structure of Historical Significance/*Architectural** Specimen	The Rheem Estate, designed by architect Clarence Tantau. The first floor as seen from the front was built in 1916 or 1917 as an orphanage to be directed by the Misses Hortense Higgens and Gertrude Mallelle. Ms. Higgens sold the structure and 20 acres to Donald Rheem in 1934. The main structure included 18 rooms excluding bathrooms and is a Spanish-styled hacienda. The pool house has additional bedrooms, changing rooms, and entertainment room with an upstairs projection room. The structure now serves as the Community Center for Moraga.

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MORAGA AREA	MORAGA BARN 1002 Viader Drive	1002 Viader Dr	Moraga	CA	94556	Structure of Historical Significance	Structure built around 1913 or 1914 and first owned by the Talbots, then Springmeyer, then Fleuti. The barn is remembered as a bar, but was utilized as a hotel, mercantile store and during the Depression, the post office.
MORAGA AREA	MORAGA CANYON LUMBER MILL Redwood Regional Park					Site of Historic Event	Now part of East Bay Municipal Utility District's holding of the "Moraga Grove of Redwoods," this site once was the site of early redwood lumber mills such as the Prince's Mill on Redwood Creek.
MORAGA AREA	DAVID CARRICK HOUSE Moraga Road	1204 E 15th St	Oakland	CA		Structure of Historical Significance	This is thought to be the oldest structure in Moraga. In 1911 or 1912, it was moved across the right-of-way and old "Moraga Road" in anticipation of the laying of the tracks for the Oakland and Antioch Railroad. The original rooms are the parlor, kitchen and two bedrooms.
NORTH COAST AREA	OLEUM Between Pinole and Crockett on the west Side of State Highway 80					Structure of Historical Significance	Construction of the Union Oil Company's refinery at Oleum was started in 1895. By 1897, the Contra Costa News described it as the "largest establishment of its kind on the coast." First oil refinery in Contra Costa County.
NORTH COAST AREA	TOWN OF PORT COSTA Located on Carquinez Strait Between Crockett and Martinez	38.046421° lat, -122.183634° long	Port Costa	CA	94569	Site of Historic Event/ Site relating to important person in history/a Historic District	Site of an early transportation route between Oakland and Sacrament. In 1879 the Central Pacific Railroad built a line to Bull Valley (Port Costa). From there the trains were ferried across the Carquinez Strait to Benicia for onward movement by rail to Sacramento. The same year a wheat merchant, George W. McNear, acquired a large strip of land at this site of Bull Valley and along the straits and laid out the Town of Port Costa. By 1887, warehouses and wharfs at this site handled four-fifths of the wheat shipped from California. California Point of Historic Interest CCo-2.
NORTH COAST AREA	BURLINGTON HOTEL Canyon Lake Dr., Port Costa	2 Canyon Lake Drive	Port Costa	CA	94569	Structure of Historical Significance/ Port Costa Historic District/*Architectural** Specimen	Built in 1909, this three-story wood structure with bay windows commands a magnificent view across Carquinez Strait. Built as a hotel to accommodate travelers. The structure deteriorated in the late 1920s when the grain shipments from this area ended. Restoration was completed by the present owners in 1973.
NORTH COAST AREA	PORT COSTA GRAIN WHAREHOUSE Canyon Lake Drive, Port Costa	3 Canyon Lake Drive	Port Costa	CA	94569	Structure of Historical Significance/Port Costa Historic District	In 1886 George McNear built a fireproof warehouse for the purpose of storing hay and produce. This 100' x 100' structure was built between the Burke Hotel and the railroad. It is presently used as an antique shop, restaurant and bar.
NORTH COAST AREA	PORT COSTA MERCANTILE Canyon Lake Drive, Port Costa	17 Canyon Lake Drive	Port Costa	CA	94569	*Architectural** Specimen/Port Costa Historic District	An early western-styled structure with a false front and bay windows at the second story. Front of structure has been restored to original appearance of Port Costa.
NORTH COAST AREA	WHEAT DOCK Canyon Lake Drive, Port Costa	11 Canyon Lake Drive	Port Costa	CA	94569	*Architectural** Specimen/Port Costa Historic District	An early western-styled structure with false front and open veranda at second story. Structure adds to the historic appearance of Port Costa.
NORTH COAST AREA	BULL VALLEY INN Canyon Lake Drive	14 Canyon Lake Drive	Port Costa	CA	94569	*Architectural** Specimen/Port Costa Historic District	Built in 1897, this two-story stone front building with mansard roof contributes to the various architectural specimens that are part of the history of Port Costa.

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NORTH COAST AREA	PORT COSTA GRAIN WAREHOUSES Carquinez Strait between Crockett and Port Costa	166 Carquinez Scenic Dr	Crockett	CA	94525	Site of Historic Event	From 1876 to 1883, six warehouses were built in what is knows as the Port Costa area of the Carquinez Strait to store grain for shipments worldwide. Twenty-five shiploads per week were handled from this area. Fire of 1889, 1910, and 1924 destroyed several of the warehouses and only two in the Crockett area remain and are used by C & H Sugar refinery.
NORTH COAST AREA	C & H SUGAR COMPANY Crockett on Carquinez Strait	830 Loring Ave	Crockett	CA	94525	Structure of Historical Significance	Built in 1884 as a flour mill. Later used as a wheat storage facility, George McNear bought it in 1894 and sold it in 1897 to California Beet Sugar Company. In 1905 it became a cane sugar refinery called California Hawaiian Sugar Refining Company (C & H).
NORTH COAST AREA	UNION STOCKYARDS Railroad Avenue, Rodeo	633 2nd St	Rodeo	CA	94572	Site of Historic Event	In 1891 the Pinole Packing Company occupied this site and built a hotel, post office, and school. The area was destroyed in 1906 by and earthquake.
NORTH COAST AREA	HERCULES POWDER COMPANY Hercules					Structure of Historical Significance	The site was purchased for a plant from the Martinez family in 1880. At one time it was the largest powder plant anywhere. January 11, 1882, six months after the plant was built, 1500 lbs. of powder exploded, causing the death of one worker. The shock was felt as far as Livermore.
NORTH COAST AREA	SELBY SMELTER Selby-between Oleum & Crockett	2294 Vista del Rio St	Crockett	CA	94525	Site of Historic Event	Built in 1885 by Thomas Selby, a San Francisco hardware Merchant. Ore from all over the world was smelted here. The plant had a tower for making shot. Its smoke stack at one time was reputed as the highest in the United States and was a notable landmark of the area. The plant was closed in 1971 and was subsequently demolished.
NORTH COAST AREA	THE OLD HOMESTEAD Loring Avenue, Crockett	995 Loring Ave	Crockett	CA	94525	Structure of Historical Significance	This, the first Crockett home, was built for Thomas Edwards, Sr., founder of Crockett, circa 1867. Part of the structure was built of imported lumber brought around Cape Horn. California Historic Landmark #731. Operated by the Crockett Women's Club, it is now used for weddings and receptions.
NORTH COAST AREA	LORING AVENUE From West St. to Vallejo Street, Crockett	District. 576 Winslow St.	Crockett	CA	94525	Sites of Historic Events/Structures of Historical Significance	This was the first main street of Crockett which was laid out as a town-ship in 1881 by Thomas Edwards, Sr. Most of the buildings on this street date from 1900 or earlier including the Pickwick Hotel on the southeast corner of Bay and Loring. This hotel was built by Mr. Heald in 1898 for employees of the sugar mill. The hotel has been in constant operation, although its name has been changed many times. The odd Fellows Hall on Loring Avenue between Bay and Heald was also built in the 1880's. This hall has housed most of the town's fraternal organizations. The buildings on Loring Avenue between West and Rolph Avenues were built in 1909 including the Park View Hotel which adjoins Rithet Park.
NORTH COAST AREA	OLD RAILROAD DEPOT					Structure of Historical Significance	Original flag stop for Crockett before it was laid out as a town. Trains stopped coming in 1969. Passengers traveling to Vallejo and Calistoga used to debark at this stop and continue by bus.

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NORTH COAST AREA	TOWN OF VALONA	The whole town. 800 1st Ave.	Crockett	CA	94525	Site of historical Significance	A small town that once occupied the eastern portion of the township of Crockett. Valona was originally laid out by Dr. John Strentzel in 1882, shortly after Thomas Edwards laid out the Town of Crockett. It occupied four square blocks and has easy access to Port Street and the tracks. Dr. Strentzel owned the hill and land on the east side of Crockett Ranch. Valona was a separate town with several stores and a school, although it had no post office or rail stop. Valona was slowly incorporated into the Crockett township.
ORINDA AREA	JOAQUIN MORAGA ADOBE 24 Adobe Lane Incorporated	24 Adobe Ln	Orinda	CA	94563	Structure of Historical Significance	Circa 1841, Joaquin Moraga built this adobe making it the oldest house in the county still standing. Built on a portion of Rancho Laguna de los Palos Colorado, a Mexican land grant to Joaquin Moraga and Juan Bernal in 1835. Restored in 1941 by Mrs. James Irvine. Interior remodeled to private home in 1964 by owner Donald Manuel. California Historical Landmark #509 (1954) and National Register of Historic Places (1972).
ORINDA AREA	CASA VIEJA Casa Vieja Road	4 Casa Vieja	Orinda	CA	94563	Structure of Historical Significance/*Architectural** Specimen	Built in 1894 by Judge James Gartland, an Oakland attorney. This was one of the first purchases of land from the Moraga Land Co. In the Glorietta Area of Orinda. The structure is a two-story wood frame house with a high gable roof and gable dormer. Windows are set in pairs at the front of the structure and there is an open porch centered in the front. The gables have decorated cresting.
ORINDA AREA	OLD MORAGA SCHOOL 200 Block Moraga Way Incorporated	200 Moraga Way	Orinda	CA	94563	Site of Historic Event	The Moraga School District was formed in November 1861. Soon after this school was built on land given by the Moraga family. This was the first school in Orinda and remained open until 1925.
ORINDA AREA	OLD YELLOW HOUSE 209 Moraga Way Incorporated	209 Moraga Way	Orinda	CA	94563	Structure of Historical Significance	Built by Captain Alexander Jenkins in 1894 on a portion of Rancho Laguna de Los Palos Colorados which had been subdivided by Angus Grant, John Grant and James A Williamson. Originally painted the color of old railroad stations, it has been preserved as originally built.
ORINDA AREA	FISH RANCH Gateway Boulevard and Highway 24	100 Gateway Blvd	Orinda	CA	94563	Site of Historic Event	Circa 1872, George Winslow established a ranch to raise fish. Later his son-in-law changed the operation to a more conventional ranch where horses were raised and established a tavern to serve travelers going to and from Oakland. Continued operating until 1915.
ORINDA AREA	HAMPTON'S GRAVE Near Briones Reservoir off Bear Creek Road	37°56'4"N 122°12'2"W	Orinda	CA	94553	Site relating to Important Person in History	Edward J. Hampton 1878-1935, was an electrician of some renown and one of Orinda's early pioneers. He acquired about 300 acres of old Martinez Rancho. He prepared his own gravesite on a high knoll overlooking Orinda. He deeded 70.62 acres of land to Contra Costa County for a public park.
ORINDA AREA	CEDAR OF LEBANON Orinda Community Church Incorporated	10 Irwin Way	Orinda	CA	94563	Site of Historic Event/Site Relating to Important Person in History	The seeds for this Cedar of Lebanon tree were sent to Mr. William Penn Mott, Jr., at his request from the head of the Botanic Garden in Jerusalem. About a dozen seeds were sent and were from the original Cedar of Lebanon grove, the same trees that are referred to in the Bible, outside the City of Jerusalem. The seeds were geminated by the Oakland Park Department nursery. This particular tree was planted in honor of Reverend Fred Marrow in 1955.

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ORINDA AREA	BRYANT STATION Orinda Park Incorporated	22 Bryant Way	Orinda	CA	94563	Site of Historic Event	California and Nevada Railroad began service in 1885 between Emeryville and Berkeley. The line was extended through Albany, Richmond, San Pablo and into Orinda where the line terminated at Bryant Station (named after a resident), circa 1890 located on the east side of Moraga Way near the intersection of Brookwood Road. Railroad bed was extended to Glorietta Avenue on route to Moraga where line was to turn east but the company failed before the tracks were laid, circa 1900. California Point of Historical Interest CCo-1.
ORINDA AREA	SANTA MARIA CHURCH Miner Road and Camino Pablo	315 Camino Sobrante	Orinda	CA	94563	Site of Historic Event/Site Relating to Important Person in History	Built in 1892 by Maria Le Breton de Laveaga as a family chapel and donated to Orinda. Masses were held regularly until 1914 when Miguel de Laveaga died. Church was modeled after San Marie de Bois Church in France and it was a popular subject for both artists and photographers. Congregation moved to a larger church in 1954 and the chapel was demolished in 1955.
ORINDA AREA	ORINDA PARK SCHOOL Intersection of Wildcat Canyon Road, Bear Creek Road and San Pablo Dam Road.	Wildcat Canyon Road and San Pablo Dam Rd	Orinda	CA	94563	Site of Historic Event	This school district was founded in 1882. The second school in Orinda was built on Wagner Ranch property, donated by General Theodore Wagner. The School was used until the Orinda High School District was formed and a new school built in 1925.
ORINDA AREA	WAGNER RANCH AND HOME Camino Pablo, Bear Creek Road and San Pablo Dam Road	Wildcat Canyon Road and Wagner Ranch	Orinda	CA	94563	Site of Historic Event/Site Relation to Important Person in History	Theodore Wagner, Surveyor-General, built a large home here on 241 acres of land in 1882. The Oak View Ranch was self-sustaining with elaborate orchards, olive trees, vineyards, a vinegar house, dairy, brick kiln, gas house, horse barn, carriage house, fish pond, blacksmith's shop and a servant's house. Old home site now maintained as historical study and nature area by East Bay Municipal Utility District.
ORINDA AREA	ORINDA PARK HOTEL Northeast corner of Bear Creek Road and San Pablo Dam Road	Bear Creek Rd and San Pablo Dam Rd	Orinda	CA	94563	Site of Historic Event/Site Relation to Important Person in History	Built by Theodore Wagner in 1885 in anticipation of the success of the California and Nevada Railroad. Used by the community until 1913. Part of the stone foundation is still visible.
ORINDA AREA	MINER RANCH Sleepy Hollow and Miner Road Area Incorporated	On Google Maps: "Sleepy Hollow"	Orinda	CA	94563	Site relating to Important Person in History	Many oil wells were drilled from 1888 through 1903 in the Miner Road area of Orinda. Several wells were drilled on Miner Ranch. Some of the wells at Miner Ranch yielded oil, although the actual quantities were small.
ORINDA AREA	THREE RANCHOS BOUNDARY Summit of Miner Road	596 Dalewood Dr	Orinda	CA	94563	Site of Historic Event	Common boundary of Ranchos Acalanes El Sobrante and Boca de la Canada del Pinole. Has been marked with a monument and memorial stone by the Orinda Historical Society.
ORINDA AREA	CONKLIN HOTEL Near Freeway at Crossroads					Site of Historic Event	Built in 1858 by James Conklin. Hotel was a principal landmark sited in many deeds of the 1880's.
ORINDA AREA	SULLIVAN RANCH AND HOME 607 El Toyonal Incorporated	607 El Toyonal	Orinda	CA	94563	Structure of Historical Significance	In 1879 Eugene Sullivan settled on 250 acres in Orinda. Ranch's dairy, the Orinda Creamery, served local residents between 1932-1938. Property remained an operating ranch until the 1960s.
ORINDA AREA	MISS GRAHAM'S RIDING ACADEMY 63 Orinda Way Incorporated	63 Orinda Way	Orinda	CA	94563	Structure of Historical Significance	Resort once famous throughout the Bay Area. People came to take lessons and ride horseback over the Orinda Trails. Only one quarter of the building remains as the Orinda Garage today.

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ORINDA AREA	DE LAVEAGA HOME 12 Bien Venida Road Incorporated	12 Bien Venida Rd	Orinda	CA	94563	Structure of Historical Significance/*Architectural** Specimen	Bien Venida was first built in 1888 by Miguel and Maria de Breton de Laveaga. The house was destroyed by fire in 1915 and a duplicate home was built from original plans on the same site. It has been continuously occupied by the de Laveaga family. E.I. de Laveaga, a son, later developed more than 1,100 acres of what is now Orinda. The two-story wood frame structure with truncated roof, gabled entrance, plus hip style, forms an irregular roof line. A windows walk, wood cresting and ornaments decorate the roof trim. First story walls are shiplap with patterned wood shingle at the second story. Shelf with boxed cornice and brackets between floor levels adds to the wall design along with an open veranda.
ORINDA AREA	FIRST ORINDA FIRE HOUSE Orinda Way Incorporated	33 Orinda Way	Orinda	CA	94563	Structure of Historical Significance/*Architectural** Specimen	Built in 1923 by Orinda Volunteer Fire Department and E.I. Laveaga as part of planned Orinda town site. Use until 1942 as a fire house and library. It is now a commercial building. Structure is a cross of early western style with false front and Spanish styling.
ORINDA AREA	ORINDA COUNTRY CLUB 315 Camino Sobrante Incorporated	215 Camino Sobrante	Orinda	CA	94563	Structure of Historical Significance/*Architectural** Specimen	Country Club built in 1924 by E.I. de Laveaga. Project included golf course and early subdivision.
ORINDA AREA	CASA VERANA 112 Camino Pablo Incorporated	112 Camino Pablo	Orinda	CA	94563	Structure of Historical Significance	Built in 1921 as the first store and gas station in Orinda. Purchased by E.I. de Laveaga and used for various community purposes. It is now used by commercial establishments.
ORINDA AREA	ORINDA STORE Orinda Village	37 Orinda Way	Orinda	CA	94563	Structure of Historical Significance	Built in 1924 by E.I. de Laveaga as part of planned town site along with firehouse, garage, and riding academy. Structure in continuous use ever since as a store.
ORINDA AREA	ORINDA FILTER PLANT 200 Block of Camino Pablo Incorporated	209 Camino Pablo	Orinda	CA	94563	Structure of Historical Significance	Present structure built in 1936. It is the largest filter plant in the east Bay Municipal Utility District (EBMUD) system, and serves most Berkeley and Oakland.
ORINDA AREA	OLD TUNNEL Old Tunnel Road	601 Fish Ranch Rd	Orinda	CA	94563	Site of Historical Event	Constructed in 1903 as a cooperative effort of Contra Costa and Alameda Counties. Were 1,100 feet long and 320 feed lower than the top of summit road. Used until 1937 when replaced by the low level “Caldecott Tunnel.” Portals can still be seen but are boarded up.
ORINDA AREA	ORINDA UNION SCHOOL 26 Orinda Way Incorporated	26 Orinda Way	Orinda	CA	94563	Structure of Historical Significance	Built in 1925 for Orinda Union School District, created by merger of Moraga School District and Orinda Park School District. Used as a school until 1973 when converted to Orinda Community Center.
ORINDA AREA	CALIFORNIA-NEVADA RAILROAD Kennedy Grove, El Sobrante Unincorporated/Incorporated	6531 San Pablo Dam Rd	El Sobrante	CA	94803	Site of Historic Event	In 1886 railroad stops of the California Nevada Railroad were scheduled at Frenchman’s Curve, along the present Hillside Drive. The area is now part of Kennedy Grove Regional Recreation Area which is maintained by the East Bay Regional Park District. California Point of Historical Interest CCo-4.

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ORINDA AREA	ORINDA THEATER Incorporated	3308, 4 Orinda Theatre Square	Orinda	CA	94563	Structure of Historical Significance/Site Relating to Important Person in History	Completed in 1945, this was Orinda's first theater and the last, large old theater of its type in Contra Costa County. It was designed by Alexander Aimwell Cantin (circa 1875-1964), one of California's first registered architects. The building is an example of streamlined modern styling. It contains murals on the foyer ceiling and auditorium walls painted by Anthony B. Heinsbergen (1895-1981) who decorated 747 movie theaters during his nearly 60 year career, including some of the best known Hollywood theaters. The theater is a major visual landmark in the community of Orinda. It was one of the first buildings built at the "Crossroads" and helped to establish a focal point for the developing suburban community. The theater and surrounding shops located at "the Crossroads" have been closed since 1980. The owner is currently in the process of redeveloping the corner, including the theater. It is projected to reopen by the end of 1989.
PACHECO AREA	PACHECO INN Pacheco Blvd. and Center Avenue	5867 Pacheco Blvd	Pacheco	CA	94533	Structure of Historic Significance	Structure built in the 1800s and still standing although remodeled. The inn was a stop for the stage coach on its route to and from Martinez.
PACHECO AREA	TOWN OF PACHECO	The whole town. 195 Brown Dr.	Pacheco	CA	94533	Site of Historic Event	Pacheco was established in 1860 by Dr. J.H. Carouthers who, with two others, purchased a sit on the bank of Walnut Creek and laid out a townsite. It was one of the important shipping centers in Contra Costa County in that era.
PACHECO AREA	PACHECO FLOUR MILL 105 Aspen Street Pacheco	105 Aspen Drive	Pacheco	CA	94533	Site of Historic Event/Site Relating to Important Person in History	The mill was built by W.K. Hendricks on land from George Loucks in 1857. The mill burned down in August in 1867 and was rebuilt in 1868 and was rebuilt in 1868 with help from local citizens. The vacant flour mill was totally destroyed by fire in 1913.
PACHECO AREA	GEORGE P. LOUCKS HOME Corner of Highway 4 and Old Pacheco Road, Pacheco	5039 Blum Rd	Martinez	CA	94553	Site Relating to Important Person in History	A two-story frame house with fluted eaves and covered front porch with balcony. The first residence built in Pacheco in 1853 by Garry L. Walwrath, from timbers hewn in Moraga Redwood. Sold to Loucks in 1857. Birthplace of Anne Loucks, the first child born in Pacheco and the town's grammar school teach for thirty-four years.
PACHECO AREA	LOUCK'S LANDING North of Highway 4 on Old Pacheco Road, Pacheco	5036 Blum Rd	Martinez	CA	94553	Site of Historic Event/Site Relating to Important Person in History	In the late 1850s this was a navigable slough and a turning basin for vessels of light draft. It was the mouth of Walnut Creek. George P. Loucks built a warehouse here to serve the small stern wheelers that came up the slough. Many years later the channel of Walnut Creek was changed to border Buchanan Field, the County airport.
PACHECO AREA	OAK PARK HOUSE 2089 Oak Park Blvd.	2097 Oak Park Blvd	Pleasant Hill	CA	94523	Structure of Historic significance	Single story frame cottage with elevated foundation and front glass porch. Built in the 1920's, structure is on land which was once a portion of the Elijah Hook Ranch. The house was purchased by the Oak Park Assembly of God in 1968. It now stands between the church and Pleasant Hill Elementary School.
PINOLE AREA	PINOLE WATERFRONT Foot of Tennent Avenue	11 Tennent Ave	Pinole	CA	94564	Site of Historic Event	This historical waterfront deserves recognition because of its importance as the nucleus of a shipping harbor, which marked the beginning of Pinole.

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PINOLE AREA	ELLERHORST HOME, Hercules	124 Buckley	Hercules	CA	94547	Structure of Historic Significance	Built during the 1860's after the Ignacio Martinez land was divided among his eleven children. In mid – 1870's Mr. and Mrs. C.H. Ellerhorst purchased and remodeled the cottage which still stands. The Ellerhorst's were quite active in the activities of Pinole.
PINOLE AREA	DOWNER HOME, San Pablo Avenue	2711 San Pablo Ave	Pinole	CA	94564	Structure of Historic Significance/ *Architectural** Specimen	Built in 1905 by Edward Downer, Sr. who established the first bank of Pinole, which opened for business October 25, 1905. Mr. Downer went on to establish a chain of banks in West Contra Costa County. He was Pinole's first city clerk (incorporation 1903) and held the post of mayor of the city of Pinole for nearly thirty years. The structure is a large mansion with fluted column porch supports.
PINOLE AREA	MARTINEZ ADOBES, Pinole Creek	4202 Alhambra Ave	Martinez	CA	94533	Site relating to important person in history	Site of the original homestead adobes built in the 1830's by the family of Don Ignacio Martinez. Headquarters of Pinole Grant, former alcalde and commandant. He planted the first wheat in the county.
PINOLE AREA	FERNANDEZ MANSION 100 Tennent Avenue Incorporated	100 Tennent Ave	Pinole	CA	94564	Structure of Historic Significance/ *Architectural** Specimen	The Fernandez Mansion—an example of 16th century classic manneristic architecture—is a stately twenty-two room redwood home located at the bay front of Pinole. It was built in 1849 by Bernardo Fernandez, a shipping merchant, who added to the growth of Pinole and West Contra Costa County by transporting its products across the bay. The mansion is listed in the National Register of Historic Places and is California Point of Historical Interest CCo-6.
PITTSBURG AREA	CAMP STONEMAN Railroad Avenue	2820 Harbor St	Pittsburg	CA	94565	Site of Historic Event	Camp Stoneman, named for General George Stoneman, a Civil War leader and the 15th Governor of California, encompassed 1,000 acres of land and was built in 1942 as an "embarkation" facility or "staging" area for World War II troops leaving for the Pacific theater. Also used during the Korean conflict in a like manner. Two million soldiers were processed through this site. Camp Stoneman was inactivated August 13, 1954.
PITTSBURG AREA	EARLY CALIFORNIA RAILROAD Pittsburg-Antioch Highway					Site of Historic Event	The Pittsburg mines and Black Diamond mines used standard gauge railroad track three years before the "Golden Spike" was driven at Promontory Point, Utah. The railroad transported coal from the mines to the San Joaquin River for shipment.
PITTSBURG AREA	ROSE HILL CEMETERY Somersville Mines Area Regional Park	On Google Maps: "Rose Hill Cemetery Nortonville Rd"	Pittsburg	CA	94565	Site of Historic Event	A burial ground three miles south of Pittsburg located in the Coal Mines Regional Park is the resting place of many Welsh Miners and their families. Ninety-two memorial headstones, inscribed in the Gaelic language of the ancient Celt record the past.
PITTSBURG AREA	MINE SHAFTS NORTONVILLE/SOMERSVILLE Cole Mines Regional Park	5175 Somersville Rd	Antioch	CA	94509	Site of Historic Event	Coal, known as the Black Diamond, was discovered in the foothills of north-eastern Contra Costa County in 1850. Noah Norton built the first home in the mine area in 1861—later knows as Nortonville. The mining families were mostly from England and Wales. This was the first fossil fuel source in California.
PITTSBURG AREA	COULTER PINE Black Diamond Way	5175 Somersville Rd	Antioch	CA	94509	Site of Historical Significance	The most distinctive single botanical species in the coal mines area is the Coulter Pine. Here it reaches its northernmost limit. This pine is characterized by large cones.

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PITTSBURG AREA	SOUTHERN PACIFIC RAILROAD DEPOT 1291 Railroad Avenue	1291 Railroad Ave	Pittsburg	CA	94565	Structure of Historical Significance/*Architectural** Specimen	An early railroad facility that added to the industrial development of Pittsburg, circa 1878. This two-story frame structure with a varied wall design of shiplap, vertical board and batten, fish scale shingles and decorated brackets incommoded passengers and cargo.
PITTSBURG AREA	SANTA FE RAILROAD DEPOT Black Diamond Street	1 W Santa Fe Ave	Pittsburg	CA	94565	Structure of Historical Significance	Transportation needs were changing to the faster railroad facilities for inland travel and depots were built to handle the passengers and cargo, circa 1900.
PITTSBURG AREA	SACRAMENTO-NORTHERN RAILROAD DEPOT	50 E 8th St	Pittsburg	CA	94565	Structure of Historical Significance	This railroad line, California's first electric line, inaugurated 1909, provided transportation between the Bay Area and the central valley communities including Sacramento, Woodland, Oroville, Chico, Marysville and Stockton.
PITTSBURG AREA	THEATER SITES York Street	351 Railroad Ave	Pittsburg	CA	94565	Site of Historic Event	The Black Diamond Theater built in 1909 and the Palace Theater built in 1910. The Enea Brother's theaters provided the first movies in Contra Costa County.
PITTSBURG AREA	VINCENT A. DAVI LIBRARY 80 Power Avenue	80 Power Ave	Pittsburg	CA	94565	Structure of Historical Significance	Pittsburg's library system began circa 1913. It was housed over the town's firehouse on 5th Street and Railroad Avenue. The new Vincent A. Davi Library named in honor of the late mayor of Pittsburg, opened April 24, 1966, at its present location on Power Avenue.
PITTSBURG AREA	FAGES-CRESPIE TURNBACK CAMP Buchanan Park, Buchanan Road	4150 Harbor St	Pittsburg	CA	94565	Site of Historic Event/Site Relating to Important Persons in History	The Fages-Crespie Expedition in 1772 was a final attempt to establish an inland land route to reach Point Reyes where the Mission of San Francisco was to be founded. The diary of the journey became the first written record of Eastern Contra Costa County. This site, recorded as "Turnback Camp," was the point at which the expedition abandoned their search for a crossing and turned southward to return to their base camp at Royal Presidio of Monte Rey (now Monterey).
PITTSBURG AREA	OAK SPRINGS COMMUNITY Buchanan Park , Buchanan Road	4150 Harbor St	Pittsburg	CA	94565	Site Relating to Important Person in History	James Kirker, an early American Frontiersman, headquartered at this site three miles south of New York of the Pacific (now Pittsburg) and established a community known as Oak Springs, California.
PITTSBURG AREA	PITTSBURG HISTORICAL DISTRICT Foot of Railroad Avenue, at Waterfront	District. 2099 Railroad Ave.	Pittsburg	CA	94565	Site of Historic Event/Site Relating to Important Persons in History	The waterfront area at Railroad Avenue has been considered as a district to provide a record of the historical past associated with fishing, shipping, the railroads and the people who contributed to the development of Pittsburg. A listing of the historical events associated with this area includes: (1) Rancho Los Medanos—A Land Grant awarded by Governor Don Bautista Alvarado in 1835 to Jose Mesa and Jose Garcia. (2) Colonel Jonathan Stevenson— Founder of New York of the Pacific (now Pittsburg). (3) General Williams Tecumsah Sherman—Surveyor of the town of New York of the Pacific. (4) First Post Office in Contra Costa County—In 1849 John Beemer was Postmaster of this office, then, located at Second and Black Diamond Street. (5) Booth Cannery—Site of early fishing center and cannery. Early cannery technology developed here. (6) Coaling Station—First steamboat stop between San Francisco and Sacramento where boats took on coal. (7) Cornwall Mansion—Home of P.B. Cornwall, Superintendent

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							of Black Diamond Coal Mines. The mansion located at the foot of Railroad Avenue, dates to 1861 and contained the local dispatcher and telegraph office. It was used as a residence until 1957. (8) Robert Reddeford Walker—Discoverer of the Pacific Tidewaters along the San Joaquin River route in 1833. He was the first American to follow the San Joaquin River to its mouth at Pittsburg. (9) Confluence of Sacramento and San Joaquin Rivers. (10) Cornwall Station-Built in 1878 (11) Steel Mill-Established in 1911 (12) Official Road-Railroad Avenue, an original road from the Cumberland Mines to the Town of New York of the Pacific 1849, followed by New York Landing 1850s, City of Pittsburg.
PITTSBURG AREA	CONGREGATIONAL CHURCH, West 4th and Montezuma Streets	425 W 4th St	Pittsburg	CA	94565	Structure of Historic Significance	The Congregational Church was first built in Nortonville for the mining community in 1882. It was moved to Pittsburg in 1884 and is still in use as a church.
PITTSBURG AREA	LATIMER RANCH Nortonville Road	5755 Nortonville Rd	Pittsburg	CA	94565	Structure of Historic Significance	The home of Leo Latimer, private owner of original patent by Governor Bigler of California. Home was built in 1850.
PITTSBURG AREA	LOS MEDANOS HOTEL	835 Railroad Ave	Pittsburg	CA	94565	Architectural* Specimen	A U-shaped two story stucco structure with decorated wood columns around windows, doors and corners. Balconies are located under windows at the second floor. A molded arch trim of wood surrounds the top structural opening of the windows on the first floor. Main entrance is recessed within an arcade. Built in 1917.
PITTSBURG AREA	BLACK DIAMOND DISTRICT OLD GRAMMAR SCHOOL West 8th and Black Diamond Streets	50 E 8th St	Pittsburg	CA	94565	Structure of Historic Significance	This grammar school was built in 1914 for the Black Diamond School District. It also housed high school classes when Pittsburg withdrew from the East County's Riverview Union High School District in 1923.
PITTSBURG AREA	PITTSBURG SEVENTH DAY ADVENTIST CHURCH East 9th and Los Medanos Streets	900 Los Medanos St	Pittsburg	CA	94565	Structure of Historic Significance/ *Architectural** Specimen	The history of this old Congregational Church is closely interwoven with the city's progress. It was dedicated September 28, 1919 and its red brick grandeur with a crenelated tower, decorated rose windows; stained glass windows and arched main entrance is a unique example of turn of the century architecture and style.
PITTSBURG AREA	CALIFORNIA THEATER Railroad and Central Avenues	351 Railroad Ave	Pittsburg	CA	94565	Structure of Historical Significance/*Architectural** Specimen	The California Theater is the majestic symbol of the city's past. The theater provided vaudeville and film entertainment from the era of silent movies to sound and color productions. This architectural structure with red and black tile and traditional theater marquee at the entrance has been proclaimed as a most magnificent theater. Built circa 1925.
PITTSBURG AREA	MILITARY CHAPEL STONEMAN PARK Harbor Street and Leland Road	390 E Leland Rd	Pittsburg	CA	94565	Structure of Historical Significance/*Architectural** Specimen	Two military chapels, built in 1942 at Camp Stoneman, are still in use by local congregations, This chapel displays the traditional architectural design associated with military bases built during World War II.
PITTSBURG AREA	ST. PETER MARTYR CHURCH West 8th and Black Diamond Street	740 Black Diamond St	Pittsburg	CA	94565	*Architectural** Specimen	A two-story high stucco structure with a tiled roof and a belfry tower located at the left of the main entrance. The tower has a narrow semi-circular opening at the top. The main entrance has a molded arch trim over the doorway and a rose window directly above with decorative panels on both sides. Main windows have a semi-circular top and are of stained glass. Built in 1925.

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PITTSBURG AREA	DOW CHEMICAL COMPANY Loveridge Road	901 Loveridge Rd	Pittsburg	CA	94565	Structure of Historical Significance	Production began July 1, 1916 at the Dow Chemical Company's Pittsburg plant. Owned then by the Great Western Electro-Chemical Company, the Pittsburg plant has grown to become the largest chemical production complex in the Western United States. The plant, which now occupies 450 acres of land and a mile of frontage along the San Joaquin River, was formerly a part of the old Rancho Los Medanos.
PITTSBURG AREA	JOHNS MANVILLE CORPORATION East 3rd and Harbor Street	598 E 3rd St. B	Pittsburg	CA	94565	Structure of Historical Significance	The Pittsburg plant of Johns Manville Product Corporation broke ground in 1923 and began production in 1926. The plant occupies a 25-acre site and produces a wide variety of home and industrial products.
PLEASANT HILL AREA	HOOK RESIDENCE 60 Hookston Road and Buskirk Avenue	60 Hookston Rd	Pleasant Hill	CA	94523	Structure of Historical Significance	William hook was a pioneer merchant in 18533 and owned a store in Pacheco. His son, Vincent, became a County Supervisor. A new home was built on the same site by Vincent's daughter. The Hooks owned about 2,000 acres of land in the area. This house was moved to Martinez when Hookston Square (an office complex) was built.
PLEASANT HILL AREA	THE DAILEY BARN AND COTTAGE, 301 Cortsen A Avenue	301 Cortsen Ave	Pleasant Hill	CA	94523	*Architectural** Specimen	A two story wood frame structure with a high gable roof and shiplap siding. An open veranda extends the front of the structure at the first story. Built in 1858, the barn is two stories high in the center section with a one story shed attachment on either side.
PLEASANT HILL AREA	THE ROGERS HOUSE, 315 Twinview Drive	315 Twinview Dr	Pleasant Hill	CA	94523	*Architectural** Specimen/Structure of Historic Significance	Circa 1867, this single story wood frame structure was built on a knoll with a view eastward overlooking the valley toward Mt. Diablo and Suisun Bay. Although additional rooms have been added to the original structure, the shiplap siding has been matched to retain the original appearance. A nearby park has been named in honor of Mr. Rogers.
PLEASANT HILL AREA	THE HENRY VESSING HOUSE 2979 Vessing Road	2979 Vessing Rd	Pleasant Hill	CA	94523	Structure of Historical Significance/*Architectural** Specimen	Adjacent to Murderer's Creek, Gambrel roof, stucco with dormers, large side Specimen porch, arch entry, built circa 1910. Tank house and windmill moved to property. Privately owned.
PLEASANT HILL AREA	THE BERWICK-VESSING HOUSE 3025 Vessing Road	3025 Vessing Rd	Pleasant Hill	CA	94523	Structure of Historical Significance	Colonial Revival style, wood siding with dormers and porch, two gabled roofs. Original section was a school moved from Pleasant Hill Road and Oak Park Blvd.
PLEASANT HILL AREA	THE BUTTNER HOUSE Off Grayson Road Near Taylor Blvd.	2590 Pleasant Hill Rd	Pleasant Hill	CA	94523	Structure of Historical Significance	TO BE DOCUMENTED
PLEASANT HILL AREA	THE BRANDON HOUSE Boyd Road near Brandon	481 Boyd Rd	Pleasant Hill	CA	94523	Structure of Historical Significance	Shingle wood structure, two stories, hip roof, old fireplace in central back, Berkeley style, built circa 1921. Privately owned.
PLEASANT HILL AREA	HANGMAN'S TREE 1985 Pleasant Hill Road, adjacent to Murderer's Creek	1985 Pleasant Hill Rd	Pleasant Hill	CA	94523	Site of Historic Event	Legend has it that an Indian was hung from this tree for horse stealing in the 1800s. This oak is estimated to be 200 year old.
PLEASANT HILL AREA	MURDERER'S CREEK Flows behind P. H. Elementary school, under Oak Park Blvd.	2097 Oak Park Blvd	Pleasant Hill	CA	94523	Site of Historic Event	This creek with three branches, North, Central and South, is indicated on the first Surveyor General's Map of Rancho Las Juntas area in 1864. A semi-developed path exists between the end of the school playground and Oak Park Lane.
PLEASANT HILL AREA	THE GEARY HOUSE Northwest Corner Pleasant Hill and Geary Roads	23 Limewood Pl	Pleasant Hill	CA	94523	Site of Historic Significance	Circa 1878, Lawrence Geary purchased a ranch of 400 acres to engage in farming. A two story redwood frame structure with overlap siding and medium gable roof was built on the farm. It was demolished in 1977 and redeveloped with new houses.

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PLEASANT HILL AREA	THE BAKER HOUSE 2485 Pleasant Hill Road	2485 Pleasant Hill Rd	Pleasant Hill	CA	94523	*Architectural** Specimen	A one-story wood frame cottage style structure with shiplap siding exposed rafters and a medium hip roof. Windows are two sash, double hung, with plain molding for surrounding detail. An open veranda extends across the front. A detached accessory building of the same styling is located at the rear of the cottage.
PLEASANT HILL AREA	FRANCISCO HOUSE 2937 Dorothy Drive	2937 Dorothy Dr	Pleasant Hill	CA	94523	*Architectural** Specimen	A one-story wood frame cottage-style structure with a medium gable roof and exposed rafters. Windows are two sash, doubled hung with plain molding for surrounding detail. Main floor is elevated over a ground level basement.
PLEASANT HILL AREA	WINDMILLS OF PLEASANT HILL	2391 Pleasant Hill Rd	Pleasant Hill	CA	94523	*Architectural** Specimen	It is said that windmills were quite numerous in Pleasant Hill and one still stands close to Pleasant Hill Road near Grayson Road. This metal structure is about sixty feet high with four foot oblique vanes radiating from a horizontal shaft.
PLEASANT HILL AREA	TEIGLAND TEAK HOUSE Teigland Road					Site of Historic Event	TO BE DOCUMENTED
PLEASANT HILL AREA	SHERMAN FIELD Highway 680 and Monument Blvd.	2314 Monument Blvd	Pleasant Hill	CA	94523	Site of Historic Event	Dedicated May 11, 1941. Private airport. Land purchased by A.J. Sassons and P.J. McManamy. Used for seven months until civilians were not permitted to fly with in 100 miles of the coast during World War II. The private airport was then leased to Pan American Airways for instrument flight training school. After the war Sherman Field was returned to private use. It closed in 1950 because of its small size and larger nearby Buchanan Field.
PLEASANT HILL AREA	ROCHE BARN (Land and Barn) 1525 Roche Drive	1525 Roche Dr	Pleasant Hill	CA	94523	Structure of Historical Significance	Built in 1905, part of original David Roche Ranch. California style with central loft and side stables, dual pitch roof. Privately owned.
PLEASANT HILL AREA	THE SANKO FARM Sanko Road near Taylor Blvd. and Ruth Street	320 Civic Dr	Pleasant Hill	CA	94523	Site of Historic Significance	Circa1938 agriculture and horses. Home of the Sanko brothers, Earl and John. Demolished in 1985, became Pleasant Hill City and Pleasant Hill Recreation and Park District Corporation Yard.
PLEASANT HILL AREA	DE MARTINI HOUSE Coggins Drive	3200 Buskirk Ave	Pleasant Hill	CA	94523	Structure of Historic significance	Attractive physical appearance probably remodeled at least twice – last being about 1930. Wood exterior with stucco, English Tudor with shingled roof and Tudor chimneys, front porch, Gothic detailing – finials and pendants, large front gable, side gable with dormers, believed circa 1920.
PLEASANT HILL AREA	PLEASANT HILL GRAMMER SCHOOL 2050 Oak Park Blvd.	2050 Oak Park Blvd	Pleasant Hill	CA	94523	Structure of Historical Significance	Oldest public building in Pleasant Hill. Built in 1920, stucco, one story with basement. Became Pleasant Hill's first recreation center when the new Pleasant Hill Elementary School on Oak Park Blvd. Opened in 1953. In 1970 it became the offices of the Pleasant Hill Police Department. In June 1982 it was rededicated as the Pleasant Hill Historical and Cultural Center and serves a consortium of community organizations, a theater and museum.
PLEASANT HILL AREA	BOSS SLATER HOUSE 2485 Pleasant Hill Road	2485 Pleasant Hill Rd	Pleasant Hill	CA	94523	Structure of Historical Significance	Previous homes of two early families; single hip roof, front altered although rustic balcony around porch, wood exterior, age unknown. The house was moved prior to construction of Taylor Blvd.

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PLEASANT HILL AREA	THE PATRICK RODGERS BARN AND HOUSE 315 Cortsen Road	315 Cortsen Rd	Pleasant Hill	CA	94523	*Architectural** Specimens/ Structures of Historical Significance	Built between 1866-1868, home of Patrick and Mary Rodgers. Gable roof on two-story wood farmhouse, wide front and side porch, one-story addition about 1900, doors and windows exhibit detailing of Greek Revival. California-style barn with central gabled room around which is wrapped a three-sided shed. Presently owned by Pleasant Hill Recreation and Park District. Plans include historic preservation of the house and barn and developing a historic park. Application has been made to list these buildings on the National Register of Historic Places.
PLEASANT HILL AREA	ARCHAEOLOGICAL SITE Gregory lane, west of Contra Costa Blvd. at east end of Two Worlds, a business/residential development.	21 Gregory Lane	Pleasant Hill	CA	94523	Structure of Historical Significance	As reported in 1950 U.C. Archaeological Survey #9 Department of Anthropology, University of California, Berkeley. Eleven complete skeletons discovered in 1946 on Robert Enge Property, 21 Gregory Lane, During excavation of swimming pool. Determined to be 8,000 to 10,000 years old by Anthropologists. Skeletons are now in the archives at U.C. Berkeley.
PLEASANT HILL AREA	WORLD WAR I MONUMENT Boyd Road near Contra Costa Boulevard	2511 Contra Costa Blvd	Pleasant Hill	CA	94523	Structure of Historical Significance	Circa 1927. Constructed in Monument and Contra Costa Boulevard, later moved when 680 freeway was built. Dedicated to the 77 Contra Costa County service personnel (76 men and 1 woman) who lost lives in World War I.
PLEASANT HILL AREA	THEODORE HOOK HOUSE 6 Street Lawrence Court	6 Lawrence Ct	Pleasant Hill	CA	94523	Structure of Historical Significance	Circa 1910. One of three houses built by James Hook for his sons. He preferred to call them “cottages.” In good condition with wood exterior and redwood interior, two stories with dormer, small basement. Classified as mid-western architecture. Theodore was grandson of Wm. Hook. This “cottage” is owned and occupied by Charles and Betty Peissner.
RICHMOND AREA	U.S. WHALING STATION Pt. St. Pablo	Dock SW of 1900 Western Dr	Richmond	CA	94807	Structure of Historical Significance	This structure was used by a whaling company for extracting whale oil during the depression years. It was the last whaling station in the U.S. to be closed. The ramps for hauling the whales out of the water are still attached to the structure.
RICHMOND AREA	EAST BROTHER LIGHT STATION Island off Pt. St. Pablo in San Francisco Bay	1900 Stenmark Dr	Richmond	CA	94801	Structure of Historical Significance/*Architectural** Specimen	For ninety-four years the Coast Guard maintained this lighthouse 24 hours a day. Families lived on this island and the children rowed to the mainland to attend a one-room schoolhouse. In 1968 the light beams were automated, although the steam powered fog horn remains intact. The Light Station underwent extensive restoration in 1979 and is listed in the National Register of Historic Places. It is now open to the public as a Bed and Breakfast Inn operated by the East Brother Light Station, Inc., a non-profit corporation licensed by the U.S. Coast Guard.
RICHMOND AREA	WINEHAVEN BUILDINGS Point Molate	2036 Stenmark Dr	Richmond	CA	94801	Structure of Historical Significance/*Architectural** Specimen	Circa 1900, the California Win Association built the biggest winery in the United States. Thousands of gallons were bottled and shipped to France and other markets of the world. Prohibition ended the winery business and the structure was used to make fertilizer from sardines and later a whaling company extracted whale oil at this location during the depression era. Facilities now used by the U.S. Navy, Fuel Department. Structure is very large and made of brick with turrets along the parapet.

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RICHMOND AREA	SANTA FE RAILROAD DEPOT Garrard Blvd.	240 Garrard Blvd	Richmond	CA	94801	Structure of Historical Significance	In 1901 the Santa Fe Railroad built a large repair facility at MacDonald Avenue and Garrard Boulevard for handling repair work north of Fresno. Facility including reading room and game room for the employees. An Indian village was behind the repair shop as living quarters for the Indians brought there to work. In 1969 the facility became the Western Terminal of the Santa Fe Railroad.
RICHMOND AREA	RED ROCK ISLAND (MOLATE) In San Francisco Bay, south of San Rafael Bridge	Island. "Red Rock Island"		CA		Site of Historic Event	Red Rock Island, about an acre, was excavated for manganese to be used in road building and industry and use for ballast in ships. It is now privately owned and used primarily by fishermen. It is noted for the fact that it is the point where three counties join—San Francisco, Marin and Contra Costa.
RICHMOND AREA	POINT RICHMOND HISTORIC DISTRICT Washington Avenue and Park Place	District. 105 Park Pl.	Richmond	CA	94801	Structure of Historical Significance/Architectural* Specimen/Site Relating to Important person in history	First business section of Richmond settled in 1900. Many of the original structures are still in existence and the area hasn't changed dramatically over the years. Structures such as "the Baltic Bar," "the Hotel Mac" and the Fire Station have been or are in the process of restoration. Baltic Bar at 135 Park Place, one of the outstanding show places of the early 1900s, was a regular visiting spot of Jack London. Structure has been restored to its earlier state. Hotel Mac at the corner of Washington Avenue and Cottage Avenue was originally known as "The Colonial Hotel," where all the elite of the Standard Oil Company lived until the 1920s. It was noted for fine food and excellent bar. A 1970 fire destroyed the interior of the hotel. It had been restored to its former grandeur. Old Firehouse No. 1 and Jail at 145 Park Place was the first firehouse and jail at Point Richmond and still stands with its original brick façade. The structure is split level with two arched openings for doorways and arched windows with center keystone. Two of the earliest buildings remain. The first Band of Richmond built in 1902 at the corner of West Richmond and Washington Avenue. The bank was located here until the early 1920s when it became the location of the First Richmond Mercantile Trust Company. It is now a clothing store. The building at 31 Washington was built by James Shaw in 1901 for the Lang Drug Company and the Brown-Sugrue Bootery. It is now a delicatessen.
RICHMOND AREA	OLD BRICK WORKS Brickyard Cove	1223 Brickyard Cove Ln	Richmond	CA	94801	Structure of Historical Significance	One of six brick companies in and around Richmond. It was first known as the Los Angeles Brick Co., and later was called the Richmond Press Brick Company. It was the last to close, and two kilns remain which were preserved by the owners of the condominiums known as "Brickyard Landing." It provided the first paving bricks for the Bay bridges.
RICHMOND AREA	ELLIS LANDING Foot of 10th St.	Route	Richmond	CA	94802	Site of Historic Event	A trade route between Richmond, San Pablo Bay and San Francisco was established by Captain George Ellis with two schooners, circa 1869. This route operated until the Santa Fe Railroad, with its freight trains and ferry boats, replaced the existing trade route, circa 1901.

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RICHMOND AREA	CHINESE FISH CAMP South of Pt. Molate	37.995705° lat, -122.457° long	San Rafael	CA	94901	Site of Historic Event	Established in the 1880s by Chinese fisherman. One hundred individuals earned their living here by netting San Francisco Bay shrimp and selling them throughout the Bay area. They also dried them for shipping back to China.
RICHMOND AREA	CONDIDO GUITERREZ ADOBE Mouth of San Pablo Creek	1599 Brookside Dr	San Pablo	CA	94806	Site of Historic Event	Built in 1845, it had the first fireplace in Contra Costa County. After Mexican rule it became a jail.
RICHMOND AREA	GIANT POWDER WORKS Point Pinole	5551 Giant Hwy	Richmond	CA	94806	Site of Historic Event	Established in 1882 as the Safety Nitro Company. The company built a post office, saloon and a railroad depot. Later became the Giant Powder Works than Atlas Powder Words, circa 1930. Sold to Bethlehem Steel in 1965. Point Pinole is now part of the East Bay Regional Parks.
RICHMOND AREA	OLD LIBRARY BUILDING 4th and Nevin	400 Nevin Ave	Richmond	CA	94801	Structure of Historic Significance/*Architectural** Specimen	The Women's Improvement Club bought a lot at 4th and Nevin which was the center of town, obtained a grant from the Carnegie Foundation and built a library which opened in 1910 and served the community until 1949. The structure now houses the Richmond Museum. This single-story brick structure is elevated over a full basement and stairway leading up to the main floor. Entry is and most of the hill was dug out for housing named the Easter Hill Project.
RICHMOND AREA	MAPLE HALL 3rd and Ohio	101 S 3rd St	Richmond	CA	94804	Structure of Historic Significance	Prior to 1910, a recreational center for Sante Fe railroaders and only place in the area where dances could be held. Traveling vaudeville acts and other forms of entertainment brought in by Santa Fe performed here. Now an apartment building.
RICHMOND AREA	BROOKS ISLAND Richmond Inner Harbor	Island. "Brooks Island"	Richmond	CA	94804	Site of Historic Event	Brooks Island, named after its owner, stands about a half-mile off Richmond Inner Harbor. To the pioneers it was known as Sheep Island because several men raised and pastured sheep there. In 1968, new interest was found as excavations determined that 4000 years of history could be unearthed. It has now been bought by the East Bay Regional Park and all amateur digging has been stopped. It is planned to be a public recreation area.
RICHMOND AREA	NICHOLL PARK MacDonald Avenue 29th to 23rd Street	3230 Macdonald Ave	Richmond	CA	94804	Site Relating to Important Person in History	Nicholl Park named in memorial to John Nicholl, one of the very early settlers on the San Pablo Ranch, circa 1857.
RICHMOND AREA	EASTER HILL 25TH TO 29TH Street and Cutting Blvd.	700 S 26th St	Richmond	CA	94804	Site of Historic Event	Easter Hill, a knoll about 150 feet high, so named because of the churches erected a large cross and held Easter Services at the knoll. Also used for hay and crop raising and quarry operation. Later used as a park until World War II when the government and Henry Kaiser built four ship yards.
RICHMOND AREA	EAST SHORE PARK 900 S. 47th Street	900 S 47th St	Richmond	CA	94804	Site of Historical Event/Site Relating to Important person in History	In the late 1860s. Richard Stege, a much traveled businessman of hotel, grocery and bakery background, settled on six hundred acres and engaged in farming and the delivering of powder to the railroads from the works which were on his land. He bought twenty acres of San Pablo Rancho and built the most gorgeous park in the northern part of the state. Large trees and plants were planted. Three large frog ponds were built so Mr. Stage could supply the large restaurants and hotels in San Francisco.

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RICHMOND AREA	POINT ISABEL Isabel Street	2701 Isabel St	Richmond	CA	94804	Site of Historical Event/Site Relating to Important person in History	Don Victor Castro owned many acres of land and had the most beautiful adobe house in California. Point Isabel was named after his favorite daughter. The point was a shipping point for the Castro Crops. Previously a beautiful hill, the point was flattened and a large post office depot to serve the entire Bay Area and a park now occupy the site.
RICHMOND AREA	ALVARADO PARK (Grand Canyon) McBryde Avenue	5755 McBryde Ave	Richmond	CA	94805	Site Relating to Important Person in History	Circa 1927, the City Council purchased 41 acres of the Grand Canyon Park, formerly the Tewksbury Estate, for the city park and recreation area. The park, which adjoins the Wild Cay Canyon Park, was named after Don Juan B. Alvarado, former Mexican Governor of California.
RICHMOND AREA	EMERIC RANCH Between 26th and 29th Streets	2851 Salesian Ave	Richmond	CA	94806	Site Relating to Important Person in History	Henry Emeric bought hundreds of acres of the San Pablo Ranch before the turn of the 20th century and his ranch had beautiful gardens, large enough to maintain deer and peacocks, exotic plants and trees from all over the world. He had many friends in the theater and arts, and provided weekend entertainment for them at his ranch. Mrs. Emily Tewksbury and John Nicholl bought the land after Mr. Emeric's death. Land was sold for homesites and the Salesian Fathers bought the land where the home stood and built their church and school.
RICHMOND AREA	CITY HALL 26th and Nevin Streets	450 Civic Center Plaza	Richmond	CA	94804	Structure of Historic Significance	When the city was being formed, an old box car was used for meetings; after a charter was passed, the City Hall was located at Point Richmond. A realtor, George Wall, later built and rented at $100 a month a new City Hall at 21st and Maine. When John Nicholl, Jr. learned of the rental he presented a free gift of a City Hall at 26th and Nevin in 1916. Site is now the new Civic Center and City Hall.
RICHMOND AREA	CALIFORNIA CAP WORKS South 33rd and Hoffman Boulevard	710 S 33rd St	Richmond	CA	94804	Structure of Historic Significance	One of the several manufacturing plants in the area associated with explosives. Fuses and caps for guns, and army artillery were made here from about 1874 to 1946. After the factory closed down, the University of California bought the land and building for Marine Biology Research.
SAN PABLO AREA	ALVARADO ADOBE San Pablo Avenue & Church Lane	13831 San Pablo Ave	San Pablo	CA	94806	Site Relating to Important Person in History	The Alvarado Adobe was built in 1845 by Jesus Maria Castro. It became the home of California Governors Juan Bautista Alvarado and his wife, Martina Castro, from 1848 to 1882. It was reconstructed in 1978 and is now open as a museum featuring a Rancho-era bedroom and a Victorian-style parlor.
SAN PABLO AREA	BLUME HOUSE, ALVARADO SQUARE San Pablo Avenue near Church Lane	13831 San Pablo Ave	San Pablo	CA	94806	Structure of Historical significance	Built in 1905 and formerly Hilltop Drive, it was the headquarters for the sprawling Blume Ranch and the largest single-family dwelling within the community. Now located in Alvarado Square Complex, the house is a museum featuring turn-of-the-century furnishings.
SAN PABLO AREA	TEXIERA HOME, ALVARADO SQUARE San Pablo Avenue near Church Lane	13831 San Pablo Ave	San Pablo	CA	94806	Structure of Historical significance	The Texiera home was originally located at the corner of Van Ness and Standard Streets, and served as residence of one of San Pablo's leading families. Built in the early 1890s, the house will become a community facility at its new location in the Alvarado Square Historic Park Complex.

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SAN PABLO AREA	THE PULLMAN STREET RECTORY	1841 Pullman St	San Pablo	CA	94806	Structure of historical significance/*Architectural** Specimen	Formerly a rectory for St. Paul's Parish, this Italianate-style four bedroom structure, built in 1875, was relocated during the 1930s to Pullman Street. "The Old Rectory" was recently moved back from Pullman Street to Church Lane and is currently being used for commercial offices. Italianate style.
SAN PABLO AREA	ANDRATA HOUSE 918 Randy Lane	918 Randy Ln	San Pablo	CA	94806	Structure of Historical Significance	Built in the early 1900s by Andrata, a foreman of the Emeric Ranch, who was able to purchase a considerable amount of land from his employer who had to sell land to help pay the cost of legal fees. The litigation between the Emerics and the Castro family over the vast land holdings forced both families to sell property at a loss.
SAN PABLO AREA	MELLO RESIDENCE 14006 San Pablo Avenue	14006 San Pablo Ave	San Pablo	CA	94806	Structure of Historic Significance/*Architectural** Specimen	This center gable T-shaped wood frame structure with shiplap siding was built in 1875 by one of the first families to settle in the San Pablo area. The Mellos were Portuguese immigrants from the Azore Islands. Three generations of Mellos have been raised in this two bedroom home.
SAN PABLO AREA	STANLEY ALTER HOME 2022 Road 20	2022 Road 20	San Pablo	CA	94806	Structure of Historic Significance/*Architectural** Specimen	This structure was built by San Pablo's early Portuguese settlers. Constructed with square nails and two inch thick redwood planks, the house was originally built and owned by a man named Machado, an early day community leader. The Alter family bought the house in 1948.
SAN PABLO AREA	RUMRILL-HELMS HOUSE 190 Road 20	190 Road 20	San Pablo	CA	94806	Structure of Historic Significance/*Architectural** Specimen	This structure was built in 1884 by A. Rumrill, one of San Pablo/s turn-of-the-century construction contractors and an original member of the Board of Trustees for the Richmond Unified School District. Rumrill Boulevard was named in his honor. The house later became the home of Rumrill's daughter and husband, Walter W. Helms, noted as being the first Richmond School District Superintendent.
SAN PABLO AREA	EARTHQUAKE REFUGE 2650 Market Avenue	2650 Market Ave	San Pablo	CA	94806	Site of Historic Event/Site Relating to Important Person in History	Victims of the 1906 earth-quake and fire in San Francisco were given food, clothing, shelter, medical attention here in barrack-style buildings and hospital, sponsored by Standard Oil Company with John D. Rockefeller funds. A shed-like structure is all that remains of the camp.
SAN PABLO AREA	BOUQUET CHATEAU	5739 Mcbryde Ave	San Pablo	CA	94806	Architectural* Specimen	This ten-bedroom structure, built in 1911 by a man named Bouquet, is unique in its style and design as a chateau, with high gable roofs. It has had several uses including a night club and an orphanage. Presently it is being restored by the owner.
SAN PABLO AREA	ST. PAUL'S CATHOLIC CHURCH AND GRAVEYARD 1825 Church Lane	1825 Church Lane	San Pablo	CA	94806	Site of Historic Event/Site Relating to Important Person in History	California's Governor, Alvarado, and his wife, Martina Castro Alvarado, gave almost four acres of land to the community for a church site. San Pablo's earliest settlers built St. Paul's church in 1863. The original church was of frame construction and similar in design to Old World churches. It was located on Church Lane, just west of the present St. Paul's and cost $300 to build. The graveyard that was located just south of the church was moved to accommodate St; Paul's Elementary School
SAN PABLO AREA	TEWKSBURY HOME Between San Pablo Avenue and Willow Road	2930 Willow Rd	San Pablo	CA	94806	Site of Historic Event	Dr. Jacob Tewksbury acquired about 7,000 acres of land in San Pablo, which was earlier part of the Rancho San Pablo of Joaquin Castro. The Doctor's holdings included an island where Standard Oil Company now stands. He filled the tidelands to connect the island to Richmond.

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SAN PABLO AREA	DEPOT BUSINESS AREA 13th and Market Streets	1320 Market Ave	San Pablo	CA	94806	Site of Historic Event	Site of an early commercial area built around railroad depots. Included: Emeric Hall; Depot School; grocery store; Dolan Saloon; Fish & Blume Warehouse; Gould Landing; Dr. Goodale Home, Santa Fe and Southern Pacific Railroads.
SAN RAMON VALLEY AREA	FIRST GRAFTED WALNUT TREE Front of 18 Garden Estates Court, Alamo	18 Garden Estates Ct	Alamo	CA	94507	Site of Historic Event	Sit of first walnut tree grafted in San Ramon Valley by Myron W. Hall in 1872. Plaque has been dedicated.
SAN RAMON VALLEY AREA	FRANCISCO GARICA ADOBE Northeast corner of Stone Valley Road and Danville Boulevard, Alamo	3188 Danville Blvd	Alamo	CA	94507	Site of Historic Event	Site of a two-story adobe structure built in 1848 by Francisco Garcia on land purchased from the Romero Grant. Later purchased by John M. Jones and became site of first post office in Alamo in 1851. Home burned in 1893 when owned by John O. Reis. Property bought by August Humburg who built another large home on same site, circa 1923. Later became residence of his daughter, Mrs. Friederiche H. Jackson, who lived in it until sold in 1967 to Safeway Stores. Home sit was on a knoll, the leveling of which revealed an Indian burial ground, which dates back some 4,000 years. The San Ramon Valley Historical Society has placed a plaque to dedicate this site of the first post office in Alamo.
SAN RAMON VALLEY AREA	ALAMO SCHOOL Danville Boulevard and Stone Valley Road, Alamo	3191 Danville Blvd.	Alamo	CA	94507	Site of Historic Event	Circa 1867, Alamo's first public grammar school, was built and used until the 1960s. The third school built on this site was torn down and is now the site of a Savings and Loan institution.
SAN RAMON VALLEY AREA	HENRY'S HOTEL Danville Boulevard at Alamo Square, Alamo	1465 Danville Blvd	Alamo	CA	94507	Site of Historic Event	Built in 1854 by S. Wolf & Company, managed by Henry Hoffman, a partner. Originally, portion used also as general store, later a saloon. Structure was torn down in July 1954 and is now the site of a gas station.
SAN RAMON VALLEY AREA	ALAMO SHOOTOUT Danville Boulevard and Orchard Court, Alamo	3150 Danville Blvd	Alamo	CA	94507	Structure of Historical Event	Site where, August 25, 1861, James Smith, itinerant farm hand, stalked E. Van Deventer, resident of North Alamo. The range was virtually eyeball-to-eyeball, although Van Deventer crouched behind his horse. Both men fired one shot; only Smith was hit, not fatally.
SAN RAMON VALLEY AREA	UNION ACADEMY Danville Boulevard and El Portal, Alamo	10 Fairmaiden Ln	Danville	CA	94526	Structure of Historic Event	Area's first school (private) built in 1860 under auspices of Contra Costa Education Association. Reverend David McClure was first headmaster. Destroyed by fire in 1868. A wooden plaque designates this site area.
SAN RAMON VALLEY AREA	ALAMO CEMETERY El Portal Road and Lagonda Way, Alamo	912 El Portal	Danville	CA	94526	Site of Historic Event	Burial ground for many San Ramon Valley pioneers. The San Ramon Valley Historical Society has placed a plaque to dedicate this site.
SAN RAMON VALLEY AREA	JOSE MIGUEL GARCIA ADOBE Austin Lane, north of Stone Valley Road, Alamo	10 Austin Ln	Alamo	CA	94507	Site Relating to Important Person in History	Built in 1848, on land purchased by Romero Grant, this adobe later became the home of Albert W. Stone, an early pioneer farmer. Mr. Stone's property of 800 acres adjoined the town of Alamo.
SAN RAMON VALLEY AREA	ALONZO STONE HOME. Stone Valley Road opposite Gay Court, Alamo	3204 Stone Valley Rd	Alamo	CA	94507	Structure of Historic Event	Site of a pioneer home built in 1852, razed 1954. An old grape arbor, planted in the 1880s, still stands.

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SAN RAMON VALLEY AREA	WHITE GATE FARM Green Valley Road and Stone Valley Road, Alamo	3207 Stone Valley Rd	Alamo	CA	94507	Structure of Historical Significance/*Architectural** Specimen	Built in 1856 this structure is known today as "White Gate Farm." The home took on the architectural features of a New England design and was built with square hand-made nails. The foundation was originally made of redwood mud bricks. The pioneer home was built by the brothers Nathaniel and Charles Howard, whose original residences was in New England. The house was constructed of redwood logged in Redwood Canyon, sent all the way back to New England to be milled. White Gate stables and bunkhouses provided a necessary stop over for horses and drivers on one of first stagecoach lines that went through the White Gate Property to Clayton. The house, with alterations and remodeling, still stands. A historical plaque was placed at this site by the San Ramon Valley Historical Society.
SAN RAMON VALLEY AREA	MOUNTAIN HOUSE Mt. Diablo near Junction of North Gate and South Gate Road, Mt. Diablo	On Google Maps: "Junction Ranger Station"	Walnut Creek	CA	94598	Structure of Historic Event	The Mountain House was built and opened in 1874 by a Mr. Hall. Later owned by a Mrs. Margaret Sloan, the house was located two miles from the summit. The sixteen room, three point structure catered to visitors traveling to the summit of Mt. Diablo and was also the stage coach Hall, and temporary site for high school. Lillian Close opened a County branch library here in 1913.
SAN RAMON VALLEY AREA	MT.DIABLO STATE PARK, Mt. Diablo	On Google Maps: "Mt. Diablo State Park"	Walnut Creek	CA	94598	Site of Historic Event	In 1851, Colonel Leander Ransome established Mt. Diablo as base meridian for all Northern California. Established as a park in 1921. Archaeological studies indicate that on a shelf area immediately below summit, generations of Indians rendezvoused annually for intertribal festivities.
SAN RAMON VALLEY AREA	OAKWOOD STOCK FARM El Nido and Diablo Boulevard, Diablo	133 Merano St	Danville	CA	94526	Site of Historic Event	Established by the Central Pacific Railroad and first known as Railroad Ranch, later Oakwood Ranch. Daniel Cook inherited property and built several barns, race track, billiard hall and a reservoir. Renowned for its line of thoroughbred cattle and trotting horses in 1880 – 1894. The dairy building, once used as a post office and now abandoned, is the only remaining structure.
SAN RAMON VALLEY AREA	CHARLES GARDNER GOOLD HOME, Blackhawk Road, Diablo	3420 Camino Tassajara	Danville	CA	94506	Site of Historic Event	Built in 1870 by Goold who died in 1880. Believed to be one of the first homes built on what is now Blackhawk Ranch.
SAN RAMON VALLEY AREA	BLACKHAWK RANCH QUARRY, Blackhawk Road, Diablo	37° 50.972′ N, 121° 55.948′ W	Danville	CA	94506	Site of Historic Event	"TO BE DOCUMENTED"
SAN RAMON VALLEY AREA	MOUNTAIN VIEW HOTEL, Hartz Avenue and School Streets, Danville	100 School St	Danville	CA	94526	Site of Historic Event	J.H. Gernant and his wife, former operators of the Railroad house, opened this twelve room hotel on August 1, 1891, razed in the 1960's.
SAN RAMON VALLEY AREA	DANVILLE GRANGE, 233 Front Street, Danville	233 Front St	Danville	CA	94526	Structure of Historic Significance	Present location of the Village Theater, the lobby of which was the original Grange Building, built in 1873. Enlarged in 1912 to house the Independent Order of Odd Fellows.
SAN RAMON VALLEY AREA	ROBERT BALDWIN HOME, Camino Ramon in Danville Station Subdivision, Danville					Site Relating to Important Person in History	Site of home and farm of one of early settlers in San Ramon Valley (1852). His farm was one of the finest in the County and at one time consisted of 900 acres. His second home built in 1888, burned in the 1950's.

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SAN RAMON VALLEY AREA	FIRST BUILDING IN DANVILLE, Front Street and Diablo Road, Danville	155 Diablo Rd	Danville	CA	94526	Site of Historic Event	Site of first building in Danville, built by Daniel and Andrew Inmanin 1858 as a blacksmith shop. Later a grocery store which also housed the area's first telephone exchange, Odd Fellow's Hall, and a temporary site for high school. Lillian Close opened a County branch library here in 1913.
SAN RAMON VALLEY AREA	ROBERT LOVE HOME West end of Love Lane, Danville	488 Love Lane	Danville	CA	94526	Structure of Historical significance	Built in 1860. The Robert Love residence still stands. It has been remodeled with additions several times.
SAN RAMON VALLEY AREA	GOOLD-DEARDORFF HOME Boon Court and San Ramon Valley Blvd., Danville	611 San Ramon Valley Blvd	Danville	CA	94526	Site Relating to Important Person in History	Circa 1880, Charles Gardner Goold and wife, Allie Johnson, built their home at this site. Four redwood trees planted by Goold in 1913 mark the home site. Daughter Wanda and husband, Gerald Deardorff, were last residents. Razed in 1974. A plaque dedicated by San Ramon Historical Society is in place at the redwood trees.
SAN RAMON VALLEY AREA	DANVILLE PRESBYTERIAN CHURCH 201 Front Street, Danville Incorporated	201 Front St	Danville	CA	94526	Structure of historical significance	Organized in 1865 as Contra Costa Presbyterian church. Renamed Danville Presbyterian church and cornerstone laid October 1, 1875. On May 27, 1932, it burned down and a new church building was erected and used until 1951. It is now a school. The San Ramon Valley Historical Society has placed a plaque to dedicate the church site.
SAN RAMON VALLEY AREA	CAPTAIN PEDRO FAGES MONUMENT Danville Boulevard and El Portal, Danville	856 Danville Blvd	Danville	CA	94526	Site Relating to Important Person in History	California Historical Landmark #853 marks the vicinity of campsite of Don Pedro Fages and Father Juan Crespi who made the first exploration of county in 1772. Camp site date was March 31, 1772.
SAN RAMON VALLEY AREA	ALAMO CUMBERLAND PRESBYTERIAN CHURCH Danville Boulevard and El Portal Danville	902 Danville Blvd	Alamo	CA	94507	Site of Historic Event	Alamo Pioneers, John and Mary Jones, in 1851 called a camp meeting and helped organize the Alamo Cumberland Presbyterian Church. A newspaper "Pacific Cumberland Presbyter" was published briefly in the early 1860s.
SAN RAMON VALLEY AREA	DANVILLE GRAMMER SCHOOL 279 Front St., Danville Incorporated	279 Front St	Danville	CA	94526	Site of Historic Event	First school built in 1858; second school in 1865m, a one-classroom structure; third, a larger school established in 1890s closed before 1920 when classes opened in the new grammar school adjacent to the San Ramon Valley Union High School. This last grammar school building, which later was used as a community center, was torn down and the site now is a high school parking lot.
SAN RAMON VALLEY AREA	"TAO HOUSE" Eugene O'NEILL HOME Kuss Road, Danville	1000 Kuss Rd	Danville	CA	94526	Structure of Historical significance	Built in 1937 by the four-time recipient of Pulitzer Prizes and winner of the Nobel Prize for Literature, Eugene O'Neill, who did some of his finest work while living here at "Tao House." The L-shaped two story structure built out of adobe-like basalt blocks, with a black oriental-type tiled roof, has sixteen rooms and recessed areas for bookshelves to hold 8,000 books. Listed on National Register of Historic Places, in 1976 Tao House was designated a National Historic Site by Act of Congress, signed by President Ford.
SAN RAMON VALLEY AREA	SCHOOL HOUSE Tassajara, Finley Road, One-Half mile north of Camino Tassajara, Danville	1125 Finley Rd	San Ramon	CA	94583	Structure of Historical significance	A one-room school house with a bell tower built in 1888. Structure now used as a community center.

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SAN RAMON VALLEY AREA	LEVI MAXCY RANCH North of Camino Tassajara on Hansen Lane, Danville	4177 Camino Tassajara	Danville	CA	94506	Structure of Historical significance	Levi Maxcy settled here in the early 1850s. He leased the ranch in 1880 and lived in Illinois, returning here in 1888. He planted vines and sold grapes. He later replaced the vineyard with a walnut orchard. In 1890 he built the house that is still standing. Levi Maxcy died in 1913.
SAN RAMON VALLEY AREA	SAN RAMON GENERAL STORE San Ramón Valley Blvd. and Old Crow Road, San Ramon	2323 San Ramon Valley Blvd	San Ramon	CA	94583	Structure of Historic Event	A two-story clapboard structure dating back to 1880s served as a store, gas station and post office. Early owner was Henry Hurst who sold it to William C. Fereira in 1924. Upstairs was once used as a community dance hall, later was partitioned as living quarters. Building was razed by "controlled burn" on June 15, 1963.
SAN RAMON VALLEY AREA	SAN RAMON SCHOOL San Ramon Valley Blvd. and old Crow Road, San Ramon	2233 San Ramon Valley Blvd	San Ramon	CA	94583	Structure of Historic Event	Built in 1867 and believed to be the second school in the area. This all-wood structure had two rooms with thirteen food ceiling and bell tower. It was abandoned in 1950 and razed in 1960. Isabel Gans was the last teacher.
SAN RAMON VALLEY AREA	SYCAMORE SCHOOL Camino Tassajara four miles east of Danville					Structure of Historic Event	School opened in 1866 with 21 pupils in one room. Mary E. Hass was the teacher. Trustees were Isaac Russell, D. N. Sherbourne and Charles Wood, Sr. By June 1928, only 11 students were in attendance forcing the school to close and consolidate with Danville Union School District.
SAN RAMON VALLEY AREA	LEONARD EDDY CABIN 2900 Camino Tassajara, Danville	2900 Camino Tassajara	Danville	CA	94506	Structure of Historical significance	Leonard Eddy is locally reputed to be first settler in this area. He built a small wood cabin in 1851. The cabin has been kept as a farm building. Eddy sold the ranch in 1853 to Philip Mendenhall who in turn sold the ranch to the Wood family. The Eddy cabin is reported to be the oldest original structure still standing in San Ramon Valley.
SAN RAMON VALLEY AREA	PHILIP MENDENHALL HOME 2900 Camino Tassajara, Danville	2900 Camino Tassajara	Danville	CA	94506	Structure of Historical significance	Philip Mendenhall purchased the land and cabin of Leonard Eddy, and built a two-story wood fame house in 1853. The property was then sold to Wood family and became the birthplace of the late Charlotte Wood, a famous long-time teacher in the area. The residence is still owned by the Wood family.
SAN RAMON VALLEY AREA	TASSAJARA POST OFFICE East side of Finley Road Danville					Structure of Historic Event	A small, squarish board-and-batten farm utility building which became a post office on October 24, 1896, with George M. Cole as postmaster. In the late 1890s the office moved across the street to the home of Anton Peterson. Office closed October 31, 1922. Original structure removed.
SAN RAMON VALLEY AREA	JOEL HARLAN HOME 19251 San Ramon Valley Blvd. San Ramon Incorporated	19251 San Ramon Valley Blvd	San Ramon	CA	94583	Structure Relating to Important Person in History/*Architectural** Specimen	Joel Harlan, an early California pioneer (1846), settled in the San Ramon area in 1852. His first dwelling was a boundary marker, defining the line between Alameda and Contra Costa Counties. He dismantled the structure and rebuilt at the present site, naming it "El Nido" (The Nest). Structure is a two-story wood frame building with a high gable roof and additional gables as roof trim. Sawed barge boards add to decorative trim. Window structure detail has shaped lintel with triangular shelf above. The home is still occupied by members of the family.
SAN RAMON VALLEY AREA	DAVID GLASS HOME San Ramon Valley Blvd., San Ramon	19953 San Ramon Valley Blvd	San Ramon	CA	94583	Structure Relating to Important Person in History/*Architectural** Specimen	David Glass settled in Contra Costa County in 1850, bought 718 acres of land in 1858, and in 1859 built this substantial mansion, which still stands.

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SAN RAMON VALLEY AREA	CHRISTIAN WIEDEMANN RANCH Norris Canyon Rd., San Ramon	3686 Norris Canyon Rd	San Ramon	CA	94583	Structure of Historical Significance	Wiedemann, a ship's carpenter, settled here in the 1860s and built this two-story frame home. His son, Fred, expanded the ranch to 3,000 acres. The home is still occupied by members of the family.
SAN RAMON VALLEY AREA	REDWOOD TREE PLAQUE Front Street next to Lynn, Danville					Site of Historic Event	This redwood tree was planted in 1875 by the Reverend R. Symington, first pastor of the old original Presbyterian church.
SAN RAMON VALLEY AREA	SAN RAMON HALL West of San Ramon Valley Blvd. on Old Crow Canyon Rd., San Ramon	2333 San Ramon Valley Blvd	San Ramon	CA	94583	Site of Historic Event	A two-story wood frame structure built in the early 1900s by popular subscription as a community hall. Torn down in the early 1960s.
SAN RAMON VALLEY AREA	WILLIAM LYNCH HOME Crow Canon Rd. & Old Crow Canyon Rd. San Ramon	2770 Crow Canyon Rd	San Ramon	CA	94583	Site relating to important person in history	William Lynch was one of the first American settlers in the area, first known as Lynchville, then Limerick, then San Ramon. He was a farmer and area's first merchant. He built two homes in the area.
SAN RAMON VALLEY AREA	LYNCH-ALEXANDER HOUSE Crow Canyon Rd. & San Ramon Valley Blvd., San Ramon	2421 San Ramon Valley Blvd	San Ramon	CA	94583	Site relating to important person in history	Circa 1885m, Dr. Alexander built his home at this site. Dr. Alexander married Mary Lynch, daughter of William Lynch who was a pioneer settler in the area. Everett Thomas Lynch, born on the Lynch Ranch was the last occupant of this home before it was razed about 1968.
SAN RAMON VALLEY AREA	NORRIS HOME Norris Canyon Rd. ¼ mile west of San Ramon Valley Blvd., San Ramon	3755 Noris Canyon Rd	San Ramon	CA	94583	Site relating to important person in history	In 1850 Leo Norris bought 4,400 acres of land from Jose Maria Amador, extending southward from Old Crow Canyon Road to about present line of Interstate 580. His home was a two-story, thirteen room frame house of rustic redwood outside, "hard finished" inside. Built in 1850, burned down in the 1950s.
SAN RAMON VALLEY AREA	AUGUST HEMME HOUSE East side of Danville Blvd. near Deodar Lane, Alamo	50 Medlyn Ln	Alamo	CA	94507	Site of historic E\event	This large two-storied mansion was built in 1876 and burned after the turn of the century. It was the last San Ramon Valley home of the pioneer August Hemme who settled here in 1852 and whose farm became the finest in Contra Costa County in the 1870s.
SAN RAMON VALLEY AREA	DANVILLE HOTEL 101-155 S. Hartz Avenue, Danville	411 Hartz Ave	Danville	CA	94526	Structure of Historical Significance	The building was built in the early 1890s on Railroad Avenue, was turned around and moved across the lot to Hartz Avenue in the late, 1920s. It is now part of the Danville Hotel Territory Site which the San Ramon Valley Historical Society dedicated by placing a bronze plaque in 1977.
SAN RAMON VALLEY AREA	ALBERT JEFFERSON YOUNG HOUSE 911 San Ramon Valley Blvd., Danville	911 San Ramon Valley Blvd	Danville	CA	94526	Structure of Historical Significance	Built in the 1870s, now renovated and turned into medical offices, a plaque was placed on this house by the San Ramon Valley Historical Society in honor of A.J. Young, a prominent citizen who came to the San Ramon Valley in the middle 1860s, who taught school here from 1865-1900, was superintendent of Sunday school at the Presbyterian Church for over 50 years, served as trustee on the Board of Education of Contra Costa County and a term in the State Assembly.
SAN RAMON VALLEY AREA	NORRIS FAMILY CEMETARY On a hill just south of Norris Canyon Rd. And west of San Ramon Valley Blvd., southwest of St. Joan of Arc Church, San Ramon	2601 San Ramon Valley Blvd	San Ramon	CA	94583	Structure of Historical Event	Pioneer members of the Norris family are buried in this cemetery. The tombstones have long been removed and the graves are now unmarked.
SAN RAMON VALLEY AREA	FIRST SAN RAMON Was on the north side of Norris Canyon Rd. between Norris Cemetery and the Norris home near Twin Creeks Development, San Ramon	27717 San Ramon Valley Blvd	San Ramon	CA	94583	Structure of Historical Event	Site of the first school in San Ramon.

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
SAN RAMON VALLEY AREA	JAIL Across from the San Ramon General Store on east side of the San Ramon Valley Boulevard	2270 San Ramon Valley Blvd	San Ramon	CA	94583	Structure of Historical Event	This small wood structure housed drunks, itinerants and perhaps a cattle rustler or two.
SAN RAMON VALLEY AREA	ABANDONED SOUTHERN PACIFIC RAILROAD RIGHT-OF-WAY Comprised of the 19.5-mile portion within Contra Costa County					Structure of Historical Event	Almost all of this right-of-way was conveyed free to the Southern Pacific Railroad Company in 1890 by hardworking citizen committees who had secured the land through donations and local subscription. Rail service began in June 1891, for both passenger and freight which mainly was to carry agricultural products to markets. While passenger service ended much earlier, the freight service ran until 1978. Contra Costa County has or is in the process of purchasing all of the right-of-way. In 1985 Contra Costa County entered into an agreement with East Bay Regional Park District to allow recreational trail use along the right-of-way. It has been named the San Ramon Valley Iron Horse Trail. A three-mile section from W. Stone Valley Road, Alamo, to Prospect Ave., Danville, has been completed and is open for public use.
WALNUT CREEK AREA	BANCROFT RESIDENCE 1500 Bancroft Road	1500 Bancroft Rd	Walnut Creek	CA	94598	Structure of Historical Significance	One of the early ranch sites in Ygnacio Valley. Original structure replaced by present home in 1922. Still houses members of the Bancroft family who have contributed to the area's history. The present two-story brick structure with a sheathing of stucco is a large imposing residence with a formal garden and green houses.
WALNUT CREEK AREA	BRUBAKER RESIDENCE 30 Brubaker Lane	30 Brubaker Dr	Walnut Creek	CA	94596	Structure of Historical Significance	In November 1974, the "Walnut Creek Action for Beauty Council" designated Mrs. John Brubaker's Valley Oak tree as a "Heritage Tree" for its outstanding contribution to scenic beauty.
WALNUT CREEK AREA	BURGESS RESIDENCE 2950 Walnut Blvd.	2950 Walnut Blvd	Walnut Creek	CA	94596	Structure of Historical Significance	Formerly the James P. Howe estate. He was a foreign correspondent during World War I. Property is now being preserved as open space.
WALNUT CREEK AREA	CASEY RESIDENCE 2651 Oak Grove Road	2651 Oak Grove Rd	Walnut Creek	CA	94598	*Architectural** Specimen	A cottage-style home that is typical of the construction of the period, circa 1910.
WALNUT CREEK AREA	HOWARD RESIDENCE 2372 Walnut Blvd.	2372 Walnut Blvd.	Walnut Creek	CA	94597	Structure of Historical Significance	Several homes are located at this site housing members of the Howard family, founders of the Howard Terminal shipping point.
WALNUT CREEK AREA	CALIFORNIA WATER SERVICE COMPANY PUMPING PLANT Walker Avenue					Structure of Historic Significance	California Water Services company preserved original structure and converted it to an office.
WALNUT CREEK AREA	JAMES T. WALKER HOME 1200 North Gate Rd.	1200 N Gate Rd	Walnut Creek	CA	94598	Structure of Historical Significance/*Architectural** Specimen	Circa 1868, James T. Walker, nephew of Captain Joseph Reddeford, built his mansion on his 1,400 acre estate. James T. Walker was prominent in early Contra Costa politics as a member of the County's Board of Supervisors.
WALNUT CREEK AREA	BUSINESS 1332 Main Street	1332 Main St	Walnut Creek	CA	94596	Structure of Historical Significance	Site of original San Ramon Bank and place where Walnut Creek City Council held its first meeting. Corner stone date reads AD 1907.
WALNUT CREEK AREA	BURGESS RESIDENCE (RICE HOME) 1056 Hacienda Dr.	1056 Hacienda Dr.	Walnut Creek	CA	94598	Structure of Historic Significance	Site of Cibrian Adobe, owned by grandson of Juana Pacheco, grantee of San Miguel Ranch, now Ygnacia Valley. Originally built in 1860s and consisted of 25 rooms. Present home built by Rice family. Later remodeled and lived in by R. N. Burgess, developer of adjoining area called Lakewood.

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
WALNUT CREEK AREA	LAWRENCE MEAT COMPANY 1423 North Main St.	1423 Main St	Walnut Creek	CA	94596	Site of Historical Significance	This structure has housed this meat selling business for three generations. It was established in 1890s and the building was constructed in 1910.
WALNUT CREEK AREA	STANLEY DOLLAR HOUSE Tice Valley Rossmoor	2799 Rossmoor Pkwy	Walnut Creek	CA	94595	Structure of Historical Significance/*Architectural** Specimen	In 1930, R. Stanley Dollars purchased the Tice Valley property and raised horses and purebred Herefords which were shown in many fairs. They also built a home which has been a show place for many years. The mansion is now the club house for the Rossmoor Leisure World residents.
WALNUT CREEK AREA	BURGESS RESIDENCE RABBIT CANNERY 962 Seven Hills Ranch Road	962 Seven Hills Ranch Rd.	Walnut Creek	CA	94598	Structure of Historical Event	"TO BE DOCUMENTED"
WALNUT CREEK AREA	MARCH BANK HORSE RANCH 1660 Ygnacio and Bancroft	1660 Ygnacio Valley Rd	Walnut Creek	CA	94598	Structure of Historical Significance/*Architectural** Specimen	Known as the Barenges Sulphur Springs in 1875, named after the Barenges Springs of the Spanish Pyrenees due to the identical chemical content of both springs. The springs were open to the public on Friday, Saturday and Sunday. Later became a hors breeding farm know as Col. March Bank's "Heather Farms."
WALNUT CREEK AREA	CHAPEL, ST. PAUL'S ESPICOPAL CHURCH Trinity Avenue	1924 Trinity Ave	Walnut Creek	CA	94596	Structure of historical Significance	St. Paul's Episcopal Church was originally on Locust Street. It was later moved to Trinity Avenue (1950).
WALNUT CREEK AREA	LEACH HOME 1837 N. Main St.	1837 N Main St	Walnut Creek	CA	94596	*Architectural** Specimen	Built in 1887, this was the home of Walnut Creek's first doctor. A two-story wood frame structure with low hip roof. Roof trim is of boxed cornice, frieze with brackets. Large Pillars support the porch and second floor balcony.
WALNUT CREEK AREA	WALNUT CREEK WOMEN'S CLUBHOUSE Corner of Carmel Drive 7 Lincoln Ave.	1470 N Broadway	Walnut Creek	CA	94596	*Architectural** Specimen	A large wood frame structure with vertical grooved rough siding. Siding overlaps at roof line and is cut to create a decorate wall design. This two-story structure has a low gable roof with louvered vents at gabled ends. Top of vents have a plain arch trim.
WALNUT CREEK AREA	BROOKSIDE VINEYARD RESIDENCE 2190 Oak Grove Blvd.	2190 Oak Grove Rd	Walnut Creek	CA	94598	Structure of Historical Significance	One of the oldest buildings in Ygnacio Valley. Site (on part of J.E. Durham Ranch, called Tres Pinos Rancho) of early vineyard planted with varietals grapes imported from Europe by Bay Area Italian families. In 1881 they incorporated as Italian Swiss Colony.
WALNUT CREEK AREA	JOHNSON RESIDENCE (SHADELANDS RANCH) 2660 Ygnacio Valley Road	2660 Ygnacio Valley Rd.	Walnut Creek	CA	94598	Structure of Historical Significance/*Architectural** Specimen	Circa 1902, H. P. Pinniman built this colonial revival ranch home patterned after a Midwestern townhouse. Once the center of a 325 acre ranch where fruit and walnuts are raised, this two-story wood frame structure has curved bays in front with curved windows. California Point of Historical Interest CCo-5. Listed on National Register of Historic Places.
WALNUT CREEK AREA	DOLE HOUSE 1614 Mt. Diablo Blvd.	1614 Mt. Diablo Blvd.	Walnut Creek	CA	94596	*Architectural** Specimen	A two-story wood from structure of Victorian style with a decorated frieze and brackets for roof trim. Roof is medium hip type with boxed cornice. Windows are two sash doubled hinge, with plain molding for surrounding detail. This is currently the location of the Walkabout Birkenstock Shoe Store. Circa 1887.

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
WALNUT CREEK AREA	WALNUT CREEK SOUTHERN PACIFIC DEPOT South Broadway	850 S Broadway	Walnut Creek	CA	94596	Structure of Historical Significance/*Architectural** Specimen	Built in 1891, and opened in June 1891, this Southern Pacific Railroad Passenger and Freight Depot was part of the 29 mile San Ramon Branch, lining Tracy and Livermore main lines. Passenger service was discontinued in 1912. The two-story wood frame structure with medium gable roof and decorated roof trim has been restored, relocated and converted into a restaurant. Exterior appearance is basically the same as original structure.
WALNUT CREEK AREA	MARSHAL RESIDENCE 43 Quail Court	43 Quail Ct	Walnut Creek	CA	94596	Site Relating to Important Person in History	Originally the site of the Marshall residence. Area now known as Quail Court Office Park which includes a variety of business offices and a restaurant.
WALNUT CREEK AREA	WELCH HOUSE RESIDENCE 2190 Oak Grove Rd.	2190 Oak Grove Dr	Walnut Creek	CA	94598	Site of Important Person in History	Circa 1880, descendants of William Welch, Grantee of Rancho las Juntas, which encompassed all the area from northern Walnut Creek to Martinez, built and occupied their residence at this site. Structure was razed in the 1960s.
WALNUT CREEK AREA	ROGERS HOTEL Duncan and Main Street	1350 N Main St	Walnut Creek	CA	94572	Site of Historic Event	Built 1880, this early hotel, stage couch stop and political gathering place was owned by Walter "Ott" Rogers.
WALNUT CREEK AREA	ADAMS RESIDENCE 2030 San Miguel Dr.	2030 San Miguel Dr.	Walnut Creek	CA	94596	*Architectural** specimen	One-and-a-half story wood frame structure with wood shingle roof which is medium gable with a gablet. A triangle pediment decorates the entrance.
WALNUT CREEK AREA	BRONSON RESIDENCE 210 El Camino Corto	210 El Camino Corto	Walnut Creek	CA	94596	*Architectural** specimen	The rustic setting of this brick structure with its high gable roof of wood shingle and windmill makes this one of a kind for Walnut Creek.
WALNUT CREEK AREA	LARRIELL RESIDENCE 196 El Camino Corto	196 El Camino Corto	Walnut Creek	CA	94596	*Architectural** specimen	Structure is of Spanish style construction with stucco siding and tile roofing.
WALNUT CREEK AREA	STOW RESIDENCE 1721 Stow Avenue	1721 Stow Ave.	Walnut Creek	CA	94596	Structure of Historical Significance	James M. Stow moved to California in 1856 and after living in varied locations, settled in Walnut Creek in 1865. In 1876, he started his won business of general merchandizing. In 1877, he became notary public and postmaster of Walnut Creek. He was elected to the office of County Assessor in 1879.
PITTSBURG AREA; ANTIOCH AREA; CLAYTON AREA; CONCORD AREA; WALNUT CREEK AREA; LAFAYETTE AREA; MORAGA AREA; and ORINDA AREA	Pittsburg-Tesla Transmission Line	Linear district (5509 Kirker Pass Rd)	Pittsburg	CA	94565	Not yet evaluated for inclusion in the HRI	These 2 Pacific Gas & Electric transmission lines cover approximately 31 miles (24 miles in Contra Costa County, 7 miles in Alameda County). The subject property represents significant high-lead electrical transmission grids that link cities in Contra Costa County to substations and communities to the west in western Contra Costa County, collectively significant for their role in residential, commercial, and industrial development during an important period of growth in the region prior to and following World War II. Also significant for the steel towers' engineering.

Area	Resource/Location	Street No./Street Name	City	State	Zip Code	Evaluation Category	Significance/Importance
SAN RAMON VALLEY AREA	ROSEBROOK ESTATE 66 Stonecastle Court, Alamo	66 Stonecastle Ct	Alamo	CA	94507	Structures of Historical Significance/Architectural Specimen	The original single-family residential building for the Rosebrook estate, along with the Garden House (an accessory building), and structures such as the decorative outdoor stone walls, outdoor kitchen, pond area, and pool, were all built in 1941 by County recognized architect, Carr Jones. The buildings and structures are all part of one cohesive experience whose design is categorized as a model example of the Storybook Style. The integrity of the Storybook Style remains intact, despite past alterations. As such, the buildings and structures are eligible for the California Register under Criteria 1, a resource associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history and cultural heritage of California, and Criteria 3, a resource that embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values. The Board of Supervisors approved these buildings and structures to be placed onto the County HRI on February 7, 2017, and approved the property for a Mills Act contract on September 26, 2017.
SAN RAMON VALLEY AREA	ROSEBROOK ESTATE 67 Stonecastle Court, Alamo	67 Stonecastle Ct	Alamo	CA	94507	Structure of Historical Significance/Architectural Specimen	The Guest House for the Rosebrook estate, was built in 1952. The original designer for the estate, County recognized architect Carr Jones, came back to design the Guest House in the same already established Storybook Style. The integrity of the Storybook Style remains intact, despite past alterations. As such, the building is eligible for the California Register under Criteria 1, a resource associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history and cultural heritage of California, and Criteria 3, a resource that embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values. The Board of Supervisors approved these buildings and structures to be placed onto the County HRI on February 7, 2017, and approved the property for a Mills Act contract on September 26, 2017.
DIABLO AREA	ENGLISH TUDOR 2067 Alameda Diablo, Diablo	2067 Alameda Diablo	Diablo	CA	94528	Structure of Historical Significance/Architectural Specimen	This single-family residential building being built in 1925, which was during the period of significance for the Diablo Historic District, has attained its integrity to that period of significance and therefore, is identified as a contributory building to the Diablo Historic District. In addition, despite past alterations, the English Tudor Style remains prevalent. As such, the building is eligible for the California Register under Criteria 1, a resource associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history and cultural heritage of California, and Criteria 3, a resource that embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values. The Board of Supervisors approved this building to be placed onto the County HRI on February 7, 2017, and approved the property for a Mills Act contract on September 12, 2017.

Source: Contra Costa County 2016, HLAC 2005, NWIC 2018.

The Meaning of the Color Coding	Color Code
Resource identified in the 2016 Draft HRI	(no color code)
Resource identified in the 2016 Draft HRI whose locations could not be verified and therefore were approximated	
Resource identified in the 2016 Draft HRI that is no longer extant and is now a site of significance	
Resource identified in the 2016 Draft HRI that encompasses a larger area (e.g.., road or grouping of properties)	
Resource identified by the HLAC (post-2016 Draft HRI)	
Resource identified in 2018 updated records search (post-2016 Draft HRI); not yet evaluated for inclusion in the HRI	

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Appendix B
Archaeological Resources in Contra Costa County

Table B-1: Archaeological Resources in Contra Costa County

Primary Number	Trinomial	Resource Type	Age
P-07-000005	CA-CCO-000682H	Site	Historic
P-07-000006	CA-CCO-000683H	Site	Historic
P-07-000007	CA-CCO-000684H	Site	Historic
P-07-000008	CA-CCO-000685H	Site	Historic
P-07-000009	CA-CCO-000686H	Site	Historic
P-07-000012	CA-CCO-000689H	Site	Historic
P-07-000013	CA-CCO-000690H	Site	Historic
P-07-000014	CA-CCO-000691H	Site	Historic
P-07-000015	CA-CCO-000692H	Site	Historic
P-07-000016	CA-CCO-000693H	Site	Historic
P-07-000018	CA-CCO-000695H	Site	Historic
P-07-000209	CA-CCO-000410H	Site	Historic
P-07-000211	CA-CCO-000414H	Site	Historic
P-07-000213	CA-CCO-000418H	Site	Historic
P-07-000218	CA-CCO-000433H	Site	Historic
P-07-000224	CA-CCO-000444H	Site, Element of district	Historic
P-07-000225	CA-CCO-000445H	Structure, Site, Element of district	Historic
P-07-000226	CA-CCO-000446H	Site, Element of district	Historic
P-07-000228	CA-CCO-000448H	Site, Element of district	Historic
P-07-000229	CA-CCO-000449H	Site, Element of district	Historic
P-07-000231	CA-CCO-000451H	Structure, Site, Element of district	Historic
P-07-000234	CA-CCO-000454H	Structure, Site, Element of district	Historic
P-07-000250	CA-CCO-000471H	Site, Element of district	Historic
P-07-000254	CA-CCO-000479H	Site	Historic
P-07-000256	CA-CCO-000483H	Site	Historic
P-07-000258	CA-CCO-000485H	Site	Historic
P-07-000261	CA-CCO-000488H	Site	Historic
P-07-000262	CA-CCO-000489H	Site	Historic
P-07-000263	CA-CCO-000490H	Site	Historic
P-07-000264	CA-CCO-000491H	Site	Historic
P-07-000265	CA-CCO-000492H	Site	Historic
P-07-000268	CA-CCO-000496H	Site	Historic
P-07-000269	CA-CCO-000497H	Site	Historic
P-07-000270	CA-CCO-000498H	Site	Historic
P-07-000273	CA-CCO-000502H	Site	Historic
P-07-000274	CA-CCO-000503H	Site	Historic
P-07-000275	CA-CCO-000504H	Site	Historic
P-07-000277	CA-CCO-000506H	Site	Historic
P-07-000278	CA-CCO-000507H	Site	Historic

Primary Number	Trinomial	Resource Type	Age
P-07-000296	CA-CCO-000525H	Site	Historic
P-07-000304	CA-CCO-000533H	Site, Element of district	Historic
P-07-000305	CA-CCO-000534H	Site, Element of district	Historic
P-07-000306	CA-CCO-000535H	Site, Element of district	Historic
P-07-000307	CA-CCO-000536H	Site, Element of district	Historic
P-07-000308	CA-CCO-000537H	Site, Element of district	Historic
P-07-000312	CA-CCO-000541H	Site	Historic
P-07-000313	CA-CCO-000542H	Site	Historic
P-07-000316	CA-CCO-000545H	Site	Historic
P-07-000317	CA-CCO-000546H	Site, Element of district	Historic
P-07-000320	CA-CCO-000550H	Site	Historic
P-07-000322	CA-CCO-000552H	Site	Historic
P-07-000331	CA-CCO-000561H	Site, Element of district	Historic
P-07-000332	CA-CCO-000562H	Site, Element of district	Historic
P-07-000333	CA-CCO-000563H	Site, Element of district	Historic
P-07-000334	CA-CCO-000564H	Site, Element of district	Historic
P-07-000337	CA-CCO-000567H	Structure, Site, Element of district	Historic
P-07-000350	CA-CCO-000584H	Site	Historic
P-07-000351	CA-CCO-000585H	Structure, Site	Historic
P-07-000352	CA-CCO-000586H	Site	Historic
P-07-000353	CA-CCO-000587H	Site	Historic
P-07-000371	CA-CCO-000606H	Site	Historic
P-07-000372	CA-CCO-000607H	Site	Historic
P-07-000373	CA-CCO-000608H	Site	Historic
P-07-000375	CA-CCO-000610H	Site	Historic
P-07-000376	CA-CCO-000611H	Site	Historic
P-07-000383	CA-CCO-000618H	Site	Historic
P-07-000386	CA-CCO-000622H	Site	Historic
P-07-000388	CA-CCO-000624H	Site	Historic
P-07-000390	CA-CCO-000626H	Site	Historic
P-07-000391	CA-CCO-000627H	Site	Historic
P-07-000392	CA-CCO-000628H	Site, Element of district	Historic
P-07-000393	CA-CCO-000629H	Site, Element of district	Historic
P-07-000394	CA-CCO-000630H	Site, Element of district	Historic
P-07-000398	CA-CCO-000634H	Site	Historic
P-07-000402	CA-CCO-000638H	Site	Historic
P-07-000403	CA-CCO-000639H	Site	Historic
P-07-000405	CA-CCO-000642H	Site	Historic
P-07-000406	CA-CCO-000643H	Site	Historic
P-07-000410	CA-CCO-000650H	Site	Historic
P-07-000412	CA-CCO-000652H	Site	Historic

Primary Number	Trinomial	Resource Type	Age
P-07-000420	CA-CCO-000663H	Site	Historic
P-07-000421	CA-CCO-000664H	Site	Historic
P-07-000422	CA-CCO-000665H	Site	Historic
P-07-000423	CA-CCO-000666H	Site	Historic
P-07-000424	CA-CCO-000667H	Site	Historic
P-07-000425	CA-CCO-000668H	Site	Historic
P-07-000426	CA-CCO-000669H	Site	Historic
P-07-000427	CA-CCO-000670H	Site	Historic
P-07-000428	CA-CCO-000671H	Site	Historic
P-07-000430	CA-CCO-000673H	Site	Historic
P-07-000432	CA-CCO-000675H	Structure, Site	Historic
P-07-000434	CA-CCO-000677H	Site	Historic
P-07-000436	CA-CCO-000570H	Site	Historic
P-07-000437	CA-CCO-000571H	Site	Historic
P-07-000450	CA-CCO-000412H	Object, Site	Historic
P-07-000468	CA-CCO-000361H	Other	Historic
P-07-000475	CA-CCO-000641H	Site, District	Historic
P-07-000482	CA-CCO-000702H	Site	Historic
P-07-000484	CA-CCO-000704H	Site	Historic
P-07-000485		Structure, Site	Historic
P-07-000487		Site	Historic
P-07-000499		Other	Historic
P-07-000501		Other	Historic
P-07-000502		Other	Historic
P-07-000506		Site	Historic
P-07-000507	CA-CCO-000705H	Site	Historic
P-07-000508	CA-CCO-000712H	Site	Historic
P-07-000510	CA-CCO-000707H	Structure, Site	Historic
P-07-000511	CA-CCO-000708H	Site	Historic
P-07-000714	CA-CCO-000359H	Site	Historic
P-07-000715	CA-CCO-000360H	Site	Historic
P-07-000735	CA-CCO-000419H	Site	Historic
P-07-000745	CA-CCO-000475H	Site	Historic
P-07-000746	CA-CCO-000478H	Structure, Site	Historic
P-07-000747	CA-CCO-000480H	Site	Historic
P-07-000757	CA-CCO-000714H	Structure, Site	Historic
P-07-000763		Structure, Site	Historic
P-07-000764		Structure, Site	Historic
P-07-000765		Site	Historic
P-07-000768		Site	Historic
P-07-000772		Site	Historic

Primary Number	Trinomial	Resource Type	Age
P-07-000778		Site	Historic
P-07-000794	CA-CCO-000728H	Site	Historic
P-07-000795		Site	Historic
P-07-000800	CA-CCO-000729H	Site	Historic
P-07-000802		Site	Historic
P-07-000841		Site	Historic
P-07-000845	CA-CCO-000734H	Site	Historic
P-07-000846	CA-CCO-000808H	Site	Historic
P-07-000848		Other	Historic
P-07-000849	CA-CCO-000735H	Site	Historic
P-07-000870		Site	Historic
P-07-000874		Site	Historic
P-07-000878		Site	Historic
P-07-000914		Other	Historic
P-07-001008		Site	Historic
P-07-001011		Site	Historic
P-07-001039		Site, Element of district	Historic
P-07-002039		Site	Historic
P-07-002402		Structure, Site	Historic
P-07-002412		Site	Historic
P-07-002545	CA-CCO-000745H	Structure, Site	Historic
P-07-002561		Structure, Site	Historic
P-07-002563		Site	Historic
P-07-002564	CA-CCO-000747H	Site	Historic
P-07-002565	CA-CCO-000748H	Site	Historic
P-07-002588	CA-CCO-000751H	Structure, Site	Historic
P-07-002598		Site	Historic
P-07-002599	CA-CCO-000757H	Structure, Object, Site	Historic
P-07-002601	CA-CCO-000759H	Site	Historic
P-07-002602	CA-CCO-000760H	Site	Historic
P-07-002603	CA-CCO-000761H	Site	Historic
P-07-002645	CA-CCO-000765H	Object, Site	Historic
P-07-002646	CA-CCO-000766H	Object, Site	Historic
P-07-002655		Site	Historic
P-07-002669	CA-CCO-000769H	Structure, Site	Historic
P-07-002674		Site	Historic
P-07-002675		Site	Historic
P-07-002676		Object, Site	Historic
P-07-002677		Site	Historic
P-07-002683	CA-CCO-000790H	Structure, Site	Historic
P-07-002687	CA-CCO-000771H	Site	Historic

Primary Number	Trinomial	Resource Type	Age
P-07-002688		Other	Historic
P-07-002708		Structure, Site	Historic
P-07-002748		Site	Historic
P-07-002749		Site	Historic
P-07-002758		Other	Historic
P-07-002760		Site	Historic
P-07-002852	CA-CCO-000776H	Site	Historic
P-07-002856	CA-CCO-000777H	Site	Historic
P-07-002857	CA-CCO-000778H	Site	Historic
P-07-002858	CA-CCO-000779H	Site	Historic
P-07-002859	CA-CCO-000780H	Site	Historic
P-07-002860	CA-CCO-000781H	Site	Historic
P-07-002861	CA-CCO-000782H	Site	Historic
P-07-002862	CA-CCO-000783H	Site	Historic
P-07-002863	CA-CCO-000784H	Site	Historic
P-07-002864	CA-CCO-000785H	Site	Historic
P-07-002866	CA-CCO-000787H	Site	Historic
P-07-002867	CA-CCO-000788H	Site	Historic
P-07-002868	CA-CCO-000789H	Site	Historic
P-07-002870	CA-CCO-000791H	Site	Historic
P-07-002871	CA-CCO-000792H	Site	Historic
P-07-002872	CA-CCO-000793H	Site	Historic
P-07-002873	CA-CCO-000794H	Site	Historic
P-07-002876		Site	Historic
P-07-002919		Site	Historic
P-07-002921		Site	Historic
P-07-002929		Other	Historic
P-07-002930		Other	Historic
P-07-002931		Other	Historic
P-07-002940	CA-CCO-000803H	Site	Historic
P-07-002941	CA-CCO-000804H	Site	Historic
P-07-002952		Site	Historic
P-07-002957		Site	Historic
P-07-002958		Site	Historic
P-07-002959		Site	Historic
P-07-002960		Site	Historic
P-07-002961		Site	Historic
P-07-002962		Site	Historic
P-07-002964		Site	Historic
P-07-002965		Site	Historic
P-07-002966		Site	Historic

Primary Number	Trinomial	Resource Type	Age
P-07-002967		Site	Historic
P-07-002968		Site	Historic
P-07-002969		Site	Historic
P-07-002970		Site	Historic
P-07-002971		Site	Historic
P-07-002973		Object	Historic
P-07-002974		Site	Historic
P-07-002975		Site	Historic
P-07-002976		Site	Historic
P-07-002980		Structure, Site	Historic
P-07-002984		Structure, Site	Historic
P-07-002985		Structure, Site	Historic
P-07-002992		Site	Historic
P-07-003001		Other	Historic
P-07-003002		Site	Historic
P-07-003017	CA-CCO-000814H	Structure, Site	Historic
P-07-003054		Site	Historic
P-07-003060		Site	Historic
P-07-003067		Other	Historic
P-07-003071	CA-CCO-000816H	Site	Historic
P-07-003077		Other	Historic
P-07-003084	CA-CCO-000818H	Site, District	Historic
P-07-004485	CA-CCO-000824H	Site	Historic
P-07-004487	CA-CCO-000825H	Site	Historic
P-07-004493		Site, Element of district	Historic
P-07-004497	CA-CCO-000826H	Structure, Site	Historic
P-07-004507		Structure, Site	Historic
P-07-004512	CA-CCO-000829H	Structure, Site	Historic
P-07-004513	CA-CCO-000830H	Structure, Site	Historic
P-07-004514	CA-CCO-000831H	Site	Historic
P-07-004515		Other	Historic
P-07-004516		Site	Historic
P-07-004517		Site	Historic
P-07-004518		Site	Historic
P-07-004519		Site	Historic
P-07-004520		Site	Historic
P-07-004521		Other	Historic
P-07-004522		Other	Historic
P-07-004530		Site	Historic
P-07-004532	CA-CCO-000841H	Site	Historic
P-07-004535		Other	Historic

Primary Number	Trinomial	Resource Type	Age
P-07-004536		Site	Historic
P-07-004538		Other	Historic
P-07-004539	CA-CCO-000833H	Site	Historic
P-07-004540		Structure, Site	Historic
P-07-004541		Structure, Site	Historic
P-07-004543	CA-CCO-000834H	Site	Historic
P-07-004596		Site	Historic
P-07-004597		Object	Historic
P-07-004616	CA-CCO-000835H	Site	Historic
P-07-004617	CA-CCO-000836H	Site	Historic
P-07-004618		Site	Historic
P-07-004622		Object, Site, Other	Historic
P-07-004623		Other	Historic
P-07-004624		Other	Historic
P-07-004626		Other	Historic
P-07-004627		Other	Historic
P-07-004628		Other	Historic
P-07-004629		Other	Historic
P-07-004666		Site, Element of district	Historic
P-07-004672		Site, Element of district	Historic
P-07-004695	CA-CCO-000839H	Site	Historic
P-07-004696	CA-CCO-000840H	Site	Historic
P-07-004717		Site	Historic
P-07-004740		Site	Historic
P-07-004741		Site	Historic
P-07-004742		Site	Historic
P-07-004743		Site	Historic
P-07-004758		Object	Historic
P-07-004823		Site	Historic
P-07-004829	CA-CCO-000850H	Site	Historic
P-07-000002	CA-CCO-000595	Site	Prehistoric
P-07-000003	CA-CCO-000680	Site	Prehistoric
P-07-000019	CA-CCO-000696	Site	Prehistoric
P-07-000021	CA-CCO-000001	Site	Prehistoric
P-07-000023	CA-CCO-000003	Site	Prehistoric
P-07-000024	CA-CCO-000004	Site	Prehistoric
P-07-000025	CA-CCO-000005	Site	Prehistoric
P-07-000026	CA-CCO-000006	Site, Element of district	Prehistoric
P-07-000027	CA-CCO-000007	Site	Prehistoric
P-07-000028	CA-CCO-000008	Object	Prehistoric
P-07-000029	CA-CCO-000009	Site, Element of district	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-000031	CA-CCO-000011	Site	Prehistoric
P-07-000032	CA-CCO-000012	Site	Prehistoric
P-07-000033	CA-CCO-000014	Site	Prehistoric
P-07-000034	CA-CCO-000015	Site	Prehistoric
P-07-000035	CA-CCO-000016	Site	Prehistoric
P-07-000036	CA-CCO-000017	Site	Prehistoric
P-07-000038	CA-CCO-000019	Site	Prehistoric
P-07-000039	CA-CCO-000020	Site	Prehistoric
P-07-000040	CA-CCO-000021	Site	Prehistoric
P-07-000041	CA-CCO-000022	Site	Prehistoric
P-07-000042	CA-CCO-000023	Site	Prehistoric
P-07-000043	CA-CCO-000024	Site	Prehistoric
P-07-000044	CA-CCO-000026	Site	Prehistoric
P-07-000045	CA-CCO-000027	Site	Prehistoric
P-07-000046	CA-CCO-000029	Site	Prehistoric
P-07-000047	CA-CCO-000030	Site	Prehistoric
P-07-000048	CA-CCO-000031	Site	Prehistoric
P-07-000049	CA-CCO-000032	Site	Prehistoric
P-07-000050	CA-CCO-000033	Site	Prehistoric
P-07-000051	CA-CCO-000034	Site	Prehistoric
P-07-000052	CA-CCO-000035	Site	Prehistoric
P-07-000053	CA-CCO-000036	Site	Prehistoric
P-07-000054	CA-CCO-000037	Site	Prehistoric
P-07-000055	CA-CCO-000038	Site	Prehistoric
P-07-000056	CA-CCO-000039	Site	Prehistoric
P-07-000057	CA-CCO-000040	Site	Prehistoric
P-07-000058	CA-CCO-000041	Site	Prehistoric
P-07-000059	CA-CCO-000042	Site	Prehistoric
P-07-000060	CA-CCO-000043	Site	Prehistoric
P-07-000061	CA-CCO-000044	Site	Prehistoric
P-07-000062	CA-CCO-000045	Site	Prehistoric
P-07-000063	CA-CCO-000046	Site	Prehistoric
P-07-000064	CA-CCO-000047	Site	Prehistoric
P-07-000065	CA-CCO-000048	Site	Prehistoric
P-07-000066	CA-CCO-000124	Site	Prehistoric
P-07-000068	CA-CCO-000126	Site	Prehistoric
P-07-000069	CA-CCO-000127	Site	Prehistoric
P-07-000070	CA-CCO-000128	Site	Prehistoric
P-07-000072	CA-CCO-000130	Site	Prehistoric
P-07-000073	CA-CCO-000131	Site	Prehistoric
P-07-000074	CA-CCO-000132	Site	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-000075	CA-CCO-000133	Site	Prehistoric
P-07-000076	CA-CCO-000134	Site	Prehistoric
P-07-000077	CA-CCO-000135	Site	Prehistoric
P-07-000078	CA-CCO-000136	Site	Prehistoric
P-07-000079	CA-CCO-000137	Site	Prehistoric
P-07-000080	CA-CCO-000138	Site, Element of district	Prehistoric
P-07-000082	CA-CCO-000140	Site	Prehistoric
P-07-000083	CA-CCO-000141	Site	Prehistoric
P-07-000084	CA-CCO-000142	Site	Prehistoric
P-07-000085	CA-CCO-000143	Site	Prehistoric
P-07-000086	CA-CCO-000144	Site	Prehistoric
P-07-000087	CA-CCO-000145	Site	Prehistoric
P-07-000088	CA-CCO-000146	Site	Prehistoric
P-07-000089	CA-CCO-000147	Site	Prehistoric
P-07-000091	CA-CCO-000149	Site	Prehistoric
P-07-000092	CA-CCO-000150	Site	Prehistoric
P-07-000093	CA-CCO-000151	Site	Prehistoric
P-07-000094	CA-CCO-000152	Site	Prehistoric
P-07-000095	CA-CCO-000153	Site	Prehistoric
P-07-000096	CA-CCO-000154	Site	Prehistoric
P-07-000097	CA-CCO-000155	Site	Prehistoric
P-07-000098	CA-CCO-000156	Site	Prehistoric
P-07-000099	CA-CCO-000157	Site	Prehistoric
P-07-000106	CA-CCO-000223	Site	Prehistoric
P-07-000108	CA-CCO-000225	Site	Prehistoric
P-07-000109	CA-CCO-000226	Site	Prehistoric
P-07-000110	CA-CCO-000227	Site	Prehistoric
P-07-000111	CA-CCO-000228	Site	Prehistoric
P-07-000112	CA-CCO-000230	Site	Prehistoric
P-07-000113	CA-CCO-000231	Site	Prehistoric
P-07-000114	CA-CCO-000232	Site	Prehistoric
P-07-000115	CA-CCO-000233	Site	Prehistoric
P-07-000116	CA-CCO-000234	Site	Prehistoric
P-07-000117	CA-CCO-000235	Site	Prehistoric
P-07-000118	CA-CCO-000236	Site	Prehistoric
P-07-000119	CA-CCO-000237	Site	Prehistoric
P-07-000120	CA-CCO-000238	Site	Prehistoric
P-07-000121	CA-CCO-000239	Site	Prehistoric
P-07-000122	CA-CCO-000240	Site	Prehistoric
P-07-000124	CA-CCO-000242	Site	Prehistoric
P-07-000125	CA-CCO-000243	Site	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-000126	CA-CCO-000244	Site	Prehistoric
P-07-000127	CA-CCO-000245	Site	Prehistoric
P-07-000128	CA-CCO-000247	Site	Prehistoric
P-07-000129	CA-CCO-000248	Site	Prehistoric
P-07-000130	CA-CCO-000249	Site	Prehistoric
P-07-000131	CA-CCO-000250	Site	Prehistoric
P-07-000132	CA-CCO-000251	Site	Prehistoric
P-07-000133	CA-CCO-000252	Site	Prehistoric
P-07-000134	CA-CCO-000253	Site	Prehistoric
P-07-000135	CA-CCO-000254	Site	Prehistoric
P-07-000136	CA-CCO-000256	Site	Prehistoric
P-07-000137	CA-CCO-000257	Site	Prehistoric
P-07-000138	CA-CCO-000258	Site	Prehistoric
P-07-000139	CA-CCO-000260	Site	Prehistoric
P-07-000140	CA-CCO-000261	Site	Prehistoric
P-07-000141	CA-CCO-000262	Site	Prehistoric
P-07-000142	CA-CCO-000263	Site	Prehistoric
P-07-000143	CA-CCO-000264	Site	Prehistoric
P-07-000144	CA-CCO-000265	Site	Prehistoric
P-07-000145	CA-CCO-000266	Site	Prehistoric
P-07-000146	CA-CCO-000267	Site	Prehistoric
P-07-000148	CA-CCO-000269	Site, Element of district	Prehistoric
P-07-000149	CA-CCO-000270	Site, Element of district	Prehistoric
P-07-000150	CA-CCO-000271	Site, Element of district	Prehistoric
P-07-000152	CA-CCO-000273	Site	Prehistoric
P-07-000154	CA-CCO-000275	Site	Prehistoric
P-07-000155	CA-CCO-000276	Site	Prehistoric
P-07-000156	CA-CCO-000277	Site	Prehistoric
P-07-000157	CA-CCO-000278	Site	Prehistoric
P-07-000158	CA-CCO-000279	Site	Prehistoric
P-07-000159	CA-CCO-000280	Site	Prehistoric
P-07-000160	CA-CCO-000281	Site	Prehistoric
P-07-000161	CA-CCO-000282	Site	Prehistoric
P-07-000162	CA-CCO-000283	Site	Prehistoric
P-07-000163	CA-CCO-000285	Site	Prehistoric
P-07-000164	CA-CCO-000286	Site	Prehistoric
P-07-000165	CA-CCO-000287	Site	Prehistoric
P-07-000166	CA-CCO-000288	Site	Prehistoric
P-07-000167	CA-CCO-000289	Site	Prehistoric
P-07-000168	CA-CCO-000290	Site	Prehistoric
P-07-000169	CA-CCO-000291	Site	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-000170	CA-CCO-000292	Site	Prehistoric
P-07-000171	CA-CCO-000293	Site	Prehistoric
P-07-000172	CA-CCO-000294	Site	Prehistoric
P-07-000173	CA-CCO-000295	Site	Prehistoric
P-07-000174	CA-CCO-000297	Site	Prehistoric
P-07-000175	CA-CCO-000298	Site	Prehistoric
P-07-000176	CA-CCO-000299	Site	Prehistoric
P-07-000177	CA-CCO-000300	Site	Prehistoric
P-07-000178	CA-CCO-000301	Site	Prehistoric
P-07-000179	CA-CCO-000302	Site	Prehistoric
P-07-000180	CA-CCO-000303	Site	Prehistoric
P-07-000181	CA-CCO-000304	Site	Prehistoric
P-07-000182	CA-CCO-000305	Site	Prehistoric
P-07-000183	CA-CCO-000306	Site	Prehistoric
P-07-000184	CA-CCO-000307	Site	Prehistoric
P-07-000185	CA-CCO-000308	Site	Prehistoric
P-07-000186	CA-CCO-000309	Site	Prehistoric
P-07-000187	CA-CCO-000310	Site, Element of district	Prehistoric
P-07-000188	CA-CCO-000312	Site	Prehistoric
P-07-000190	CA-CCO-000352	Site	Prehistoric
P-07-000191	CA-CCO-000369	Site	Prehistoric
P-07-000192	CA-CCO-000371	Site	Prehistoric
P-07-000193	CA-CCO-000375	Site	Prehistoric
P-07-000194	CA-CCO-000385	Site	Prehistoric
P-07-000195	CA-CCO-000386	Site	Prehistoric
P-07-000197	CA-CCO-000397	Site, Element of district	Prehistoric
P-07-000198	CA-CCO-000398	Site, Element of district	Prehistoric
P-07-000199	CA-CCO-000399	Site, Element of district	Prehistoric
P-07-000200	CA-CCO-000401	Site	Prehistoric
P-07-000201	CA-CCO-000402	Site	Prehistoric
P-07-000205	CA-CCO-000406	Site	Prehistoric
P-07-000210	CA-CCO-000411	Site	Prehistoric
P-07-000212	CA-CCO-000417	Site, Element of district	Prehistoric
P-07-000216	CA-CCO-000428	Site, Element of district	Prehistoric
P-07-000217	CA-CCO-000431	Site	Prehistoric
P-07-000220	CA-CCO-000437	Site	Prehistoric
P-07-000222	CA-CCO-000439	Site	Prehistoric
P-07-000232	CA-CCO-000452	Site, Element of district	Prehistoric
P-07-000235	CA-CCO-000455	Site, Element of district	Prehistoric
P-07-000236	CA-CCO-000456	Site, Element of district	Prehistoric
P-07-000237	CA-CCO-000457	Site, Element of district	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-000239	CA-CCO-000459	Site, Element of district	Prehistoric
P-07-000241	CA-CCO-000461	Site, Element of district	Prehistoric
P-07-000242	CA-CCO-000462	Site, Element of district	Prehistoric
P-07-000243	CA-CCO-000463	Site, Element of district	Prehistoric
P-07-000244	CA-CCO-000464	Site, Element of district	Prehistoric
P-07-000245	CA-CCO-000465	Site, Element of district	Prehistoric
P-07-000247	CA-CCO-000468	Site, Element of district	Prehistoric
P-07-000248	CA-CCO-000469	Site, Element of district	Prehistoric
P-07-000251	CA-CCO-000473	Site	Prehistoric
P-07-000255	CA-CCO-000482	Site	Prehistoric
P-07-000257	CA-CCO-000484	Site	Prehistoric
P-07-000259	CA-CCO-000486	Site	Prehistoric
P-07-000260	CA-CCO-000487	Site	Prehistoric
P-07-000266	CA-CCO-000493	Site	Prehistoric
P-07-000267	CA-CCO-000495	Site	Prehistoric
P-07-000271	CA-CCO-000500	Site	Prehistoric
P-07-000272	CA-CCO-000501	Site	Prehistoric
P-07-000276	CA-CCO-000505	Site	Prehistoric
P-07-000280	CA-CCO-000509	Site	Prehistoric
P-07-000281	CA-CCO-000510	Site	Prehistoric
P-07-000284	CA-CCO-000513	Site	Prehistoric
P-07-000285	CA-CCO-000514	Site	Prehistoric
P-07-000286	CA-CCO-000515	Site	Prehistoric
P-07-000287	CA-CCO-000516	Site	Prehistoric
P-07-000288	CA-CCO-000517	Site	Prehistoric
P-07-000289	CA-CCO-000518	Site	Prehistoric
P-07-000290	CA-CCO-000519	Site	Prehistoric
P-07-000291	CA-CCO-000520	Site	Prehistoric
P-07-000292	CA-CCO-000521	Site	Prehistoric
P-07-000293	CA-CCO-000522	Site	Prehistoric
P-07-000294	CA-CCO-000523	Site	Prehistoric
P-07-000295	CA-CCO-000524	Site	Prehistoric
P-07-000297	CA-CCO-000526	Site	Prehistoric
P-07-000298	CA-CCO-000527	Site	Prehistoric
P-07-000299	CA-CCO-000528	Site	Prehistoric
P-07-000300	CA-CCO-000529	Site	Prehistoric
P-07-000301	CA-CCO-000530	Site	Prehistoric
P-07-000302	CA-CCO-000531	Site	Prehistoric
P-07-000309	CA-CCO-000538	Site	Prehistoric
P-07-000310	CA-CCO-000539	Site	Prehistoric
P-07-000311	CA-CCO-000540	Site	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-000315	CA-CCO-000544	Site	Prehistoric
P-07-000318	CA-CCO-000547	Site	Prehistoric
P-07-000319	CA-CCO-000549	Site	Prehistoric
P-07-000321	CA-CCO-000551	Site	Prehistoric
P-07-000324	CA-CCO-000554	Site, Element of district	Prehistoric
P-07-000325	CA-CCO-000555	Site, Element of district	Prehistoric
P-07-000326	CA-CCO-000556	Site, Element of district	Prehistoric
P-07-000327	CA-CCO-000557	Site, Element of district	Prehistoric
P-07-000328	CA-CCO-000558	Site, Element of district	Prehistoric
P-07-000329	CA-CCO-000559	Site, Element of district	Prehistoric
P-07-000338	CA-CCO-000568	Site, Element of district	Prehistoric
P-07-000341	CA-CCO-000574	Site	Prehistoric
P-07-000342	CA-CCO-000575	Site	Prehistoric
P-07-000343	CA-CCO-000576	Site	Prehistoric
P-07-000344	CA-CCO-000577	Site	Prehistoric
P-07-000345	CA-CCO-000578	Site	Prehistoric
P-07-000346	CA-CCO-000579	Site	Prehistoric
P-07-000347	CA-CCO-000580	Site	Prehistoric
P-07-000348	CA-CCO-000581	Site	Prehistoric
P-07-000354	CA-CCO-000588	Site	Prehistoric
P-07-000355	CA-CCO-000589	Site	Prehistoric
P-07-000356	CA-CCO-000590	Site	Prehistoric
P-07-000357	CA-CCO-000591	Site	Prehistoric
P-07-000358	CA-CCO-000592	Site	Prehistoric
P-07-000359	CA-CCO-000593	Site	Prehistoric
P-07-000360	CA-CCO-000594	Site	Prehistoric
P-07-000362	CA-CCO-000597	Site	Prehistoric
P-07-000363	CA-CCO-000598	Site	Prehistoric
P-07-000364	CA-CCO-000599	Site	Prehistoric
P-07-000365	CA-CCO-000600	Site	Prehistoric
P-07-000367	CA-CCO-000602	Site	Prehistoric
P-07-000369	CA-CCO-000604	Site	Prehistoric
P-07-000370	CA-CCO-000605	Site	Prehistoric
P-07-000374	CA-CCO-000609	Site	Prehistoric
P-07-000377	CA-CCO-000612	Site	Prehistoric
P-07-000378	CA-CCO-000613	Site	Prehistoric
P-07-000379	CA-CCO-000614	Site	Prehistoric
P-07-000381	CA-CCO-000616	Site	Prehistoric
P-07-000382	CA-CCO-000617	Site, Element of district	Prehistoric
P-07-000384	CA-CCO-000619	Site	Prehistoric
P-07-000389	CA-CCO-000625	Site	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-000395	CA-CCO-000631	Site	Prehistoric
P-07-000396	CA-CCO-000632	Site	Prehistoric
P-07-000399	CA-CCO-000635	Site	Prehistoric
P-07-000400	CA-CCO-000636	Site, Element of district	Prehistoric
P-07-000401	CA-CCO-000637	Site, Element of district	Prehistoric
P-07-000408	CA-CCO-000647	Site	Prehistoric
P-07-000409	CA-CCO-000649	Site	Prehistoric
P-07-000413	CA-CCO-000653	Site	Prehistoric
P-07-000414	CA-CCO-000657	Site	Prehistoric
P-07-000415	CA-CCO-000658	Site	Prehistoric
P-07-000416	CA-CCO-000659	Site	Prehistoric
P-07-000417	CA-CCO-000660	Site	Prehistoric
P-07-000418	CA-CCO-000661	Site	Prehistoric
P-07-000419	CA-CCO-000662	Site	Prehistoric
P-07-000435	CA-CCO-000678	Site	Prehistoric
P-07-000439	CA-CCO-000255	Site	Prehistoric
P-07-000440	CA-CCO-000259	Site	Prehistoric
P-07-000441	CA-CCO-000284	Site	Prehistoric
P-07-000442	CA-CCO-000351	Site	Prehistoric
P-07-000443	CA-CCO-000370	Object, Site	Prehistoric
P-07-000444	CA-CCO-000378	Site	Prehistoric
P-07-000445	CA-CCO-000379	Site	Prehistoric
P-07-000446	CA-CCO-000380	Site	Prehistoric
P-07-000447	CA-CCO-000389	Site	Prehistoric
P-07-000448	CA-CCO-000390	Site	Prehistoric
P-07-000449	CA-CCO-000391	Site	Prehistoric
P-07-000451	CA-CCO-000413	Site	Prehistoric
P-07-000452	CA-CCO-000420	Site	Prehistoric
P-07-000453	CA-CCO-000421	Site	Prehistoric
P-07-000455	CA-CCO-000423	Site	Prehistoric
P-07-000456	CA-CCO-000432	Site	Prehistoric
P-07-000457	CA-CCO-000436	Site	Prehistoric
P-07-000460	CA-CCO-000481	Site	Prehistoric
P-07-000461	CA-CCO-000654	Site, Element of district	Prehistoric
P-07-000462	CA-CCO-000655	Site, Element of district	Prehistoric
P-07-000463	CA-CCO-000679	Site	Prehistoric
P-07-000466	CA-CCO-000357	Site	Prehistoric
P-07-000469	CA-CCO-000367	Site	Prehistoric
P-07-000470	CA-CCO-000372	Site	Prehistoric
P-07-000471	CA-CCO-000374	Site	Prehistoric
P-07-000472	CA-CCO-000381	Site	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-000473	CA-CCO-000387	Site	Prehistoric
P-07-000474	CA-CCO-000392	Site	Prehistoric
P-07-000478		Site	Prehistoric
P-07-000479	CA-CCO-000700	Site	Prehistoric
P-07-000481	CA-CCO-000356	Site	Prehistoric
P-07-000516		Other	Prehistoric
P-07-000519		Other	Prehistoric
P-07-000532		Site	Prehistoric
P-07-000534	CA-CCO-000013	Site	Prehistoric
P-07-000535	CA-CCO-000025	Site	Prehistoric
P-07-000539	CA-CCO-000051	Site	Prehistoric
P-07-000661	CA-CCO-000207	Site	Prehistoric
P-07-000671	CA-CCO-000229	Site	Prehistoric
P-07-000672	CA-CCO-000246	Site	Prehistoric
P-07-000674	CA-CCO-000311	Site	Prehistoric
P-07-000708	CA-CCO-000347	Site	Prehistoric
P-07-000709	CA-CCO-000348	Site	Prehistoric
P-07-000711	CA-CCO-000350	Site	Prehistoric
P-07-000716	CA-CCO-000362	Site	Prehistoric
P-07-000717	CA-CCO-000363	Site	Prehistoric
P-07-000718	CA-CCO-000364	Site	Prehistoric
P-07-000719	CA-CCO-000365	Site	Prehistoric
P-07-000720	CA-CCO-000366	Site	Prehistoric
P-07-000721	CA-CCO-000368	Site	Prehistoric
P-07-000724	CA-CCO-000377	Site	Prehistoric
P-07-000725	CA-CCO-000382	Site	Prehistoric
P-07-000726	CA-CCO-000383	Site	Prehistoric
P-07-000727	CA-CCO-000384	Site	Prehistoric
P-07-000728	CA-CCO-000393	Site	Prehistoric
P-07-000729	CA-CCO-000394	Site	Prehistoric
P-07-000730	CA-CCO-000395	Site	Prehistoric
P-07-000731	CA-CCO-000396	Site	Prehistoric
P-07-000732	CA-CCO-000400	Site	Prehistoric
P-07-000733	CA-CCO-000415	Site	Prehistoric
P-07-000734	CA-CCO-000416	Site	Prehistoric
P-07-000736	CA-CCO-000424	Site	Prehistoric
P-07-000738	CA-CCO-000429	Site	Prehistoric
P-07-000739	CA-CCO-000430	Site	Prehistoric
P-07-000742	CA-CCO-000442	Site	Prehistoric
P-07-000743	CA-CCO-000466	Site	Prehistoric
P-07-000744	CA-CCO-000472	Site	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-000750	CA-CCO-000572	Site	Prehistoric
P-07-000766	CA-CCO-000716	Site	Prehistoric
P-07-000774		Other	Prehistoric
P-07-000777	CA-CCO-000719	Site, Element of district	Prehistoric
P-07-000779	CA-CCO-000720	Site, Element of district	Prehistoric
P-07-000786	CA-CCO-000721	Site	Prehistoric
P-07-000787	CA-CCO-000722	Site	Prehistoric
P-07-000788	CA-CCO-000723	Site	Prehistoric
P-07-000789	CA-CCO-000724	Site	Prehistoric
P-07-000790	CA-CCO-000725	Site	Prehistoric
P-07-000793	CA-CCO-000727	Site	Prehistoric
P-07-000844		Other	Prehistoric
P-07-000850		Site	Prehistoric
P-07-000851	CA-CCO-000736	Site	Prehistoric
P-07-000861		Object, Site	Prehistoric
P-07-000865		Site	Prehistoric
P-07-002544	CA-CCO-000847	Site	Prehistoric
P-07-002569		Site	Prehistoric
P-07-002570	CA-CCO-000750	Site	Prehistoric
P-07-002580		Site, Other	Prehistoric
P-07-002581		Site	Prehistoric
P-07-002584		Object	Prehistoric
P-07-002585		Site	Prehistoric
P-07-002586		Site	Prehistoric
P-07-002589		Site	Prehistoric
P-07-002594	CA-CCO-000756	Site	Prehistoric
P-07-002600	CA-CCO-000758	Site	Prehistoric
P-07-002607	CA-CCO-000762	Site	Prehistoric
P-07-002639		Site	Prehistoric
P-07-002640		Element of district, Other	Prehistoric
P-07-002650	CA-CCO-000767	Site	Prehistoric
P-07-002671	CA-CCO-000770	Site	Prehistoric
P-07-002693	CA-CCO-000774	Site	Prehistoric
P-07-002714		Site	Prehistoric
P-07-002717		Site	Prehistoric
P-07-002718	CA-CCO-000775	Site	Prehistoric
P-07-002744		Object	Prehistoric
P-07-002755	CA-CCO-000763	Site	Prehistoric
P-07-002756		Other	Prehistoric
P-07-002757		Object, Other	Prehistoric
P-07-002761		Site	Prehistoric

Primary Number	Trinomial	Resource Type	Age
P-07-002865	CA-CCO-000786	Site	Prehistoric
P-07-002874		Other	Prehistoric
P-07-002875		Other	Prehistoric
P-07-002897		Other	Prehistoric
P-07-002933	CA-CCO-000797	Site	Prehistoric
P-07-002934	CA-CCO-000798	Site	Prehistoric
P-07-002935	CA-CCO-000799	Site	Prehistoric
P-07-002936	CA-CCO-000800	Site	Prehistoric
P-07-002937	CA-CCO-000801	Site	Prehistoric
P-07-002939	CA-CCO-000802	Site	Prehistoric
P-07-002963		Site	Prehistoric
P-07-002989	CA-CCO-000809	Site	Prehistoric
P-07-002990	CA-CCO-000810	Site	Prehistoric
P-07-003064		Site	Prehistoric
P-07-003065		Site	Prehistoric
P-07-003068		Site	Prehistoric
P-07-003069		Site	Prehistoric
P-07-003086	CA-CCO-000819	Site	Prehistoric
P-07-003120		Other	Prehistoric
P-07-004508		Other	Prehistoric
P-07-004524		Site	Prehistoric
P-07-004537	CA-CCO-000832	Site	Prehistoric
P-07-004625		Other	Prehistoric
P-07-004714		Site	Prehistoric
P-07-004718	CA-CCO-000845	Site	Prehistoric
P-07-004739		Other	Prehistoric
P-07-004744		Site	Prehistoric
P-07-004757		Other	Prehistoric
P-07-004759		Other	Prehistoric
P-07-004760		Other	Prehistoric
P-07-004761		Other	Prehistoric
P-07-004762		Other	Prehistoric
P-07-004763		Other	Prehistoric
P-07-004764		Other	Prehistoric
P-07-004765		Other	Prehistoric
P-07-004837	CA-CCO-000851	Site	Prehistoric
P-07-004838		Other	Prehistoric
P-07-004839		Other	Prehistoric
P-07-000081	CA-CCO-000139/H	Site	Prehistoric, Historic

Primary Number	Trinomial	Resource Type	Age
P-07-000090	CA-CCO-000148/H	Site	Prehistoric, Historic
P-07-000189	CA-CCO-000320/H	Site	Prehistoric, Historic
P-07-000202	CA-CCO-000403/H	Site	Prehistoric, Historic
P-07-000203	CA-CCO-000404/H	Site	Prehistoric, Historic
P-07-000206	CA-CCO-000407/H	Site	Prehistoric, Historic
P-07-000207	CA-CCO-000408/H	Site	Prehistoric, Historic
P-07-000208	CA-CCO-000409/H	Site	Prehistoric, Historic
P-07-000219	CA-CCO-000434/H	Site, Element of district	Prehistoric, Historic
P-07-000227	CA-CCO-000447/H	Site, Element of district	Prehistoric, Historic
P-07-000233	CA-CCO-000453/H	Site, Element of district	Prehistoric, Historic
P-07-000238	CA-CCO-000458/H	Site, Element of district	Prehistoric, Historic
P-07-000240	CA-CCO-000460/H	Site, Element of district	Prehistoric, Historic
P-07-000246	CA-CCO-000467/H	Site, Element of district	Prehistoric, Historic
P-07-000253	CA-CCO-000477/H	Site, Element of district	Prehistoric, Historic
P-07-000283	CA-CCO-000512/H	Site	Prehistoric, Historic
P-07-000314	CA-CCO-000543/H	Site, Element of district	Prehistoric, Historic
P-07-000323	CA-CCO-000553/H	Site, Element of district	Prehistoric, Historic
P-07-000330	CA-CCO-000560/H	Site, Element of district	Prehistoric, Historic
P-07-000336	CA-CCO-000566/H	Site, Element of district	Prehistoric, Historic
P-07-000340	CA-CCO-000573/H	Site, District	Prehistoric, Historic
P-07-000385	CA-CCO-000621/H	Site	Prehistoric, Historic
P-07-000397	CA-CCO-000633/H	Site	Prehistoric, Historic
P-07-000404	CA-CCO-000640/H	Site	Prehistoric, Historic

Primary Number	Trinomial	Resource Type	Age
P-07-000433	CA-CCO-000676/H	Site	Prehistoric, Historic
P-07-000458	CA-CCO-000441/H	Site	Prehistoric, Historic
P-07-000459	CA-CCO-000474/H	Site	Prehistoric, Historic
P-07-000464	CA-CCO-000355/H	Site	Prehistoric, Historic
P-07-000767	CA-CCO-000717/H	Structure, Site	Prehistoric, Historic
P-07-000769		Site	Prehistoric, Historic
P-07-000780		Site	Prehistoric, Historic
P-07-000792	CA-CCO-000726/H	Site	Prehistoric, Historic
P-07-002556		Other	Prehistoric, Historic
P-07-002579		Structure, Site	Prehistoric, Historic
P-07-002592	CA-CCO-000755/H	Site	Prehistoric, Historic
P-07-002614	CA-CCO-000764/H	Site	Prehistoric, Historic
P-07-002668	CA-CCO-000768/H	Site	Prehistoric, Historic
P-07-002692	CA-CCO-000773/H	Site	Prehistoric, Historic
P-07-002932	CA-CCO-000796/H	Site	Prehistoric, Historic
P-07-003087	CA-CCO-000820/H	Structure, Site	Prehistoric, Historic
P-07-004506	CA-CCO-000827/H	Site	Prehistoric, Historic
P-07-004619	CA-CCO-000837/H	Site	Prehistoric, Historic
P-07-004724		Site	Prehistoric, Historic
P-07-004735		Site	Prehistoric, Historic
P-07-004746	CA-CCO-000846/H	Site	Prehistoric, Historic
P-07-004821	CA-CCO-000849/H	Site	Prehistoric, Historic
P-07-000483	CA-CCO-000703/H	Site	Prehistoric, Historic, Unknown

Primary Number	Trinomial	Resource Type	Age
P-07-000737	CA-CCO-000425/H	Site	Prehistoric, Historic, Unknown
P-07-000104	CA-CCO-000221	Site	Prehistoric, Protohistoric
P-07-000107	CA-CCO-000224	Site	Prehistoric, Protohistoric
P-07-000204	CA-CCO-000405/H	Site	Prehistoric, Protohistoric, Historic
P-07-000022	CA-CCO-000002	Site	Prehistoric, Unknown
P-07-000151	CA-CCO-000272	Site	Protohistoric
P-07-001776		Site	Protohistoric
P-07-000282	CA-CCO-000511	Other	Unknown
P-07-000549	CA-CCO-000061	Other	Unknown
P-07-000559	CA-CCO-000071	Other	Unknown
P-07-000575	CA-CCO-000087	Other	Unknown
P-07-000579	CA-CCO-000091	Other	Unknown
P-07-000589	CA-CCO-000101	Other	Unknown
P-07-000599	CA-CCO-000111	Other	Unknown
P-07-004476		Site	Unknown
P-07-004477		Site	Unknown

Source: NWIC 2018.

Appendix 5.5-2 Tribal Correspondence

Appendices

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NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Website: http://www.nahc.ca.gov

January 8, 2019

Lily Arias
ICF

Sent by Email: lily.arias@icf.com

RE: Contra Costa County General Plan Update and EIR, Contra Costa County

Dear Ms. Arias:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. **The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area**. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. **By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe**. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: Sharaya.Souza@NAHC.ca.gov.

Sincerely,

Sharaya Souza
Analyst

Attachment

Native American Heritage Commission
Native American Contacts List
1/7/2019

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road — Ohlone/Costanoan
Woodside ,CA 94062
amahmutsuntribal@gmail.com
(650) 851-7489 Cell
(650) 332-1526 Fax

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28 — Ohlone/Costanoan
Hollister ,CA 95024
ams@indiancanyon.org
(831) 637-4238

Muwekma Ohlone Indian Tribe of the SF Bay Area
Charlene Nijmeh, Chairperson
20885 Redwood Road, Suite 232 — Ohlone / Costanoan
Castro Valley ,CA 94546
cnihmeh@muwekma.org
(408) 464-2892
(408) 205-9714

North Valley Yokuts Tribe
Katherine Erolinda Perez, Chairperson
P.O. Box 717 — Ohlone/Costanoan
Linden ,CA 95236 — Northern Valley Yokuts
canutes@verizon.net — Bay Miwok
(209) 887-3415

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3388 — Ohlone/Costanoan
Fremont ,CA 94539 — Bay Miwok
chochenyo@AOL.com — Plains Miwok
(510) 882-0527 Cell — Patwin
(510) 687-9393 Fax

Wilton Rancheria
Raymond Hitchcock, Chairperson
9728 Kent Street — Miwok
Elk Grove ,CA 95624
rhitchcock@wiltonrancheria-nsn.gov
(916) 683-6000 Office
(916) 683-6015 Fax

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code,Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes for the proposed:
Contra Costa County General Plan Update and EIR, Contra Costa County.

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Charlene Nijmeh, Chairperson
Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
20885 Redwood Road, suite 232
Castro Valley, CA 94546

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Ms. Nijmeh,

In accordance with the California Public Resources Code (PRC), Contra Costa County (County) is providing notice of a proposed project within your jurisdiction. We are hereby notifying you of an opportunity to request consultation with us regarding the potential for this project to impact tribal cultural resources, as defined under PRC § 21074.

A search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was requested on December 20, 2018, with updates requested in October 2019 and October 2020. The SLF search identified Native American cultural resources within unincorporated Contra Costa County. The NAHC also provided your name as a representative of a California Native American Tribe who may have knowledge of cultural resources within or near the project area.

Proposed Project

The County is in the process of updating its General Plan, Zoning Code, and Climate Action Plan (CAP). The General Plan Update will add new and expanded policy topics to address the current requirements of State law, modernize the County's policy framework, and address land use mapping issues and inconsistencies. The General Plan Update will also consider potential land use changes in unincorporated communities where change or enhancement of existing uses is

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Kara Douglas
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

desired through 2040, based on community feedback. Along with updating the General Plan, the County will also implement a comprehensive update to both the County Zoning Code and the CAP. These new plans and regulations will guide development in unincorporated Contra Costa County through 2040. The County is the lead agency under the California Environmental Quality Act (CEQA) and will prepare an environmental impact report for this project.

Opportunity for Consultation

This letter and preliminary project information serve as a formal request for consultation as required under the Senate Bill 18 (SB 18) process for the project, as described in Government Code § 65352.3, and the Assembly Bill 52 (AB 52) process for the project, as described under CEQA PRC § 21080.3.1 and Chapter 532 Statutes of 2014.

The County invites you to communicate any concerns you might have regarding places within the project area that are important to your community. The County requests your participation in the identification and protection of cultural resources, sacred lands, or other heritage sites within unincorporated Contra Costa County with the understanding that you or other members of the community might possess specialized knowledge of the area.

In accordance with Government Code § 65352.3(a)(2), you are provided 90 days from receipt of this letter to either request or decline consultation for this project in writing. Please send your written response to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the project if we do not receive a response within the period provided by law.

If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Ann Marie Sayers, Chairperson
Indian Canyon Mutsun Band of Costanoan
PO Box 28
Hollister, CA 95024

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Ms. Sayers,

In accordance with the California Public Resources Code (PRC), Contra Costa County (County) is providing notice of a proposed project within your jurisdiction. We are hereby notifying you of an opportunity to request consultation with us regarding the potential for this project to impact tribal cultural resources, as defined under PRC § 21074.

A search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was requested on December 20, 2018, with updates requested in October 2019 and October 2020. The SLF search identified Native American cultural resources within unincorporated Contra Costa County. The NAHC also provided your name as a representative of a California Native American Tribe who may have knowledge of cultural resources within or near the project area.

Proposed Project

The County is in the process of updating its General Plan, Zoning Code, and Climate Action Plan (CAP). The General Plan Update will add new and expanded policy topics to address the current requirements of State law, modernize the County's policy framework, and address land use mapping issues and inconsistencies. The General Plan Update will also consider potential land use changes in unincorporated communities where change or enhancement of existing uses is

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Kelli Zenn
Business Operations Manager

desired through 2040, based on community feedback. Along with updating the General Plan, the County will also implement a comprehensive update to both the County Zoning Code and the CAP. These new plans and regulations will guide development in unincorporated Contra Costa County through 2040. The County is the lead agency under the California Environmental Quality Act (CEQA) and will prepare an environmental impact report for this project.

Opportunity for Consultation

This letter and preliminary project information serve as a formal request for consultation as required under the Senate Bill 18 (SB 18) process for the project, as described in Government Code § 65352.3, and the Assembly Bill 52 (AB 52) process for the project, as described under CEQA PRC § 21080.3.1 and Chapter 532 Statutes of 2014.

The County invites you to communicate any concerns you might have regarding places within the project area that are important to your community. The County requests your participation in the identification and protection of cultural resources, sacred lands, or other heritage sites within unincorporated Contra Costa County with the understanding that you or other members of the community might possess specialized knowledge of the area.

In accordance with Government Code § 65352.3(a)(2), you are provided 90 days from receipt of this letter to either request or decline consultation for this project in writing. Please send your written response to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the project if we do not receive a response within the period provided by law.

If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Irenne Zwierlein, Chairperson
Amah Mutsun Tribal Band of Mission San Juan Bautista
789 Canada
Woodside, CA 94062

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Ms. Zwierlein,

In accordance with the California Public Resources Code (PRC), Contra Costa County (County) is providing notice of a proposed project within your jurisdiction. We are hereby notifying you of an opportunity to request consultation with us regarding the potential for this project to impact tribal cultural resources, as defined under PRC § 21074.

A search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was requested on December 20, 2018, with updates requested in October 2019 and October 2020. The SLF search identified Native American cultural resources within unincorporated Contra Costa County. The NAHC also provided your name as a representative of a California Native American Tribe who may have knowledge of cultural resources within or near the project area.

Proposed Project

The County is in the process of updating its General Plan, Zoning Code, and Climate Action Plan (CAP). The General Plan Update will add new and expanded policy topics to address the current requirements of State law, modernize the County's policy framework, and address land use mapping issues and inconsistencies. The General Plan Update will also consider potential land use changes in unincorporated communities where change or enhancement of existing uses is

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Kelli Zenn
Business Operations Manager

desired through 2040, based on community feedback. Along with updating the General Plan, the County will also implement a comprehensive update to both the County Zoning Code and the CAP. These new plans and regulations will guide development in unincorporated Contra Costa County through 2040. The County is the lead agency under the California Environmental Quality Act (CEQA) and will prepare an environmental impact report for this project.

Opportunity for Consultation

This letter and preliminary project information serve as a formal request for consultation as required under the Senate Bill 18 (SB 18) process for the project, as described in Government Code § 65352.3, and the Assembly Bill 52 (AB 52) process for the project, as described under CEQA PRC § 21080.3.1 and Chapter 532 Statutes of 2014.

The County invites you to communicate any concerns you might have regarding places within the project area that are important to your community. The County requests your participation in the identification and protection of cultural resources, sacred lands, or other heritage sites within unincorporated Contra Costa County with the understanding that you or other members of the community might possess specialized knowledge of the area.

In accordance with Government Code § 65352.3(a)(2), you are provided 90 days from receipt of this letter to either request or decline consultation for this project in writing. Please send your written response to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the project if we do not receive a response within the period provided by law.

If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Katherine Erolinda Perez, Chairperson
North Valley Yokuts Tribe
PO Box 717
Linden, CA 95236

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Ms. Perez,

In accordance with the California Public Resources Code (PRC), Contra Costa County (County) is providing notice of a proposed project within your jurisdiction. We are hereby notifying you of an opportunity to request consultation with us regarding the potential for this project to impact tribal cultural resources, as defined under PRC § 21074.

A search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was requested on December 20, 2018, with updates requested in October 2019 and October 2020. The SLF search identified Native American cultural resources within unincorporated Contra Costa County. The NAHC also provided your name as a representative of a California Native American Tribe who may have knowledge of cultural resources within or near the project area.

Proposed Project

The County is in the process of updating its General Plan, Zoning Code, and Climate Action Plan (CAP). The General Plan Update will add new and expanded policy topics to address the current requirements of State law, modernize the County's policy framework, and address land use mapping issues and inconsistencies. The General Plan Update will also consider potential land use changes in unincorporated communities where change or enhancement of existing uses is

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Jason Crapo
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Kara Douglas
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

desired through 2040, based on community feedback. Along with updating the General Plan, the County will also implement a comprehensive update to both the County Zoning Code and the CAP. These new plans and regulations will guide development in unincorporated Contra Costa County through 2040. The County is the lead agency under the California Environmental Quality Act (CEQA) and will prepare an environmental impact report for this project.

Opportunity for Consultation

This letter and preliminary project information serve as a formal request for consultation as required under the Senate Bill 18 (SB 18) process for the project, as described in Government Code § 65352.3, and the Assembly Bill 52 (AB 52) process for the project, as described under CEQA PRC § 21080.3.1 and Chapter 532 Statutes of 2014.

The County invites you to communicate any concerns you might have regarding places within the project area that are important to your community. The County requests your participation in the identification and protection of cultural resources, sacred lands, or other heritage sites within unincorporated Contra Costa County with the understanding that you or other members of the community might possess specialized knowledge of the area.

In accordance with Government Code § 65352.3(a)(2), you are provided 90 days from receipt of this letter to either request or decline consultation for this project in writing. Please send your written response to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the project if we do not receive a response within the period provided by law.

If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Andrew Galvan
The Ohlone Indian Tribe
PO Box 3388
Fremont, CA 94539

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Mr. Galvan

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Proposed Project

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If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

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Director

Aruna Bhat
Deputy Director

Jason Crapo
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Maureen Toms
Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Lloyd Mathiesen, Chairperson
Chicken Ranch Rancheria of Me-Wuk Indians
PO Box 1159
Jamestown, CA 95327

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Mr. Mathiesen,

In accordance with the California Public Resources Code (PRC), Contra Costa County (County) is providing notice of a proposed project within your jurisdiction. We are hereby notifying you of an opportunity to request consultation with us regarding the potential for this project to impact tribal cultural resources, as defined under PRC § 21074.

A search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was requested on December 20, 2018, with updates requested in October 2019 and October 2020. The SLF search identified Native American cultural resources within unincorporated Contra Costa County. The NAHC also provided your name as a representative of a California Native American Tribe who may have knowledge of cultural resources within or near the project area.

Proposed Project

The County is in the process of updating its General Plan, Zoning Code, and Climate Action Plan (CAP). The General Plan Update will add new and expanded policy topics to address the current requirements of State law, modernize the County's policy framework, and address land use mapping issues and inconsistencies. The General Plan Update will also consider potential land use changes in unincorporated communities where change or enhancement of existing uses is

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Opportunity for Consultation

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If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Daniel Gomez, Chairperson
Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
3730 Highway 45
Colusa, CA 95932

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Mr. Gomez,

In accordance with the California Public Resources Code (PRC), Contra Costa County (County) is providing notice of a proposed project within your jurisdiction. We are hereby notifying you of an opportunity to request consultation with us regarding the potential for this project to impact tribal cultural resources, as defined under PRC § 21074.

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Proposed Project

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Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

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Director

Aruna Bhat
Deputy Director

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Deputy Director

Maureen Toms
Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Merlene Sanchez, Chairperson
Guidiville Indian Rancheria
PO Box 339
Talmage, CA 95481

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Ms. Sanchez,

In accordance with the California Public Resources Code (PRC), Contra Costa County (County) is providing notice of a proposed project within your jurisdiction. We are hereby notifying you of an opportunity to request consultation with us regarding the potential for this project to impact tribal cultural resources, as defined under PRC § 21074.

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Proposed Project

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Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
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Contra Costa County

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Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Kanyon Sayers, MLD Contact
Indian Canyon Mutsun Band of Costanoan
1615 Pearson Court
San Jose, CA 95122

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Kanyon Sayers, MLD Contact

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Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

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Aruna Bhat
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Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Monica Arellano
Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
20885 Redwood Road, suite 232
Castro Valley, CA 94546

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Ms. Arellano

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Will Nelson
Principal Planner

Department of Conservation and Development

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Contra Costa County

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Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Timothy Perez, MLD Contact
North Valley Yokuts Tribe
PO Box 717
Linden, CA 95236

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Mr. Perez,

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Contra Costa County

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Kelli Zenn
Business Operations Manager

January 15, 2021

Steven Hutchason, THPO
Wilton Rancheria
9728 Kent Street
Elk Grove, CA 95624

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Mr. Hutchason,

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Opportunity for Consultation

This letter and preliminary project information serve as a formal request for consultation as required under the Senate Bill 18 (SB 18) process for the project, as described in Government Code § 65352.3, and the Assembly Bill 52 (AB 52) process for the project, as described under CEQA PRC § 21080.3.1 and Chapter 532 Statutes of 2014.

The County invites you to communicate any concerns you might have regarding places within the project area that are important to your community. The County requests your participation in the identification and protection of cultural resources, sacred lands, or other heritage sites within unincorporated Contra Costa County with the understanding that you or other members of the community might possess specialized knowledge of the area.

In accordance with Government Code § 65352.3(a)(2), you are provided 90 days from receipt of this letter to either request or decline consultation for this project in writing. Please send your written response to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the project if we do not receive a response within the period provided by law.

If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553
Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Amalia Cunningham
Assistant Deputy Director

Kelli Zenn
Business Operations Manager

January 15, 2021

Jesus Tarango, Chairperson
Wilton Rancheria
9728 Kent Street
Elk Grove, CA 95624

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Mr. Tarango,

In accordance with the California Public Resources Code (PRC), Contra Costa County (County) is providing notice of a proposed project within your jurisdiction. We are hereby notifying you of an opportunity to request consultation with us regarding the potential for this project to impact tribal cultural resources, as defined under PRC § 21074.

A search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was requested on December 20, 2018, with updates requested in October 2019 and October 2020. The SLF search identified Native American cultural resources within unincorporated Contra Costa County. The NAHC also provided your name as a representative of a California Native American Tribe who may have knowledge of cultural resources within or near the project area.

Proposed Project

The County is in the process of updating its General Plan, Zoning Code, and Climate Action Plan (CAP). The General Plan Update will add new and expanded policy topics to address the current requirements of State law, modernize the County's policy framework, and address land use mapping issues and inconsistencies. The General Plan Update will also consider potential land use changes in unincorporated communities where change or enhancement of existing uses is

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Respectfully,

Will Nelson
Principal Planner

Department of Conservation and Development

30 Muir Road
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Phone:1-855-323-2626

Contra Costa County

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Kelli Zenn
Business Operations Manager

January 15, 2021

Dahlton Brown, Director of Administration
Wilton Rancheria
9728 Kent Street
Elk Grove, CA 95624

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Mr. Brown,

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A search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was requested on December 20, 2018, with updates requested in October 2019 and October 2020. The SLF search identified Native American cultural resources within unincorporated Contra Costa County. The NAHC also provided your name as a representative of a California Native American Tribe who may have knowledge of cultural resources within or near the project area.

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If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

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Contra Costa County

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Amalia Cunningham
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Kelli Zenn
Business Operations Manager

January 15, 2021

Corrina Gould, Chairperson
The Confederated Villages of Lisjan
10928 Edes Avenue
Oakland, CA 94603

RE: Notice of Opportunity to Request Consultation under Senate Bill 18 and Assembly Bill 52 for the Proposed Contra Costa County General Plan Update, Zoning Code Update, and Climate Action Plan Update (aka Envision Contra Costa 2040)

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Ms. Gould,

In accordance with the California Public Resources Code (PRC), Contra Costa County (County) is providing notice of a proposed project within your jurisdiction. We are hereby notifying you of an opportunity to request consultation with us regarding the potential for this project to impact tribal cultural resources, as defined under PRC § 21074.

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If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

From:	Will Nelson
To:	Tanya Sundberg
Subject:	FW: General Plan SB18/AB52
Date:	Wednesday, March 10, 2021 4:55:09 PM

From: Corrina Gould <cvltribe@gmail.com>
Sent: Wednesday, March 10, 2021 3:23 PM
To: Will Nelson <Will.Nelson@dcd.cccounty.us>
Subject: General Plan SB18/AB52

Hello,

The Tribe would like to consult with the county on the General Plan for Contra Costa County. We look forward to hearing from you. Thank you.

'Uni (Respectfully),
Corrina Gould, Tribal Chair
Confederated Villages of Lisjan Tribe

From:	Corrina Gould
To:	Will Nelson
Cc:	tsundberg@placeworks.com; Pappas, Steve
Subject:	Re: FW: Contra Costa Comments
Date:	Wednesday, December 1, 2021 10:30:37 AM
Attachments:	image002.png

Dear Will and All,

I am so sorry for the last minute cancellation. We would like more time to go over this document again with our legal team. Can we please reschedule?

'Uni (Respectfully),

Corrina Gould, Tribal Chair
Confederated Villages of Lisjan Tribe

On Tue, Nov 30, 2021 at 4:33 PM Will Nelson <Will.Nelson@dcd.cccounty.us> wrote:

> Hello Corrina,
>
> I hope you're well.
>
> We have reviewed the Tribe's comments and provided our thoughts as notes in the attachment. The references in the notes correspond to the draft policy language I sent on November 3. Please also see the comment in the email below regarding policy COS-P.9.7. We're looking forward to discussing each of these items tomorrow.
>
> Best,
>
> Will
>
> **William R. Nelson**
>
> Principal Planner
>
> Contra Costa County

Department of Conservation and Development

30 Muir Road, Martinez, CA 94553

Phone (925) 655-2898

Web www.contracosta.ca.gov

****PLEASE NOTE, THE DEPARTMENT HAS NEW PHONE NUMBERS AS OF APRIL 1.**

MY NEW PHONE NUMBER IS 925-655-2898.**

We're planning for the future of Contra Costa County.

Learn more and get involved at envisioncontracosta2040.org.



This message was sent from a public e-mail system and may be subject to disclosure under the California Public Records Act.

From: Tanya Sundberg <tsundberg@placeworks.com>

Sent: Tuesday, November 23, 2021 7:30 PM
To: Will Nelson <Will.Nelson@dcd.cccounty.us>; Pappas, Steve <steve.pappas@icf.com>
Cc: jjansen@placeworks.com; Lindsey Klein <lklein@placeworks.com>
Subject: RE: Contra Costa Comments

Hi Will,

As we discussed last week, we have provided responses in the attached PDF.

In addition to the comments in the PDF, the cover letter makes a point that the Confederated Villages of Lisjan are a living culture. The Sogorea Te' Land Trust website also uses language about the Tribe's resiliency. We will make this point in the background text, but we would like to find a way to also reference it in the policies and/or actions. Here is one idea:

COS-P9.7 "Work with local Native American tribes to protect recorded and unrecorded cultural and sacred sites and to educate developers and the community at large about living Native American culture ~~history~~ in the region as well as the history of Native Americans in what is now Contra Costa County."

I hope you all had fun at Alec's birthday party last weekend, and that you are looking forward to a relaxing and delicious Thanksgiving!

Tanya

TANYA SUNDBERG

Associate Principal

she/her

510.848.3815 ext. 3390 | cell: 510.866.8336

From: Will Nelson <Will.Nelson@dcd.cccounty.us>
Sent: Tuesday, November 16, 2021 2:42 PM
To: Tanya Sundberg <tsundberg@placeworks.com>; Pappas, Steve <steve.pappas@icf.com>
Cc: Joanna Jansen <jjansen@placeworks.com>; Lindsey Klein <lklein@placeworks.com>

Subject: FW: Contra Costa Comments

Tanya and Steve,

Please see the attached comments from Corrina and the Lisjan tribe. These comments have also been forwarded to the Historical Landmarks Advisory Committee members for consideration at Thursday's meeting. I think there are a lot of good suggestions here. We should be prepared to discuss these at our next meeting with the tribe.

Thanks,

Will

William R. Nelson

Principal Planner

Contra Costa County

Department of Conservation and Development

30 Muir Road, Martinez, CA 94553

Phone (925) 655-2898

Web www.contracosta.ca.gov

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This message was sent from a public e-mail system and may be subject to disclosure under the California Public Records Act.

From: Corrina Gould <cvltribe@gmail.com>
Sent: Tuesday, November 16, 2021 1:53 PM
To: Will Nelson <Will.Nelson@dcd.cccounty.us>
Subject: Contra Costa Comments

Hello,

Please see attached documents for Tribal comments for Contra Costa.

'Uni (Respectfully),

Corrina Gould, Tribal Chair

Confederated Villages of Lisjan Tribe

From:	Will Nelson
To:	Corrina Gould
Cc:	Tanya Sundberg
Subject:	Updated Cultural Resources Goals, Policies, and Actions for Envision Contra Costa 2040
Date:	Thursday, February 10, 2022 5:49:02 PM
Attachments:	image001.jpg image002.png CulturalResourcesGoalsPoliciesActions_Revised_Feb2022.pdf CulturalResourcesGoalsPoliciesActions_Revised_Feb2022_Clean.docx

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Hello Corrina,

I hope you're well.

Thank you again for sharing your time and knowledge with us during our Envision Contra Costa 2040 consultation meeting last December. We have prepared draft updates to the cultural resources policy guidance that respond to the Tribe's comments and our December discussion, and attached it for your review. Changes since the previous version are tracked in the attached PDF. The changes have all been accepted in the attached Word file, which I've included to make it easier for you to suggest additional changes/edits.

As part of this update, we consulted with other County staff to consider the Tribe's requests. While we aren't able to achieve all of the Tribe's suggestions, the majority of those suggestions are incorporated into the revised policy guidance, including:

- Adding a new goal specific to tribal consultation and protecting tribal cultural resources.
- Strengthening and expanding the policy language about consulting with tribes.
- Adding new policy guidance about facilitating tribal acquisition of conservation easements and tribal access to open space and recreation lands.
- Adding new policy guidance about avoidance and mitigation of impacts to tribal cultural resources.
- Adding new policy guidance about informing developers about Native American culture and tribal cultural resources.
- Adding new policy guidance about relinquishing found tribal cultural artifacts to tribes.

Once you've reviewed the revised policy guidance, please reach out to suggest times for our next discussion.

Looking forward to hearing from you.

Best,

Will

William R. Nelson
Principal Planner
Contra Costa County
Department of Conservation and Development
30 Muir Road, Martinez, CA 94553
Phone (925) 655-2898
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Confederated Villages of Lisjan Nation
(510) 575-8408 ♦ 10926 Edes Avenue, Oakland CA 94603

September 1, 2022

RE: California Environmental Quality Act Public Resources Code section 21080.3, subd. (b) Request for Formal Notification of Proposed Projects Within the Tribe's Geographic Area of Traditional and Cultural Affiliation

Greetings,

As of the date of this letter, in accordance with Public Resources Code Section 21080.3.1, subd. (b), Confederated Villages of Lisjan Nation, which is traditionally and culturally affiliated with a geographic area within your agency's geographic area of jurisdiction, requests formal notice of and information on proposed projects for which your agency will serve as a lead agency under the California Environmental Quality Act (CEQA), Public Resources Code section 21000 et seq.

Pursuant to Public Resources Code section 21080.3.1, subd. (b), and until further notice, we hereby designate the following person as the tribe's lead contact person for purposes of receiving notices of proposed projects from your agency:

Corrina Gould, Tribal Chair

10926 Edes Ave, Oakland, CA 94603

510-575-8408

cvltribe@gmail.com

We request that all notices be sent via certified U.S. Mail with a return receipt. Following receipt and review of the information your agency provides, within the 30-day period proscribed by Public Resources Code section 21080.3.1, subd. (d), the Confederated Villages of Lisjan Nation may request consultation, as defined by Public Resources Code section 21080.3.1, subd. (b), pursuant to

Confederated Villages of Lisjan Nation
(510) 575-8408 ♦ 10926 Edes Avenue, Oakland CA 94603

Public Resources Code section 21080.3.2 to mitigate any project impacts a specific project may cause to tribal cultural resources.

If you have any questions or need additional information, please contact our lead contact person listed above.

Sincerely,

/s/ Corrina Gould

Corrina Gould

Tribal Chair, Confederated Villages of Lisjan Nation

CC:Native American Heritage Commission

Confederated Villages of Lisjan
(510) 575-8408 ♦ 10926 Edes Avenue, Oakland CA 94603

In the Introduction section on page 9-9 and throughout the Document we are referred to as “Costanoan.” This is a term applied to us by Spanish colonizers rather than a word we use for ourselves. We collectively refer to our related nations as “Ohlone”, and we specifically are the Lisjan Ohlone. The Confederated Villages of Lisjan are one of many Ohlone nations, and each nation is unique in its culture and language. The Confederated Villages of Lisjan are made up of the six nations that were directly enslaved at Mission San Jose in Fremont, CA and Mission Dolores in San Francisco, CA: Lisjan (Ohlone), Karkin (Ohlone), Bay Miwok, Plains Miwok, Delta Yokut and Napian (Patwin). Our territory includes 5 Bay Area counties; Alameda, Contra Costa, Solano, Napa and San Joaquin, and we are directly tied to the “Indian Town” census of the 1920’s and the Verona Band.

Stating that “no sites have been identified” demonstrating historic sites in the Bay Area from 5,000 years ago is inaccurate. Overall the historic description is lacking in accuracy. We would like to draft a more accurate version, if possible.

Page 9-10 States that “A systematic archaeological survey has not been conducted for Contra Costa County” and that site information is mostly from “sporadic surveys.” Can we partner with the County to ensure that changes? Determining what needs to be protected and which cultural resources are connected to what specific Indigenous nation requires thorough and systematic research. The County should partner with Tribes on this to ensure confidentiality and assist in locating sites for protection. The document does not seem to indicate the surveys took place in partnership with Tribes, so it is likely that a lot of information is missing.

We suggest you review the historic maps from the Mexican Rancho period to determine possible sensitive sites requiring protection.

In determining the “sensitivity” of sites described on page 9-10, was there any tribal input? Tribes are in the best position to determine the sensitivity and meaning of their homelands. We would like to be part of determining the level of protection our historic and sacred sites warrant.

Page 9-12 states that “Both public and private stewardship of the resources on-site shall be considered as long as the protection is long-term and guaranteed in some manner” and that the
East Bay Regional Park District (EBRPD) and Contra Costa Water District (CCWD) will work to acquire lands for protection. We would like to partner in the acquisition and protection of lands that are determined to be part of our historic homelands.

Page 9-12 notes that there was a historic resource inventory compiled in 1976, and it is not considered a comprehensive list. Has this information been updated, or is the County still working with the list from the 70's? As it is admittedly not comprehensive and the 70s was a time where many still refused to consult with or respect tribes, we would like to ensure a new and more thorough list is compiled. We would like information regarding our resources to remain confidential in such a list.

Page 9-12 notes that "efforts" should be made to secure financing for studies. Does the County have a concrete plan for obtaining the funding? We would like to see the County develop a full and funded plan before making any major decisions regarding our historic and cultural resources.

9-28 states that areas with significant and important archaeological or historic significance can be publicly owned. We would prefer to have ownership over our own sacred and historic sites. To the extent possible, we ask for such sites to be acquired for us. It would save the County financially as we could work to preserve and revitalize the natural or cultural elements of the site. If this is not possible, we ask for a partnership where we are allowed access and use of our sites for ceremonial and preservation purposes. We would also like a clearer route for obtaining conservation easements for tribal cultural uses. Per SB 18, California Native American Tribes are entities that can obtain such easements. We ask that especially sacred or sensitive sites be kept off limits from the general public. Please consider that what is merely a place for recreational pastime for some is an ancient site of great cultural and spiritual importance for us.
9-30 states that "development surrounding areas of historic significance" shall have a design that "enhances the historic quality" of the area. We ask that to the extent possible no development occur surrounding our sacred and historic sites. They are already as they should be and no development will enhance their quality.

Where the "Development Review Process" is discussed on page 9-13, we would like language indicating Tribes will be consulted with as part of the review process.

We want to make sure that Tribes are properly consulted on any project that will effect us.

We would like "collaborating with Tribes" to be included in the Historic and Cultural Resources Goals. It is important to set this as a guideline.

9-k states Ordinances will be reviewed and amended as necessary to make amendments necessary for safeguarding resources. We would like to partner with you in the review and suggested amendments of such ordinances.

9-o describes a program of seeking coordination and cooperation of federal, State and local governments to develop funding, acquire sites, and develop easements. Please include Tribes in this program.

In general, the “other program” section on page 9-13 can include a program of working with tribes to preserve lands, develop better educational materials for the public, grant easements and other partnerships.

Please be aware that for us, a cultural resource may be less tangible than merely an object or the site itself. In our culture, views of and access to our sacred sites are often as important as the area itself. We ask that you defer to our traditions and own cultural understanding when discussing the importance of and use of our historic and cultural resources.

SAMPLE LANGUAGE

In addition to these suggested changes to specific parts of the current General Plan, we have sample language regarding specific policy to address cultural resources and other issues.

CULTURAL AND ARCHAEOLOGICAL RESOURCES GOAL

Protection and Preservation of Native American Cultural Places. Policies

1. Consult with culturally affiliated Native American tribes prior to amending the General Plan and adopting or amending specific plans, and when a tribal cultural site is to be placed in permanent open space, consistent with state law.

2. Work with culturally affiliated tribes to identify and appropriately address cultural resources and tribal sacred sites through the development review process.

3. Avoid or mitigate to the maximum feasible extent impacts of development on Native American archaeological and cultural resources.

4. Encourage voluntary landowner efforts to protect cultural resources and tribal cultural sites consistent with state law.

Implementation Measures

1. The County shall refer proposals for projects that are not categorically exempted from the California Environmental Quality Act for evaluation and a recommendation as to whether further study is required to determine the presence or absence of archaeological resources. If further study is required, the project applicant shall contract with a qualified professional to conduct the study and make recommendations designed to avoid or minimize adverse impacts on cultural or historic resources and indicate whether further investigation is needed. All studies shall be completed and submitted to the County prior to the completion of any environmental document for the project.

2. The County will refer draft environmental documents, including any studies and recommended mitigation measures, to the appropriate Native American tribes for review and comment as part of the public review process for such documents. Mitigation

measures to avoid or minimize impacts on Native American cultural resources may include the execution of a cultural resources treatment agreement between the developer and the appropriate tribe(s) that address the treatment and disposition of cultural resources and human remains, and tribal monitoring during earth-disturbing activities.

3. Consult with culturally affiliated tribes prior to designating open space in order to protect the identity of any cultural places that exist on the proposed open space and develop a treatment plan and management plan for any such cultural places.

4. Work with culturally affiliated tribes to acquire and hold conservation easements on terms mutually satisfactory to the tribe and landowner for purposes of protecting tribal cultural places.

Archaeological and Cultural Resources

1. Any project that involves earth disturbing activities within previously undisturbed soils in an area determined to be archaeologically or culturally sensitive, shall require evaluation of the site by a qualified archaeologist retained by the project applicant. The applicant shall implement the recommendations of the archaeologist, subject to the approval of the County Planning Department.

2. Any project that involves earth disturbing activities in previously undisturbed soils that have been determined to be archaeologically or culturally sensitive shall require consultation by the applicant with California Indian Tribe(s) which have a traditional cultural affiliation with the project area and/or the resources affected by the project, for the purposes of determining archaeological and cultural resources impacts and creating appropriate mitigation to address such impacts. The applicant shall also arrange for monitoring of earth disturbing activities by Tribe(s) which have a traditional cultural affiliation with the project area and/or the resources affected by the project, if requested.

Human Remains

1. In the event of the discovery of a burial, human bone or suspected human bone all excavation or grading in the vicinity of the find shall halt immediately and the area of the find shall be protected and the project applicant immediately shall notify the County Coroner of the find and comply with the provisions of Cal. Health and Safety Code Section 7050.5, including Cal. Public Resources Code Section 5097.98, if applicable.

2. In the event that human remains are determined to be Native American human remains the applicant shall consult with the MLD to determine appropriate treatment for the Native American human remains as prescribed in Public Resources Code Section 5097 et seq..

Protection and Preservation of Native American Cultural Places. Policies

1. Consult with culturally affiliated Native American tribes prior to amending the General Plan and adopting or amending specific plans, and when a tribal cultural site is to be placed in permanent open space, consistent with state law.

2. Work with culturally affiliated tribes to identify and appropriately address cultural resources and tribal sacred sites through the development review process.

3. Avoid or mitigate to the maximum feasible extent impacts of development on Native American archaeological and cultural resources.

4. Encourage voluntary landowner efforts to protect cultural resources and tribal cultural sites consistent with state law.

Sample Cultural Resources Mitigation Measures

1. Prior to the issuance of grading permits, the developer is required to enter into a cultural resources' treatment agreement with the culturally affiliated tribe. This agreement will address the treatment and disposition of cultural resources and human remains that may be impacted as a result of the development of the Project, as well as provisions for tribal monitors.

2. If cultural resources are discovered during the project construction, all work in the area of the find shall cease, and a qualified archaeologist and representatives of the culturally affiliated tribe shall be retained by the project sponsor to investigate the find and make recommendations as to treatment and mitigation.

3. A qualified archaeological monitor will be present and will have the authority to stop and redirect grading activities, in consultation with the culturally affiliated tribe and their designated monitors, to evaluate the significance of any archaeological resources discovered on the property.

4. Tribal monitors from the culturally affiliated tribe shall be allowed to monitor all grading, excavation and groundbreaking activities, including all archaeological surveys, testing, and studies, to be compensated by the developer.

5. The landowner agrees to relinquish ownership of all cultural resources, including all archaeological artifacts that are found on the Project area, to the culturally affiliated tribe for proper treatment and disposition.

6. All cultural sites within the Project area are to be avoided and preserved.

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Kanyon Sayers-Roods, MLD,

This letter serves as a formal invitation to the Indian Canyon Mutsun Band of Costanoan (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
- Conservation, Open Space, and Working Lands Element
- Public Facilities and Services Element
- Health and Safety Element
- Growth Management Element

All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

project, and final development approval decisions are made on a project-by-project basis by County staff, review boards, the Planning Commission, and/or the Board of Supervisors.

The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

If the Tribe wishes to engage in formal government-to-government consultation with Contra Costa County for the Contra Costa County 2045 General Plan and the CAP Updates under AB 52 and PRC § 21080.3.1, please respond in writing within 30 calendar days of this notice **(by Monday, November 6, 2023)** with the Tribe's designated Point of Contact for consultation to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the Contra Costa County 2045 General Plan and the CAP Updates if we do not receive a response within the period provided by law. This notification does not limit the ability of the Tribe to submit information to Contra Costa County.

If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairman Daniel Gomez,

This letter serves as a formal invitation to the Cachil Dehe Band of Wintun Indians of the Colusa Indian Community (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
- Conservation, Open Space, and Working Lands Element
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All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

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The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

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Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

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If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Lloyd Mathiesen,

This letter serves as a formal invitation to the Chicken Ranch Rancheria of Me-Wuk Indians (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
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All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

project, and final development approval decisions are made on a project-by-project basis by County staff, review boards, the Planning Commission, and/or the Board of Supervisors.

The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

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Contra Costa County
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Attention: Will Nelson
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If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Donald Duncan,

This letter serves as a formal invitation to the Guidiville Indian Rancheria (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

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Opportunity to Submit Information

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If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
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Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
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Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

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Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Ann Marie Sayers,

This letter serves as a formal invitation to the Indian Canyon Mutsun Band of Costanoan (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
- Conservation, Open Space, and Working Lands Element
- Public Facilities and Services Element
- Health and Safety Element
- Growth Management Element

All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

project, and final development approval decisions are made on a project-by-project basis by County staff, review boards, the Planning Commission, and/or the Board of Supervisors.

The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

If the Tribe wishes to engage in formal government-to-government consultation with Contra Costa County for the Contra Costa County 2045 General Plan and the CAP Updates under AB 52 and PRC § 21080.3.1, please respond in writing within 30 calendar days of this notice **(by Monday, November 6, 2023)** with the Tribe's designated Point of Contact for consultation to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the Contra Costa County 2045 General Plan and the CAP Updates if we do not receive a response within the period provided by law. This notification does not limit the ability of the Tribe to submit information to Contra Costa County.

If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Cosme Valdez,

This letter serves as a formal invitation to the Nashville Enterprise Miwok-Maidu-Nishinam Tribe (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

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The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
- Conservation, Open Space, and Working Lands Element
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All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

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Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

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Attention: Will Nelson
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Martinez, CA 94553

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If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Timothy Perez,

This letter serves as a formal invitation to the North Valley Yokuts Tribe (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
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- Conservation, Open Space, and Working Lands Element
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All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

project, and final development approval decisions are made on a project-by-project basis by County staff, review boards, the Planning Commission, and/or the Board of Supervisors.

The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

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Opportunity to Submit Information

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If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Kanyon Sayers-Roods, MLD,

This letter serves as a formal invitation to the Indian Canyon Mutsun Band of Costanoan (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

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Opportunity to Submit Information

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Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

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Department of Conservation and Development

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Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
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Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Charlene Nijmeh,

This letter serves as a formal invitation to the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

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The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

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All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

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The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

If the Tribe wishes to engage in formal government-to-government consultation with Contra Costa County for the Contra Costa County 2045 General Plan and the CAP Updates under AB 52 and PRC § 21080.3.1, please respond in writing within 30 calendar days of this notice **(by Monday, November 6, 2023)** with the Tribe's designated Point of Contact for consultation to:

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Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
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If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Vice Chairwoman Monica Arellano,

This letter serves as a formal invitation to the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

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If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

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Figure 1. Regional Location
Figure 2. EIR Study Boundaries

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

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Deputy Director

Jason Crapo
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Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Andrew Galvan,

This letter serves as a formal invitation to The Ohlone Indian Tribe (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

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October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Jesus Tarango,

This letter serves as a formal invitation to the Wilton Rancheria (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

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Respectfully,



William R. Nelson
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October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Katherine Perez,

This letter serves as a formal invitation to the North Valley Yokuts Tribe (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

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Principal Planner
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Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Corrina Gould,

This letter serves as a formal invitation to The Confederated Villages of Lisjan (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
- Conservation, Open Space, and Working Lands Element
- Public Facilities and Services Element
- Health and Safety Element
- Growth Management Element

All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

project, and final development approval decisions are made on a project-by-project basis by County staff, review boards, the Planning Commission, and/or the Board of Supervisors.

The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

If the Tribe wishes to engage in formal government-to-government consultation with Contra Costa County for the Contra Costa County 2045 General Plan and the CAP Updates under AB 52 and PRC § 21080.3.1, please respond in writing within 30 calendar days of this notice **(by Monday, November 6, 2023)** with the Tribe's designated Point of Contact for consultation to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the Contra Costa County 2045 General Plan and the CAP Updates if we do not receive a response within the period provided by law. This notification does not limit the ability of the Tribe to submit information to Contra Costa County.

If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Andrew Galvan,

This letter serves as a formal invitation to The Ohlone Indian Tribe (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
- Conservation, Open Space, and Working Lands Element
- Public Facilities and Services Element
- Health and Safety Element
- Growth Management Element

All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

project, and final development approval decisions are made on a project-by-project basis by County staff, review boards, the Planning Commission, and/or the Board of Supervisors.

The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

If the Tribe wishes to engage in formal government-to-government consultation with Contra Costa County for the Contra Costa County 2045 General Plan and the CAP Updates under AB 52 and PRC § 21080.3.1, please respond in writing within 30 calendar days of this notice **(by Monday, November 6, 2023)** with the Tribe's designated Point of Contact for consultation to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the Contra Costa County 2045 General Plan and the CAP Updates if we do not receive a response within the period provided by law. This notification does not limit the ability of the Tribe to submit information to Contra Costa County.

If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Neil Peyron,

This letter serves as a formal invitation to the Tule River Indian Tribe (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

The County is preparing comprehensive updates to its existing General Plan and CAP. The updates will establish County land use policy through 2045 and reduce greenhouse gas (GHG) emissions and enhance community resiliency.

State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
- Conservation, Open Space, and Working Lands Element
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- Health and Safety Element
- Growth Management Element

All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

project, and final development approval decisions are made on a project-by-project basis by County staff, review boards, the Planning Commission, and/or the Board of Supervisors.

The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

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If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

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Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Chairperson Kenneth Woodrow,

This letter serves as a formal invitation to the Wuksache Indian Tribe/Eshom Valley Band (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

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Opportunity to Submit Information

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Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Dahlton Brown, Director of Administration,

This letter serves as a formal invitation to the Wilton Rancheria (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

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State law requires that the General Plan contain seven elements: Land Use, Circulation, Housing, Open Space, Noise, Safety, and Conservation. Environmental justice must also be addressed, either in its own element or throughout the General Plan (the County has taken a hybrid approach). The content of the elements is outlined in State law. The updated General Plan will include all State-required elements and two optional elements, Growth Management and Public Facilities and Services. The Housing Element is being updated in parallel to the rest of the General Plan. The updated Housing Element was adopted by the County Board of Supervisors on June 13, 2023, and is undergoing revision following a review by the California Department of Housing and Community Development.

The County's existing General Plan was adopted in 1991, with minor revisions occurring in 2005. The overall purpose of the General Plan Update is to create a modern General Plan that articulates a vision for the county's long-term physical form and development, while preserving and enhancing the quality of life for the County's residents. The key components of this project include broad community goals for the future of the County and specific policies and implementing actions that help achieve the goals. The updated General Plan will modernize the County's policy framework to address the current requirements of State law, with emphasis on the topics of environmental justice, economic development, community health, and sustainability. The General Plan Update will also include numerous land use changes in unincorporated communities where change or enhancement of existing uses is desired through 2045.

Finally, the project includes an update to the County's 2015 CAP. The CAP will be a separate document that sets targets and establishes measures to reduce GHG emissions in unincorporated Contra Costa County, consistent with State targets.

The proposed General Plan encompasses the required and optional topics within the following chapters:

- Stronger Communities Element
- Land Use Element
- Transportation Element
- Housing Element (prepared as part of a separate project)
- Conservation, Open Space, and Working Lands Element
- Public Facilities and Services Element
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- Growth Management Element

All specific plans and zoning in the county must be consistent with the General Plan. Similarly, all land use development approvals and environmental decisions made by the County must be consistent with the General Plan. The General Plan itself, however, does not approve or entitle any development project. Property owners have control over when they wish to propose a

project, and final development approval decisions are made on a project-by-project basis by County staff, review boards, the Planning Commission, and/or the Board of Supervisors.

The proposed CAP is a separate document that provides strategic implementation programs to show how the County will reduce GHG emissions in support of the State's adopted GHG reduction targets. The CAP implements the General Plan and its general policies and actions supporting the reduction of GHG emissions. As an implementing document, the CAP provides more specific direction to the County than the General Plan, and the CAP will be monitored and updated more often than the General Plan.

Records Search Results

Environmental review for the County's existing General Plan included a records search from the California Historical Resources Information System (CHRIS) Northwest Information Center (NWIC). The record search identified approximately 600 archaeological sites within the county. An additional 155 archaeological sites were identified as a result of a records search conducted in December 2018 at the NWIC. The 2018 records search was limited to sites documented in the county since 2005 to capture those that were formally documented since publication of the most recently reconsolidated General Plan in 2005–2020. A total of 755 archaeological sites were identified in the county, including 274 historic-era sites; 418 prehistoric sites; 54 multi-component sites, which have both historic-era and prehistoric components; and nine sites of unknown age. The records search also identified 380 built historical resources in the unincorporated areas of the county.

As of the date of preparation of this letter, the county has not been subject to a large, comprehensive survey for archaeological resources. The potential remains for as-yet undocumented resources to be present within the county.

Opportunity to Submit Information

As part of the cultural resources review of the Contra Costa County 2045 General Plan and the CAP Updates under CEQA, we are providing this notification as an opportunity for the Tribe to submit any information the Tribe is willing to share about cultural resources, including Tribal cultural resources as defined in PRC § 21074 that may be near the EIR Study Area (see Figure 2, *EIR Study Boundaries*). We understand that the locations of these resources are sensitive and resource locations would not be disclosed in public documents and will be kept confidential as provided for under California Government Code § 6254.10.

If the Tribe wishes to engage in formal government-to-government consultation with Contra Costa County for the Contra Costa County 2045 General Plan and the CAP Updates under AB 52 and PRC § 21080.3.1, please respond in writing within 30 calendar days of this notice **(by Monday, November 6, 2023)** with the Tribe's designated Point of Contact for consultation to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road
Martinez, CA 94553

You may also respond by e-mail to will.nelson@dcd.cccounty.us. We will assume consultation is not desired and proceed with the Contra Costa County 2045 General Plan and the CAP Updates if we do not receive a response within the period provided by law. This notification does not limit the ability of the Tribe to submit information to Contra Costa County.

If you have any questions, please do not hesitate to call me at (925) 655-2898. Thank you and we look forward to your response.

Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
Figure 1. Regional Location
Figure 2. EIR Study Boundaries

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Maureen Toms
Deputy Director

Ruben Hernandez
Deputy Director

Jason Crapo
Deputy Director

Gabriel Lemus
Assistant Deputy Director

October 5, 2023

RE: Assembly Bill 52 Notification for the Contra Costa County 2045 General Plan and Climate Action Plan Updates, California

Project Location/Area: All of Unincorporated Contra Costa County

County File Number: GP18-0001

Steven Hutchason, THPO,

This letter serves as a formal invitation to the Wilton Rancheria (Tribe) to begin government-to-government consultation with Contra Costa County under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) § 21080.3.1, on the Contra Costa County 2045 General Plan and the Climate Action Plan (CAP) Updates. Contra Costa County is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Contra Costa County 2045 General Plan and CAP Updates

Contra Costa County is located in the San Francisco Bay Area in Northern California. It is bordered by San Francisco Bay to the west, San Pablo Bay and Suisun Bay to the north, Alameda County to the south, and San Joaquin County to the east (see Figure 1, *Regional Location*). Major interstates and State routes include Interstate 80, Interstate 580, Interstate 680, Highway 4, Highway 24, and Highway 242.

The Contra Costa County 2045 General Plan outlines a project area that excludes land within incorporated municipalities' limits (i.e., its authority is limited to the unincorporated areas within the county). In addition, Measure C-1990 established the 65/35 Land Preservation Standard and Urban Limit Line (ULL). The 65/35 Land Preservation Standard restricts urban development to no more than 35 percent of the county's land area, while the remaining 65 percent must be preserved for agriculture, open space, parks, and other non-urban uses. The ULL limits the areas where urban development can occur. The EIR will examine potential impacts on lands within unincorporated Contra Costa County, including land within and outside the ULL and within each municipality's sphere of influence (SOI), which is referred to as the "EIR Study Area" (see Figure 2, *EIR Study Boundaries*).

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Respectfully,



William R. Nelson
Principal Planner
Contra Costa County

Attachments:
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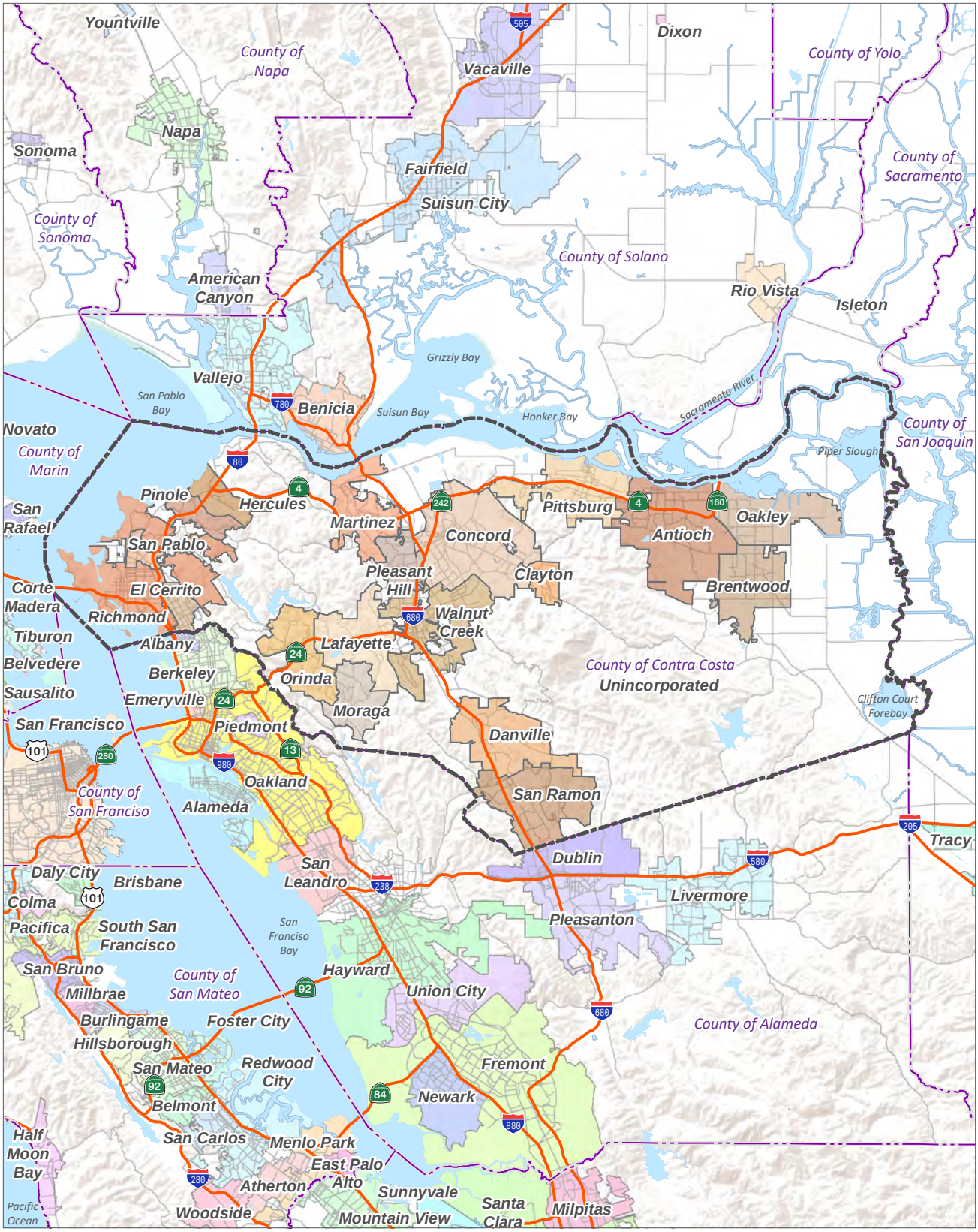
Figure 2. EIR Study Boundaries



Source: ESRI, 2022

Contra Costa County Boundary

County Boundary

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Scale (Miles)

Figure 1

Regional Location

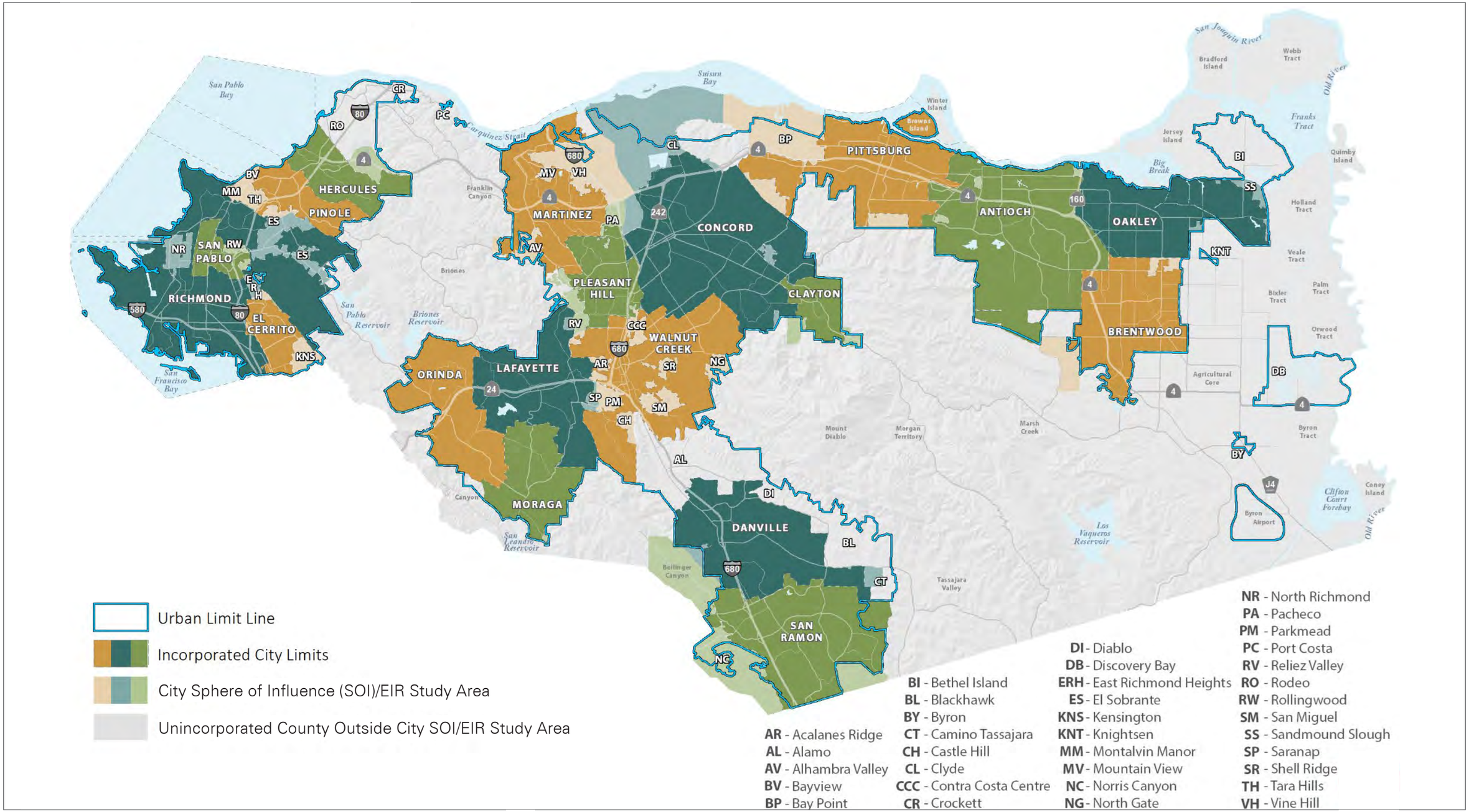


Figure 2
EIR Study Boundaries



This message was sent from a public e-mail system and may be subject to disclosure under the California Public Records Act.

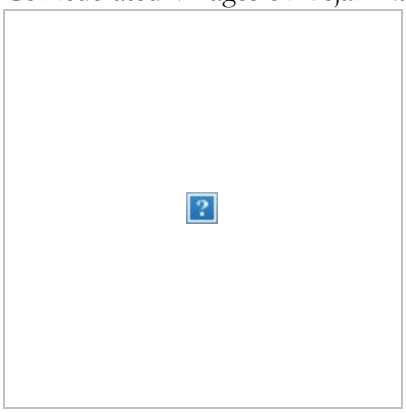
From: Lisjan Nation <cvltribe@gmail.com>
Sent: Wednesday, October 25, 2023 12:22 PM
To: Will Nelson <Will.Nelson@dcd.cccounty.us>
Subject: Contra Costa County 2045 General Plan and Climate Action Plan File Number GP18-0001

Hello,

Thank you for your email. The Tribe is requesting a copy of the final CHRIS and EIR for this project, along with the SLF from Native American Heritage Commission and any additional archeological reports. Our physical address is: PO BOX 6487 Oakland CA 94603 or if you would prefer to send them electronically, please send them to this email address.

'Uni (Respectfully),

Francis Ranstead
Confederated Villages of Lisjan Nation Tribal Administrative Assistant



Appendix 5.8-1 Climate Action Plan

Appendices

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Table 3 and **Figure 7** show the community-wide GHG emissions for the unincorporated county during the four inventory years. Total community-wide emissions declined 18 percent from 2005 to 2019. **Table 4** shows the proportion of GHG emissions from each sector for the unincorporated county for the four inventory years.

TABLE 3. ABSOLUTE ANNUAL GHG EMISSIONS, 2005 TO 2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Transportation (excluding BART)	628,200	651,130	571,650	464,040	-26%
Residential energy	294,930	280,870	212,420	191,780	-35%
Nonresidential energy	118,740	125,350	98,850*	159,520	34%
Solid waste	243,940	224,570	223,100	220,760	-10%
Agriculture	33,350	39,300	44,880	36,130	8%
Off-road equipment	34,160	36,290	42,840	54,010	58%
Water and wastewater	8,080	7,400	4,400	4,870	-40%
BART	1,040	1,320	1,440	190	-82%
Land use and sequestration	-70,860	-70,860	-70,860	-70,860	0%
Total Annual $MTCO_2e$	**1,291,580**	**1,295,370**	**1,128,720**	**1,060,440**	**-18%**
Informational Items					
Stationary sources	13,983,030	11,956,000	11,232,290	10,867,670	-22%
Wildfire	14,270	66,080	0**	10,100	N/A***

Note: All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

* Estimates of nonresidential electricity use in 2013 are used in 2017 to account for a lack of available data in 2017.

* No wildfires were recorded in the unincorporated county in 2017.

** Overall change between 2005 and 2019 for wildfire is not calculated because of the high degree of year-to-year variability.

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The transportation sector has consistently been the largest source of GHG emissions in the unincorporated county, accounting for between 46 and 53 percent of total community-wide GHG emissions (excluding informational items). Residential energy and solid waste are the second- and third-largest sources of GHG emissions, followed by nonresidential energy. Agriculture GHG emissions account for between 3 and 4 percent, and off-road equipment accounts for between 3 and 5 percent. GHG emissions from the water and wastewater and BART sectors are each 1 percent or less.

The sectors that experienced the largest decrease in annual GHG emissions between 2005 and 2019 were BART (82 percent), water and wastewater (40 percent), residential energy (35 percent), and transportation (26 percent). Emissions reductions also occurred in the solid waste sector (10 percent) and the nonresidential energy sector (8 percent). These changes are primarily due to an increase in renewable and carbon-free electricity and better resource-efficiency practices by community members. Two sectors, off-road equipment and agriculture, saw increases in their emissions from 2005 to 2019. Detailed summaries of changes in GHG emissions by sector appear in Appendix B.

The transportation sector has consistently been the largest source of GHG emissions in unincorporated Contra Costa County. The sectors that experienced the largest decrease in annual GHG emissions between 2005 and 2019 were BART, water and wastewater, residential energy, and transportation.

Per-Person GHG Emissions

Along with the "absolute" GHG emission levels discussed previously, the project team assessed the per-person GHG emissions from the unincorporated county. The team calculates per-person GHG emissions by taking the absolute GHG emissions in **Table 3** and dividing them by the number of residents in the unincorporated county for that inventory year. **Table 5** and **Figure 8** show the per-person emissions for the inventory years for the unincorporated county.

DRAFT

Overall, per-person emissions declined 27 percent from 2005 to 2019. Because the population of the unincorporated county grew during this time, most sectors saw their per-person emissions decline. Even for sectors that had increases in their absolute emissions, such as Agriculture, population growth resulted in a decline in per-person emissions. The two sectors that saw an increase in per-person emissions were Off-road equipment, and Nonresidential energy, although the per-person emissions grew by 53 percent from 2005 to 2019 compared to a 73 percent increase in absolute emissions.

Per-person emissions declined 27 percent between 2005 and 2019.

TABLE 5. PER-PERSON GHG EMISSIONS, 2005 TO 2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Population					
Residents	154,270	165,700	174,110	174,150	13%
Emissions ($MTCO_2e$ per-person)					
Transportation	4.07	3.93	3.28	2.66	-35%
Residential energy	1.91	1.70	1.22	1.10	-42%
Solid waste	1.58	1.36	1.28	1.27	-20%
Nonresidential energy	0.77	0.76	0.57	0.92	19%
Agriculture	0.22	0.24	0.26	0.21	-4%
Off-road equipment	0.22	0.22	0.25	0.31	53%
Water and wastewater	0.05	0.04	0.03	0.03	-47%
BART	0.01	0.01	0.01	Less than 0.01	-84%
Land use and sequestration	-0.46	-0.43	-0.41	-0.41	-11%
Total Annual ($MTCO_2e$ per-person)	**8.37**	**7.82**	**6.48**	**6.09**	**-27%**
Informational Items					
Stationary Sources	90.64	72.15	64.51	62.40	-31%
Wildfire	0.09	0.40	0.00	0.06	N/A*

Note: All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

* Overall change between 2005 and 2019 is not calculated because of the high degree of year-to-year variability.

Many factors contribute to changes in GHG emissions. Key factors may include changes in electricity and natural gas use, the proportion of electricity obtained from carbon-free sources, VMT, vehicle fuel efficiency, landfilled waste tonnage, temperature (affecting heating and cooling demand), and demographic changes (e.g., changes in population, household, and job numbers). Sector-specific descriptions of sources of and changes in GHG emissions are provided in **Appendix B**.

CONSUMPTION-BASED INVENTORY EMISSIONS

The community-wide GHG inventory presented for the unincorporated county is a protocol-compliant, production-based inventory, which means that it assesses the GHG emissions produced by activities occurring in the community. However, the inventory does not account for most of the emissions created by the consumption of food or material goods or use of services in the unincorporated county, including emissions from the manufacture and transportation of goods purchased in the community, food grown and processed in other locations, air travel by unincorporated Contra Costa County community members, and the disposal or reprocessing of certain materials and products. For example, if someone who lives or works in an unincorporated county community purchases new clothes, the production-based inventory will include vehicle emissions for the trip to and from the store, energy use at the store and home, and any landfilled waste generated. It would not include emissions from the growing and processing of the raw materials in the clothes, the manufacturing of the clothes, transportation of the clothes to the store, or the reprocessing of any waste materials that do not end up in a landfill, unless these activities occur within the unincorporated county.

A consumption-based inventory assesses emissions associated with the manufacture, transportation, and disposal of these goods and services regardless of where they occur.

In contrast to a production-based inventory, a second type of GHG inventory, known as a consumption-based inventory, looks at a wider array of GHG emissions created by the goods and services used by unincorporated county community members, including residents, businesses, and employees. A consumption-based inventory assesses emissions associated with the manufacture, transportation, and disposal of these goods and services regardless of where they occur. Such inventories can provide a more complete picture of the GHG emissions associated with the lifestyle and consumer behavior of unincorporated county community members.

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A consumption-based inventory is more complex to prepare than a production-based inventory. There are not established protocols and methods for consumption-based inventories, and California does not yet have a statewide consumption-based inventory or any guidance for preparing one. Due to these limitations, the project team did not prepare one as part of this 2024 CAP. In 2015, BAAQMD worked with the Cool Climate Network at the University of California, Berkeley, to prepare a consumption-based inventory for all Bay Area jurisdictions. This inventory includes GHG emissions from the following sources:

- **Travel:** GHG emissions from fuel use by on-road vehicles, vehicle manufacturing and repairs, public transportation, and air travel.
- **Housing**: GHG emissions from electricity and natural gas use in homes as well as other fuels associated with home heating (such as kerosene or fuel oil), electricity emissions from water and wastewater activities, and waste emissions. This category also includes emissions from the manufacture, transportation, and construction and demolition of materials used to construct houses.
- **Food**: GHG emissions from the growth, processing/manufacturing, and transportation of food products.
- **Goods**: GHG emissions from the manufacture, transportation, and disposal of consumer products, such as home furnishings, appliances and electronics, clothing, and healthcare and personal items.
- **Services**: GHG emissions from personal and business services, including entertainment and recreation, communication, education, healthcare, and maintenance and repair activities.

Some of these GHG emission sources are also included in the production-based inventory prepared as part of the 2024 CAP, and others are covered by either the production-based or consumption-based inventory but not both. According to the consumption-based inventory, transportation is responsible for 34 percent of emissions produced by activities conducted and goods consumed within unincorporated Contra Costa County. Food is responsible for 19 percent, goods and services for 17 percent each, and housing for 13 percent (see **Figure 10**).

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GHG Forecast

The following sections present the results of the community-wide and County operations GHG emissions forecasts for the years 2030 and 2045. For a detailed description of GHG forecast methods and assumptions, see **Appendix B**.

ABSOLUTE GHG EMISSIONS FORECAST

Table 7 and **Figure 11** show unincorporated Contra Costa County's projected future GHG emissions relative to the 2019 inventory. These projections are obtained by applying projected changes in community population to resource use and transportation behavior recorded in 2019. As such, these projections do not account for any potential changes in transportation or resource use directly resulting from the COVID-19 pandemic, the long-term effects of which are not currently known.

Most sectors show an increase in GHG emissions due to the growing population. Agricultural emissions decrease because the amount of land used for agricultural purposes is projected to decline. Although the land use and sequestration sector is expected to remain a net carbon sink (negative emissions), the amount of emissions sequestered (removed from the atmosphere) by the activities in this sector are projected to decline. This is due to anticipated development of currently undeveloped land, removing the potential for this land to sequester, or store, carbon. Sequestration in forested and urbanized areas is projected to increase slightly.

TABLE 7. ABSOLUTE GHG EMISSIONS FORECAST, 2019 TO 2045

Sector	2019	2030	2045	Percentage Change, 2019–2045
Transportation	464,040	542,020	605,080	30%
Residential energy	191,780	217,710	259,380	35%
Nonresidential energy	159,520	167,720	180,200	13%
Solid waste	220,760	229,450	260,490	18%
Agriculture	36,130	34,770	33,410	-8%
Off-road equipment	54,010	69,520	76,100	41%
Water and wastewater	4,870	5,530	6,590	35%
BART	190	220	260	37%
Land use and sequestration	-70,860	-67,580	-58,890	-17%
Total Annual $MTCO_2e$	1,060,440	1,199,360	1,362,620	28%

4. GHG EMISSION REDUCTION STRATEGY



Briones Valley. Photo credit: Stephen Joseph.

GHG Emissions Reduction Goals

A key part of any CAP is one or more goals for future GHG emissions levels. These goals may be "firm" levels of GHG emission reductions supported by State regulations and local commitments (also called regulatory goals) or aspirations that go beyond adopted minimums and represent a higher level of GHG emission reductions that communities can strive toward. The 2024 CAP includes GHG emission reduction goals for 2030 and 2045.

As discussed in **Chapter 2**, California has two statewide regulatory goals for reduction of GHGs:

- Reduce GHG emissions to 40 percent below 1990 levels by 2030. This goal was codified into law by SB 32.
- Reduce emissions to 85 percent below 1990 levels and achieve net carbon neutrality by 2045. This is the goal codified by AB 1279.

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The 2022 Scoping Plan recommends that local governments support statewide efforts to achieve net carbon neutrality by achieving an 85 percent reduction in GHG emissions compared to 1990 by 2045. The 2022 Scoping Plan also removes specific goals for per-person emissions reductions that appeared in previous versions. The BAAQMD 2020 CEQA Guidelines,[7] *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans*, require that local climate action plans such as the 2024 CAP be consistent with these State-level goals.

CONTRA COSTA COUNTY'S GHG EMISSION REDUCTION GOALS

Local GHG emissions reduction efforts, such as this 2024 CAP, may select any GHG emissions reduction goals that are appropriate for unincorporated Contra Costa County. However, to comply with State and regional guidelines for CEQA, the GHG emission reduction goals in the 2024 CAP should be broadly consistent with the State-level goals. Additionally, the 2045 General Plan informs the County's land use decisions and related policies out to 2045; therefore, consistency with the State's 2045 goal also aligns with the General Plan's horizon year. Given these considerations, the GHG emissions reduction goals for Contra Costa County are:

- Reduce GHG emissions to 658,700 $MTCO_2e$ by 2030.
- Reduce GHG emissions to 164,680 $MTCO_2e$ by 2045.

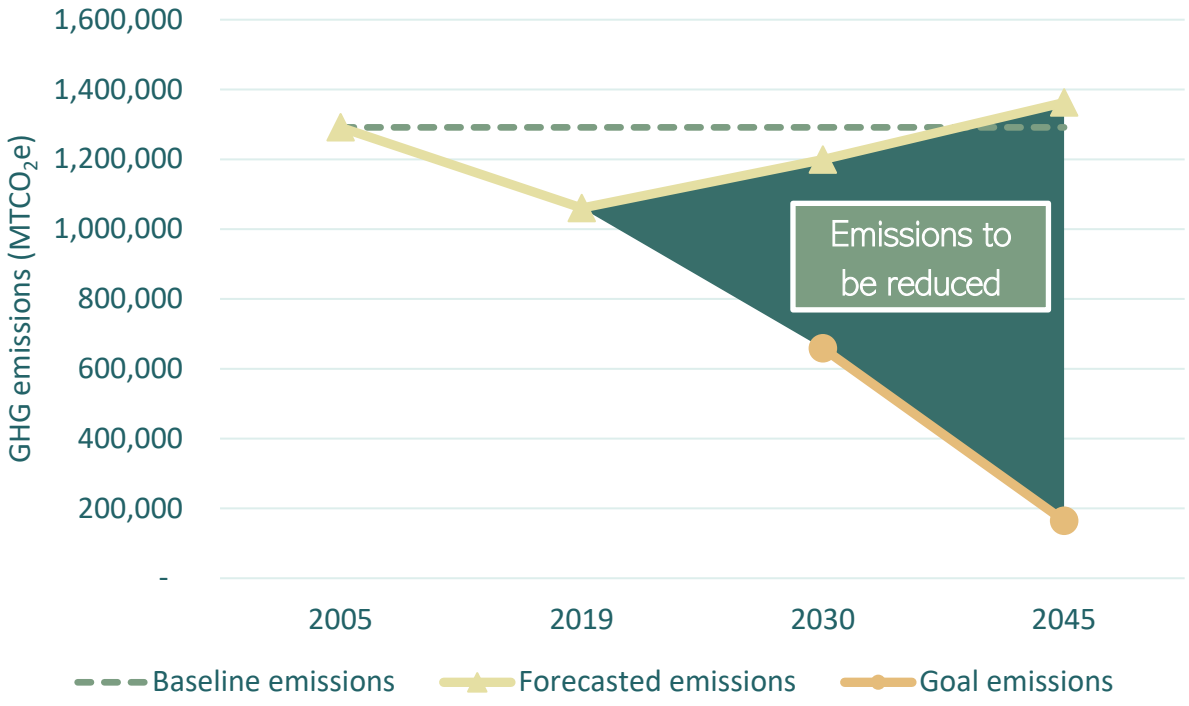
Table 8 and **Figure 12** show these emission goals and how they compare to the County's projected GHG emissions in **Chapter 3**.

TABLE 8. CONTRA COSTA COUNTY GHG EMISSIONS AND EMISSION GOALS, 2019 TO 2045

	2019	2030	2045
Forecast GHG emissions	1,060,440 $MTCO_2e$	1,199,360 $MTCO_2e$	1,362,620 $MTCO_2e$
Goal	None	658,700 $MTCO_2e$	164,680 $MTCO_2e$
GHG emissions to be reduced	N/A	540,660 $MTCO_2e$	1,197,940 $MTCO_2e$

DRAFT

FIGURE 12. GHG EMISSION LEVELS AND REDUCTION GOALS



Existing and Planned GHG Emissions Reduction Efforts

The County must substantially reduce its GHG emissions to achieve its goals. Fortunately, there are already several efforts in place or planned at the State and regional level that are expected to reduce GHG emissions in the unincorporated areas of Contra Costa County without the County taking additional action. The County can receive "credit" for the level of GHG emissions reduced locally by these existing and planned efforts.

California has adopted and committed to implementing policies to decrease GHG emission levels statewide, including from several of the major GHG emission sources in the unincorporated areas of Contra Costa County. Many of these policies are identified in the 2008 Scoping Plan and have been revised and expanded by successive updates.

The Scoping Plan and related documents lay out several State-led policies to reduce GHG emissions, but six policies have a direct and apparent GHG emission reduction benefit to unincorporated Contra Costa County: The Renewables Portfolio Standard (RPS), Clean Car Standards, Title 24 building energy efficiency standards, the Low Carbon Fuel Standard

(LCFS), the Short-Lived Climate Pollutant Reduction Strategy, and Renewable Natural Gas. An in-depth description of these initiatives and their projected GHG emission savings are provided in Appendix B.

1. **The Renewables Portfolio Standard** requires increases in renewable and carbon-free electricity supplies.
2. **The Clean Car Standards** require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels.
3. The updated **Title 24 building energy efficiency standards** require new buildings to achieve increased energy-efficiency goals, and in some cases to install rooftop solar panels. The latest version of these standards went into effect January 1, 2023.
4. **The Low Carbon Fuel Standard** mandates reduced carbon intensity of fuels used in off-road equipment.
5. **The Short-Lived Climate Pollutant Reduction Strategy**, also known as SB 1383, requires that jurisdictions provide organic waste collection services, recover edible food, and keep most organic waste out of landfills.
6. **Renewable Natural Gas** assumes that biomethane and renewable hydrogen fuels will be blended into the fossil gas pipeline and that, in the 2030s, dedicated hydrogen pipelines will be constructed to serve certain industrial clusters.

The project team estimated GHG savings from the Clean Car Standards using State modeling tools released in 2021. These models do not consider newer State regulations to accelerate the transition to zero-emission vehicles, and so they do not reflect all the expected GHG reductions from zero-emission vehicles in Contra Costa County. The remaining savings are covered in Strategy TR-2, which is discussed later in this chapter.

In addition to State actions, the County's default electricity provider, MCE, has also taken action to reduce the GHG emissions from the electricity it supplies to unincorporated Contra Costa County community members, beyond the minimum required by the RPS. In 2019, MCE electricity was approximately 60 percent renewable and 90 percent carbon free. In future years, MCE will work to source 95 percent of its electricity from carbon-free sources. When quantifying the emissions impacts from electricity procurement policies, GHG emissions reductions from RPS are considered first. The reductions from MCE clean energy procurement shown in **Table 9** represent savings obtained after the effects of the RPS have been considered. **Table 9** shows the GHG emissions reduction potential from the State-level efforts and MCE's energy procurement plans and projected levels of adoption of

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MCE Deep Green, as well as how unincorporated Contra Costa County's GHG emission levels with these reductions compares to the goals discussed previously.

TABLE 9. GHG EMISSION REDUCTIONS FROM EXISTING AND PLANNED ACTIONS, 2019 TO 2045

	2019 $MTCO_2E$	2030 $MTCO_2E$	2045 $MTCO_2E$
Forecast emissions without existing and planned actions	1,060,440	1,199,360	1,362,620
Reductions from RPS	-	-24,620	-115,400
Reductions from Clean Car standards	-	-110,250	-214,120
Reductions from Title 24	-	-10,460	-33,710
Reductions from LCFS (off-road only)*	-	-740	-7,430
Reductions from SB 1383		-21,880	-53,870
Reductions from renewable natural gas	-	-17,180	-73,670
Reductions from MCE clean energy procurement	-	-1,240	-
Reductions from all actions		-185,520	-483,340
Remaining emissions with existing and planned actions	1,060,440	1,013,840	879,280

*Due to how the off-road equipment emissions from LCFS are calculated, the results show a minor increase in emissions from this sector.

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Achieving Our Goals

County staff developed a set of 11 GHG emission reduction strategies and assessed the GHG emission reduction potential of these strategies, given the project team's reasonable understanding of available resources and what seemed appropriate for the unincorporated area. **Appendix B** provides detailed information about the GHG emission reduction potential of these strategies.

With the reductions currently projected from the 2024 CAP strategies, GHG emissions for the unincorporated areas of Contra Costa County are expected to fall to 1.47 $MTCO_2e$ per person. This is 55 percent below GHG emissions without the 2024 CAP.

These GHG emission reduction potentials are intended to be a starting point. They are based on the best available information, the experience and expertise of County staff, and known resources and capabilities. It is possible to achieve greater reductions if there is more confidence in higher levels of participation or development of additional programs. **Table 10** shows the expected GHG emission levels with these strategies enacted,

TABLE 10. GHG EMISSIONS WITH 2024 CAP DRAFT REDUCTION STRATEGIES, 2019 TO 2045

Sector	2019	2030	2045	Percentage Change, 2019–2045
Transportation	464,040	277,450	65,660	-86%
Residential Energy	191,780	117,440	21,730	-89%
Nonresidential Energy	159,520	114,720	10,430	-93%
Solid Waste	220,760	146,270	137,070	-38%
Agriculture	36,130	34,770	33,410	-8%
Off-road Equipment	54,010	54,150	35,640	-34%
Water and Wastewater	4,870	3,610	1,470	-70%
BART	190	150	50	-74%
Land Use and Sequestration	-70,860	-90,210	-147,800	109%
Total Annual $MTCO_2e$	**1,060,440**	**658,300**	**157,610**	**-85%**
Note: Due to rounding, totals may not equal the sum of the individual values				

With the reductions currently projected from the 2024 GHG emissions reduction strategies, GHG emissions for the unincorporated county are expected to be reduced to 86 percent below 1990 levels, equal to 88 percent below baseline 2005 levels or 85 percent below

2019 levels. These reductions are predicted to occur across most GHG emission sectors, though emissions within the Solid Waste sector will continue to be affected by previously deposited waste continuing to decompose in landfills. As noted previously, there is the potential for these strategies to yield additional GHG emission reductions as County staff and decision makers develop and institute implementation actions and monitor the results.

With these reductions as currently assessed, unincorporated Contra Costa County achieves the GHG emissions reduction goals for 2030 and 2045, as shown in **Table 11**.

TABLE 11. 2024 GHG EMISSION REDUCTIONS AND REGULATORY GOALS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG emissions reduction goals	658,700	164,680
GHG emissions with CAP strategies	658,300	157,610
Gap to GHG emission reduction goal*	-400	-7,070

Note: Due to rounding, totals may not equal the sum of the individual values.
* Negative values mean that the strategies reduce GHG emissions to below the goal.

THE 2024 CAP AND CARBON NEUTRALITY

The 2024 CAP achieves significant reductions in GHG emissions and places Contra Costa County on a path to support statewide carbon neutrality by 2045. Currently, there is insufficient guidance and certainty around local carbon sequestration, storage, and potential carbon offset strategies to mathematically demonstrate with certainty that the 2024 CAP will achieve carbon neutrality by 2045. However, the County believes that such guidance and certainty will emerge in future years as the County, regional agencies, and the State further explore the opportunities, develop guidance and methods, and validate new technology. When available, guidance on quantifying how to achieve carbon neutrality will be integrated into future updates of this 2024 CAP.

For the foreseeable future, achieving the County's GHG emissions reductions goals, including carbon neutrality, will likely not be feasible without the use of local carbon sequestration, notably on natural and working lands. Although GHG emissions can be eliminated from many of the County's GHG emissions sources, this is not practical for every source given technical, economic, or political considerations. Assuming implementation of the strategies in this 2024 CAP, **Figure 15** shows the major sources of Contra Costa County's remaining GHG emissions in 2045.

APPENDIX B: TECHNICAL GHG APPENDIX

This appendix provides details for Contra Costa County's greenhouse gas (GHG) emissions inventory and forecast in Chapter 3 of the 2024 Climate Action Plan (CAP) and the GHG emission reduction pathway presented in Chapter 4 of the 2024 CAP. It summarizes the technical details and findings from these analyses as well as the data sources, assumptions, and performance metrics used to assess the potential for GHG savings from state and local existing and planned efforts and the reduction strategies associated with the CAP.

Inventory and Forecast

As part of the preparation of the 2015 CAP, Contra Costa County and its regional partners and technical consultants prepared community-wide and County operations GHG inventories for the calendar years 2005 and 2013. The 2015 CAP identified the year 2005 as the baseline year for emission reductions, as this was considered a year with good data availability at the time, consistent with State guidance, and without any unusual factors that might affect GHG emissions.

As part of the 2024 CAP update process, the project teams prepared inventories of community-wide emissions for the years 2017 and 2019. County staff made some updates to the 2005 and 2013 community-wide inventories in the 2015 CAP to ensure a consistent method and approach across all inventory years.

County staff have also prepared a County operations GHG emissions inventory for the year 2017.

This document presents the full results of the Contra Costa County community-wide GHG inventory and the County operations inventory and is the most up-to-date summary of Contra Costa County's GHG emissions.

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PROTOCOLS

A series of guidance documents, called protocols, provide recommendations on how to adequately assess GHG emissions. The project team prepared the new GHG inventories and updates to past GHG inventories consistent with the guidance in widely adopted, standard protocol documents. These protocols provide guidance on what activities should be evaluated in the GHG inventories and how emissions from those activities should be assessed. Using standard methods also allows for an easy comparison of GHG emission levels across multiple years and communities.

- The County operations GHG inventory relies on the Local Government Operations Protocol (LGOP), which was first developed in 2008 and was updated in 2010. The LGOP is a tool for accounting and reporting GHG emissions of local government (municipal) operations and is used throughout California and the United States. The LGOP includes guidance from several existing programs as well as the state's mandatory GHG reporting regulations.
- The community-wide GHG inventory uses the United States Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (U.S. Community Protocol), which was first developed in 2012 and updated most recently in 2019. The California Governor's Office of Planning and Research encourages cities and counties in California to follow the U.S. Community Protocol for community-wide GHG emissions.
- A third protocol, the Global Protocol for Community-Scale Greenhouse Gas Inventories (Global Protocol) was first developed in 2014 and is intended for use in preparing international community-scale GHG inventories. It is largely consistent with the U.S. Community Protocol, although it contains additional guidance and resources to support a wider range of activities that may be found in other countries. The project team has used the Global Protocol to assess GHG emissions from sources that are not covered in the U.S. Community Protocol.

GHG inventories are estimates of GHG emissions based on these standard methods and verified datasets. While they are not direct measurements of GHG emissions, the use of the standard methods identified in the protocols, in combination with accurate data from appropriate sources, allows GHG inventories to provide reliable estimates of local emission levels. Due to potential data limitations, some inconsistencies in methods may remain. Any concerns about inconsistent methods are noted in the appropriate sector discussion.

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UNITS OF MEASUREMENT

GHG inventories and forecasts assess emissions in a unit called carbon dioxide equivalent (CO_2e), which is a combined unit of all GHGs analyzed in the inventory. As different GHGs have different effects on the processes that drive climate change, CO_2e is a weighted unit that reflects the relative potency of the different GHGs. These inventories report amounts of GHGs in metric tons of CO_2e ($MTCO_2e$), equal to 1,000 kilograms or approximately 2,205 pounds.

EMISSION FACTORS

An emission factor describes how many $MTCO_2e$ are released per unit of an activity. For instance, an emission factor for electricity describes the $MTCO_2e$ produced per kilowatt hours (kWh) of electricity used. Since different sources of electricity can have different emission factors, the emission factors in **Table B-1** represent a weighted average of emission factors across electricity sources and portfolios (e.g. MCE's Light Green and Deep Green products). The emission factor for on-road transportation describes the $MTCO_2e$ produced per mile of driving. The project team calculated most of the GHG emissions using data on GHG-generating activities in combination with emission factors. Some sources of GHG emissions (known as sectors), including agriculture and off-road emissions, are calculated using formulae or models and do not have specific emission factors. **Table B-1** shows the emission factors for the inventory years for the unincorporated area.

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TABLE B-1: GHG INVENTORY EMISSION FACTORS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change	Source
PG&E electricity ($MTCO_2e$/kWh)	0.000226	0.000195	0.000096	0.000108	-52%	PG&E
Direct access electricity ($MTCO_2e$/ kWh)	0.000388	0.000309	0.000208	0.000187	-52%	California Energy Commission
MCE electricity ($MTCO_2e$/ kWh)	N/A	N/A	0.000059	0.000045	-24% *	MCE
Natural gas ($MTCO_2e$/therm)	0.005311	0.005311	0.005311	0.005311	0%	US Community Protocol
Propane ($MTCO_2e$/gallon)	0.005844	0.005844	0.005844	0.005844	0%	US Community Protocol
Kerosene ($MTCO_2e$/gallon)	0.010569	0.010569	0.010569	0.010569	0%	US Community Protocol
Wood ($MTCO_2e$/MMBTU)	0.095624	0.095624	0.095624	0.095624	0%	US Community Protocol
On-road vehicles ($MTCO_2e$/VMT)	0.000486	0.000483	0.000421	0.000408	-16%	California Air Resources Board
BART ($MTCO_2e$/ passenger mile)	0.000093	0.000093	0.000093	0.000013	-86%	BART
Municipal solid waste ($MTCO_2e$/ton)	0.293179	0.293184	0.286047	0.261659	-11%	CalRecycle
Alternative daily cover ($MTCO_2e$/ton)	0.191850	0.245890	0.245694	0.245693	28%	CalRecycle

* MCE's percentage change is from 2017 to 2019.

COMMUNITY-WIDE EMISSIONS

Sectors

The community-wide GHG inventory assessed GHG emissions from the following 11 categories of activities, known as sectors.



- **Transportation** includes GHG emissions created by driving on-road vehicles in the unincorporated county, including passenger and freight vehicles.



- **Residential energy** includes GHG emissions attributed to the use of electricity, natural gas, and other home heating fuels in residential buildings.



- **Solid waste** includes the GHG emissions released from trash collected in the unincorporated areas of Contra Costa County, as well as collective annual emissions from waste already in place at the Acme, Keller Canyon, and West Contra Costa Landfills.



- **Nonresidential energy** includes GHG emissions attributed to the use of electricity and natural gas in nonresidential buildings.



- **Agriculture** includes GHG emissions from various agricultural activities in the unincorporated county, including agricultural equipment, crop cultivation and harvesting, and livestock operations.



- **Off-road equipment** includes GHG emissions from equipment that does not provide on-road transportation (excluding agricultural equipment), such as tractors for construction or equipment used for landscape maintenance.



- **Water and wastewater** accounts for the electricity used to transport and process water and wastewater used or generated by unincorporated county residents and businesses, as well as direct emissions resulting from wastewater treatment activities.



- **Bay Area Rapid Transit (BART)** includes GHG emissions associated with the operation of BART for unincorporated county residents.



- **Land use and sequestration** includes GHG emissions absorbed and stored in trees and soils on locally controlled lands as part of healthy ecosystems and released into the atmosphere from development of previously undeveloped land.

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- **Stationary sources** are emissions from fuel use at major industrial facilities, permitted by state and regional air quality authorities. These emissions are informational and are not counted as part of the community total.
- **Wildfire** includes emissions released as a result of wildfires. These emissions are informational and are not counted as part of the community total.

Community-Wide Inventory Results

Table B-2 show the community-wide GHG emissions for the unincorporated area associated for the four inventory years. Total community-wide emissions declined 22 percent from 2005 to 2019. The most significant decreases in emissions came from BART, water and wastewater, residential energy use, and transportation, which all saw their associated emissions decrease by more than 25 percent. Only off-road equipment saw a significant (58 percent) increase in associated GHG emissions.

TABLE B-2: ABSOLUTE ANNUAL GHG EMISSIONS, 2005–2019 ($MTCO_2E$)

Sector	2005	2013	2017	2019	Percentage Change, 2005 - 2019
Transportation	628,200	651,130	571,650	464,040	-26%
Residential energy	294,930	280,870	212,420	191,780	-35%
Nonresidential energy	118,740	125,350	98,850	159,520	34%
Solid waste	243,940	224,570	223,100	220,760	-10%
Agriculture	33,350	39,300	44,880	36,130	8%
Off-road equipment	34,160	36,290	42,840	54,010	58%
Water and wastewater	8,080	7,400	4,400	4,870	-40%
BART	1,040	1,320	1,440	190	-82%
Land use and sequestration	-70,860	-70,860	-70,860	-70,860	0%
Total Annual $MTCO_2e$	**1,291,580**	**1,295,370**	**1,128,720**	**1,060,440**	**-18%**
Informational Items					
Stationary sources	13,983,030	11,956,000	11,232,290	10,867,670	-22%
Wildfire	14,270	66,080	0*	10,100	N/A

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

*No wildfires were recorded within the unincorporated County in 2017.

COMMUNITY-WIDE GHG INVENTORY RESULTS BY SECTOR

Transportation

On-road transportation activity accounts for vehicle miles driven between two points in the unincorporated area, or between the unincorporated area or another community. It does not include miles for trips that begin and end in other communities but pass through the unincorporated area (e.g., from Sacramento to Oakland). Unincorporated Contra Costa County community members drove approximately 1.3 billion vehicle miles in 2005, decreasing 12 percent to approximately 1.1 billion vehicle miles in 2019. The VMT in 2005 resulted in GHG emissions of approximately 628,200 $MTCO_2e$, which dropped to approximately 464,040 in 2019, a 26-percent decrease. GHG emissions decreased due to this reduction in VMT, increasingly fuel-efficient vehicles, and a wider adoption of electric vehicles. The average vehicle on the road in unincorporated Contra Costa County generated 16 percent fewer GHG emissions per mile in 2019 than in 2005, as reported by Caltrans. **Table B-3** provides a breakdown of the activity data and emissions for on-road transportation for the unincorporated area by each individual year included in the updated community inventory.

TABLE B-3: TRANSPORTATION ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 - 2019
Activity Data (VMT)					
On-road transportation	1,291,819,230	1,349,279,980	1,357,121,160	1,136,911,090	-12%
Emissions ($MTCO_2e$)					
On-road transportation	628,200	651,130	571,650	464,040	-26%
All numbers are rounded to the nearest 10.					

Residential Energy

Contra Costa County's GHG emissions from residential energy totaled approximately 191,780 $MTCO_2e$ in 2019, compared to 294,930 $MTCO_2e$ in 2005, a decline of 35 percent. Residential electricity GHG emissions decreased due to a decrease in overall use and usage of cleaner sources of electricity. Residential electricity use fell 40 percent from 2005 to 2019, from 488,236,740 kWh to 293,561,300 kWh. Over this period, as seen in **Table B-1**, a

unit of electricity supplied by PG&E emitted 52 percent less GHG in 2019 than in 2005. Electricity from MCE, which supplied electricity to community residents in 2017 and 2019, generated even fewer GHG emissions per unit of electricity than PG&E-supplied electricity, which has also contributed to the decline in this sector. Natural gas use and GHG emissions saw a small decrease from 2005 to 2019 of 3 percent despite a growing population. Propane and wood use and GHG emissions also declined over this period, although GHG emissions from these fuels are only a small proportion of those from the residential energy sector. **Table B-4** provides a breakdown of the activity data and GHG emissions for residential energy for the unincorporated area.

TABLE B-4: RESIDENTIAL ENERGY ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 - 2019
Activity Data					
Residential PG&E electricity (kWh)	488,236,740	478,219,710	461,970,670	46,158,330	-91%
Residential MCE electricity (kWh)	-	-	307,820	247,402,970	80,273%*
Residential natural gas (therms)	30,919,160	31,007,110	28,634,420	30,100,640	-3%
Residential propane (gallons)	1,525,330	1,106,900	1,043,270	1,021,340	-33%
Residential kerosene (gallons)	13,160	10,960	8,030	16,320	24%
Residential wood (MMBTU)	117,000	165,830	100,960	101,710	-13%
Emissions ($MTCO_2e$)					
Residential PG&E electricity	110,120	93,380	44,510	5,000	-95%
Residential MCE electricity	0	0	20	11,060	55,200%*
Residential natural gas	164,570	165,040	152,060	159,850	-3%
Residential propane	8,910	6,470	6,100	5,970	-33%
Residential kerosene	140	120	80	170	21%
Residential wood	11,190	15,860	9,650	9,730	-13%
Total Annual $MTCO_2e$	**294,930**	**280,870**	**212,420**	**191,780**	**-35%**

* MCE did not operate in the unincorporated County until 2017, and 2017 operations were very limited. MCE percentage changes are for changes from 2017 to 2019.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Solid Waste

Contra Costa County's community-wide GHG emissions associated with solid waste includes four subsectors.

- Municipal solid waste (MSW) is the material that is discarded by community members and reflects the actual waste generated by the community.
- Alternative daily cover (ADC) is organic material applied at landfills by the landfill operator as a means of controlling debris and pests.
- Waste in place is the solid waste and associated GHG emissions deposited in the County's landfills in previous years.
- The flaring subsector accounts for GHG emissions from the combustion of gases generated by the decomposing waste.

Between 2005 and 2019, total solid waste GHG emissions decreased by 10 percent due to decreases in solid waste generated and ADC applied, likely as a result of increased community awareness about recycling and composting and the availability of curbside recycling programs. Although annual waste generation decreased, waste in place at the landfills increased as waste is added to the landfills each year. **Table B-5** presents solid waste emissions data for each year for the unincorporated area.

TABLE B-5: SOLID WASTE ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Activity Data (Tons)					
Solid waste	154,820	78,790	79,520	79,340	-49%
ADC	15,950	13,990	11,470	7,580	-52%
Waste in place	34,455,010	41,785,650	45,776,140	47,618,290	38%
Landfill flaring	5,270	5,260	5,250	5,270	Less than 1%
Emissions ($MTCO_2e$)					
Solid waste	45,390	23,100	22,750	20,760	-54%
ADC	3,060	3,440	2,820	1,860	-39%
Waste in place	193,950	196,500	196,000	196,610	1%
Landfill flaring	1,540	1,530	13,550	13,590	-1%
Total Annual $MTCO_2e$	**243,940**	**224,570**	**235,120**	**232,820**	**-10%**

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Nonresidential Energy

Contra Costa County's GHG emissions from nonresidential energy totaled approximately 159,520 $MTCO_2e$ in 2019, compared to 118,740 $MTCO_2e$ in 2005, an increase of 34 percent. Electricity emissions from retail electricity suppliers (PG&E and MCE) have fallen significantly, driven by a small decrease in electricity use and a large increase in the amount of electricity for renewable and carbon-free sources (see **Table B-1**). Between 2005 and 2019, nonresidential electricity obtained from PG&E decreased by 90 percent and nonresidential electricity obtained from MCE increased from virtually nothing in 2017 to approximately 200 million kWh in 2019. Natural gas use and associated emissions have reportedly increased, although this may be less of an actual increase and more so the result of data being omitted by PG&E as a way of complying with state privacy regulations. As a consequence of this, the project team has kept nonresidential natural gas use constant at 2013 levels, a conservative estimate that may not account for actual decreases in this subsector. Similarly, direct access electricity (electricity purchased from third parties instead of PG&E or MCE, usually by large customers such as major industrial facilities) was only reported for 2019, although this electricity use likely occurred in previous years but was not reported due to privacy regulations. **Table B-6** provides a breakdown of the activity data and GHG emissions for nonresidential energy for the unincorporated area.

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TABLE B-6: NONRESIDENTIAL ENERGY ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
Nonresidential PG&E Electricity (kWh) [1]	284,558,070	266,216,660	266,216,660	29,062,250	-90%
Nonresidential MCE electricity (kWh) [2]	0	0	28,730	200,181,720	696,669%
Nonresidential Direct Access electricity (kWh) [3]	0	0	0	396,805,940	N/A
Nonresidential natural gas (therms) [4]	10,251,360	13,784,410	13,784,410	13,784,410	-58%
Emissions ($MTCO_2e$)					
Nonresidential PG&E electricity [1]	64,180	51,980	25,650	3,150	-95%
Nonresidential MCE electricity [2]	0	0	Less than 10	9,040	451,900%
Nonresidential Direct Access electricity [3]	0	0	0	74,130	N/A
Nonresidential natural gas [4]	54,560	73,370	73,200	73,200	34%
Total Annual $MTCO_2e$	**118,740**	**125,350**	**98,850**	**159,520**	**34%**

1: Due to omissions in data reported by PG&E for the calendar year 2017, the project team assumed that electricity use remained constant from 2013 levels.

2: MCE did not operate in the unincorporated County until 2017, and 2017 operations were very limited. MCE percentage changes are for changes from 2017 to 2019.

3: Direct access electricity was only reported for 2019. As PG&E also reports MCE-supplied electricity as Direct Access, the numbers given in this table are the electricity use after MCE data are removed.

4: Due to omissions in data reported by PG&E for the calendar years 2017 and 2019, the project team assumed that natural gas use remained constant from 2013 levels.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Agricultural Emissions

GHG emissions associated with the agriculture sector for the unincorporated area increased by approximately 8 percent between 2005 and 2019, as shown in **Table B-7**. This increase is due primarily to a minor increase (5 percent) in the amount of cattle in the county. Although crop acreages declined from 2005 to 2019, more fertilizer was applied in 2019 than in 2005 due to a shift in the types of crops being grown that required slightly more fertilizer.

TABLE B-7: AGRICULTURE ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
Crops (acreage)	200,980	204,031	197,360	183,730	-9%
Nitrogen applied (pounds)	3,261,620	3,560,480	3,698,500	3,608,340	11%
Livestock (effective annual population)	16,500	19,110	22,060	17,340	5%
Emissions ($MTCO_2e$)					
Crops	3,920	4,280	4,450	4,340	11%
Enteric fermentation	28,510	33,920	39,160	30,790	8%
Manure management	920	1,100	1,270	1,000	9%
Total Annual $MTCO_2e$	33,350	39,300	44,880	36,130	8%

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Off-Road Equipment Emissions

According to data shown in **Table B-8**, emissions from off-road equipment in unincorporated Contra Costa County increased approximately 73 percent between 2005 and 2019, although the sector overall remains a small proportion of the total community-wide emissions. This increase is primarily the result of a significant rise in diesel tractor and other agricultural equipment use over this period, along with increases in commercial and industrial/warehouse equipment use. Since this is modeling directly reported by State agencies, it is possible that changes in modeling methods may be affecting the results. Note that the State provides these GHG emission levels directly, so there is no activity data to display.

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TABLE B-8: OFF-ROAD EQUIPMENT GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Agricultural equipment	1,200	1,190	1,180	10,170	748%
Cargo handling equipment	900	380	330	310	-66%
Commercial harbor equipment *	0	0	0	2,600	N/A
Construction and mining equipment	6,780	7,170	8,880	7,200	6%
Industrial equipment	8,320	8,840	9,470	9,780	18%
Lawn and garden equipment	3,580	3,280	3,760	3,880	8%
Light commercial equipment	2,230	2,780	3,060	3,270	47%
Locomotives	3,170	3,260	3,540	3,620	14%
Oil drilling equipment	20	20	20	20	0%
Pleasure craft	1,890	1,810	1,800	1,830	-3%
Portable equipment	4,830	6,240	6,700	6,970	44%
Recreational equipment	650	670	610	630	-3%
Transport Refrigeration Units	590	650	3,490	3,730	532%
Total Annual $MTCO_2e$	**34,160**	**36,290**	**42,840**	**54,010**	**58%**

* State modeling only provided emissions for commercial harbor equipment for 2019.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

According to records maintained by the California Department of Conservation's Geologic Energy Management Division, there are no active oil or gas extraction wells in the unincorporated area. There are 16 natural gas storage wells in the hills between Clyde and Bay Point, along with an observation well. As these sites are not being used for active extraction, there are no further emissions associated with fossil fuel production at well sites in this inventory.

Water and Wastewater Emissions

Emissions associated with the water and wastewater sector are counted as indirect or direct emissions. Indirect water emissions refer to emissions created by the electricity required to treat and move water to where it is used. Indirect wastewater emissions refer to electricity needed to move wastewater to water treatment facilities, and to process and discharge it. Direct wastewater emissions refer to emissions produced directly by decomposing materials in wastewater.

GHG emissions from Contra Costa County's water and wastewater activity decreased 40 percent between 2005 and 2019. Indirect water GHG emissions declined by 62 percent between 2005 and 2019 while indirect wastewater GHG emissions decreased by 66 percent. Community members used substantially less water (31 percent less) and generated less wastewater (30 percent less) in 2019 than in 2005 despite population growth. This is likely a result of increased water efficiency by community residents and businesses. Additionally, the electricity used in water and wastewater pumping and treatment has been increasingly supplied by renewable and carbon-free sources, decreasing GHG emissions. Direct wastewater emissions did rise by approximately 199 percent from 2005 to 2019, but given that the amount of wastewater generated declined by this period, this is likely due to changes in modeling approaches and available data. The emissions data for the unincorporated area in **Table B-9** shows that overall emissions increased slightly within the water and wastewater sector.

TABLE B-9: WATER AND WASTEWATER ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Activity Data					
Water use (million gallons)	11,530	11,650	7,380	8,010	-31%
Water electricity use (kWh)	26,443,770	28,004,290	19,137,620	20,783,930	-21%
Wastewater generation (million gallons)	4,560	4,610	3,150	3,170	-30%
Wastewater electricity use (kWh)	6,199,120	6,198,590	4,268,050	4,295,780	-31%
Emissions ($MTCO_2e$)					
Indirect water	5,960	5,470	1,840	2,250	-62%
Indirect wastewater	1,400	1,210	410	470	-66%
Direct wastewater	720	720	2,150	2,150	199%
Total Annual $MTCO_2e$	**8,080**	**7,400**	**4,400**	**4,870**	**-40%**

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

BART Emissions

Emissions associated with BART ridership decreased 82 percent between 2005 and 2019. This decline is attributable to changes in BART's electricity portfolio, which in recent years have shifted to favor more renewable and carbon-free sources of energy. BART ridership from community members in unincorporated Contra Costa County increased 29 percent between 2005 and 2019, as shown in **Table B-10**. Ridership at all stations serving the unincorporated area increased by 10 to 35 percent over this period except for Pittsburg/Bay Point, which saw some of its ridership shift to Pittsburg Center and Antioch with the opening of the BART to Antioch extension in 2018.

TABLE B-10: BART ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
BART Ridership (passenger miles)	11,231,870	14,228,420	15,528,840	14,444,740	29%
Emissions ($MTCO_2e$)					
Total Annual $MTCO_2e$	1,040	1,320	1,440	190	-82%
All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.					

Land Use and Sequestration

GHG emissions from land use and sequestration can be either positive (a source of emissions) or negative (removing emissions from the atmosphere, creating what is known as an emissions "sink"). Natural lands and trees in urban areas absorb carbon, storing it in wood, plants, and soil. As a result, when natural land is preserved or when more trees are planted, emissions from this sector are negative because GHGs are being removed from the atmosphere. However, developing natural lands or converting them to a different form (for example, replacing forests with crop land) or removing street trees causes carbon to be released, creating GHG emissions.

This sector includes emission sources and sinks from three types of activities: sequestration of GHG emissions in locally controlled forested lands, sequestration of GHG emissions in street trees in urbanized unincorporated areas, and emissions caused by permanently removing vegetation from natural lands or farmlands as a part of development.

Emissions and sequestered amounts remained constant in both years for all three activities. Locally-controlled forests and urban trees have not had their sequestration capabilities changed by human activities during the inventory period. While there was some development activity that caused a loss of sequestered GHG emissions, records of when the development specifically occurred are not available, and so the GHG emissions have been assigned equally to both inventory years, hence the lack of changes. Forests sequestered 58,110 $MTCO_2e$ annually, while urban trees sequestered 12,750 $MTCO_2e$, for a total carbon sink of 70,860 $MTCO_2e$ for the unincorporated area, as shown in **Table B-11**.

TABLE B-11: LAND USE AND SEQUESTRATION ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Activity Data					
Acres of forested land	60,050	60,050	60,050	60,050	0%
Acres of urban trees	32,780	32,780	32,780	32,780	0%
Acres of land use changes	0	0	0	0	0%
Emissions ($MTCO_2e$)					
Forest sequestration	-58,110	-58,110	-58,110	-58,110	0%
Street tree sequestration	-12,750	-12,750	-12,750	-12,750	0%
Land use changes	0	0	0	0	0%
Total Annual $MTCO_2e$	**-70,860**	**-70,860**	**-70,860**	**-70,860**	**0%**

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Wildfire

Wildfires create GHG emissions by burning organic materials such as trees and plants, releasing the carbon sequestered in these materials. Larger fires and those that burn through forested areas, as opposed to less densely vegetated ecosystems, release more GHG emissions. The County reported wildfires in the unincorporated area in 2005, 2013, and 2019, but not in 2017. The acreages and emissions of these fires for the unincorporated area are reported in **Table B-12**. Although wildfire emissions and acreages were lower in 2019 than in 2005, wildfire activity varies widely from year to year, and is generally expected to increase in future years due to climate change. Wildfire emissions are not calculated in the totals presented in this appendix and are for informational purposes only.

TABLE B-12: WILDFIRE ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
Acres burned	2,070	6,320	0	1,830	-31%
Emissions ($MTCO_2e$)					
Total Annual $MTCO_2e$	14,270	66,080	0	10,100	-29%

2005 wildfires: Bragdon Fire, BNSF Fire, Byron Fire, Vasco Airport Fire, and an unnamed fire south of Antioch.

2013 wildfires: Kirker Fire and Morgan Fire.

2019 wildfires: Marsh 3 Fire, Marsh 5 Fire, Marsh 6 Fire.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Stationary Source Emissions

Stationary source emissions result from fuel use, such as natural gas or propane, at large industrial facilities. These facilities include refineries, power plants, factories, and similar installations. Natural gas use at these facilities may be included as part of the nonresidential natural gas use reported by PG&E. These facilities are regulated by the State and BAAQMD, and the County does not have direct control over their operations. Emissions from these facilities are therefore not counted toward the County's total GHG emissions.

Table B-13 shows the emissions from stationary sources for the unincorporated area. This information is directly reported by the California Air Resources Board as total emissions. The Board does not report activity data for stationary sources, which would include amounts of fuel burned at these facilities. These emissions are not included in the totals presented in this memorandum and are for informational purposes only.

TABLE B-13: STATIONARY SOURCE GHG EMISSIONS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Emissions ($MTCO_2e$)					
Total Annual $MTCO_2e$	13,983,030	11,956,000	11,232,290	10,867,670	-22%

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

COUNTY OPERATIONS EMISSIONS

Sectors

The County operations inventory looks at GHG emissions from the following sectors:

- **Employee commute** includes GHG emissions from County employees commuting to and from work, as well as emissions associated with business travel.
- **Buildings and facilities** includes the electricity and natural gas use at County-owned facilities.
- **Government fleet** includes the fuel-use from County-owned vehicles.
- **Government-generated solid waste** includes the waste materials generated at County facilities.
- **Public lighting** includes the electricity use for publicly-owned lights, including streetlights and traffic signals.
- **Water and wastewater** includes emissions associated with water use and wastewater generation at County facilities.
- **Refrigerants** includes the leaks of GHGs from air conditioning systems in County-owned vehicles and buildings.

County Operations Inventory Results

In 2006, Contra Costa County government operations emissions totaled 54,090 $MTCO_2e$ for the sectors reported in this inventory, as shown in **Table B-14**. In 2017, County government operations GHG emissions were 43,380 $MTCO_2e$, a 20 percent decrease from 2006 levels. This decrease is primarily the result of reductions in energy use, reductions in County fleet emissions, and reductions in employee waste disposal. The 2017 inventory also includes emissions from wastewater treatment and refrigerants, which were not included in the 2006 inventory.

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TABLE B-14: 2006 BASELINE AND 2017 COUNTY-OPERATIONS GHG EMISSIONS SUMMARY

Sector	2006 GHG Emissions ($MTCO_2E$)	2017 GHG Emissions ($MTCO_2E$)	Percent Change
Employee commute	23,530	25,800	10%
Buildings and facilities	19,260	12,500	-35%
Government fleet	8,500	3,430	-60%
Government-generated solid waste	1,980	900	-54%
Public lighting	830	440	-47%
Water and wastewater	Not included	220	—
Refrigerants	Not included	90	—
Total	**54,090**	**43,380**	**-20%**

These inventories assume 8,420 County employees in 2006 and 10,030 employees in 2017, a 19% increase.

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

COUNTY OPERATIONS GHG INVENTORY RESULTS BY SECTOR

Employee Commute and Travel

Tables B-15 and B-16 summarize changes in 2006 and 2017 related to employee commute activities.

TABLE B-15: 2006 BASELINE AND 2017 EMPLOYEE COMMUTE AND TRAVEL EMISSIONS

Activity/Source	2006 $MTCO_2E$	2017 $MTCO_2E$	Percent Change
Employee commute	23,530	25,800	10%

TABLE B-16: 2017 EMPLOYEE COMMUTE ACTIVITY DATA AND GHG EMISSIONS

ACTIVITY/SOURCE	ACTIVITY DATA	UNITS	GHG EMISSIONS ($MTCO_2E$)	PERCENT
Driving alone (gas)	77,173,500	Vehicle miles	24,600	95%
Driving alone (electric)	4,494,570	Vehicle miles	0	0%
Carpool	1,155,500	Passenger miles	350	1%
Transit (BART, bus)	641,830	Passenger miles	100	Less than 1%
Motorcycle	425,050	Vehicle miles	749	3%
Active transportation (walk, bike)	66,590	Miles	0	0%
Telecommute	88,816	Miles	0	0%
Total	**84,045,860**	**Miles**	**25,800**	**100%**

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

Although employees' personal commute is not under the direct operational control of the County, there are a variety of tools and resources available to influence employees' commute patterns. For this reason, emissions are included in this inventory. Employee commute accounted for in the emissions inventory includes business travel; travel via personal vehicles; carpool; alternative transportation methods, including biking and walking; air travel; and public transit.

In 2017, County employees' commute to work contributed to 25,795 $MTCO_2e$. This is a 10 percent increase in GHG emissions from the 23,530 $MTCO_2e$ reported in 2006. Over the years, there was an increase in the number of employees from 8,420 to 10,030 between 2006 and 2017. Commute emissions reflect increased vehicle fuel efficiency, although changes in the number of employees and increases in commute distance balance that out.

Buildings and Facilities

The buildings and facilities sector includes electricity and natural gas use at County-owned and operated buildings and facilities. Emissions from this sector totaled 19,210 $MTCO_2e$ in 2006 and 12,500 $MTCO_2e$ in 2017 (see Table B-17), a 35 percent decrease.

TABLE B-17: 2006 BASELINE AND 2017 BUILDINGS AND FACILITIES ENERGY USE EMISSIONS

SUBSECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENT CHANGE
Buildings and facilities – natural gas	11,360	6,300	-44%
Buildings and facilities – electricity	7,670	6,200	-19%
Total	**19,030**	**12,500**	**-35%**
Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.			

Government (County) Fleet

The vehicles and equipment used in the County's daily operations burn gasoline, diesel, propane, and compressed natural gas fuel, resulting in the emission of GHGs.

Contra Costa's 2017 vehicle fleet emissions totaled 3,430 $MTCO_2e$ (see **Table B-18**). This is a 59-percent decrease in GHG emissions from the 8,500 $MTCO_2e$ in the 2006 inventory. This is primarily the result of a decrease in on-road vehicle miles traveled and an increase in fuel efficiency between inventory years.

TABLE B-18: 2006 BASELINE AND 2017 VEHICLE FLEET EMISSIONS

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENT CHANGE
Government fleet	8,500	3,430	-59%

Solid Waste

County operations generates solid waste during normal activity, much of which is eventually landfilled. Emissions from this sector are estimates of methane generation that will result in future years from the waste that was sent to the landfill in the inventory year. Solid waste generated by County employees contributed to a total of 900 $MTCO_2e$ in year 2017 (see **Table B-19**). Solid waste collected from County operations saw a reduction of 54 percent in emissions since the 2006 baseline, where this sector contributed to 1,980 $MTCO_2e$.

TABLE B-19: 2006 BASELINE AND 2017 GOVERNMENT-GENERATED SOLID WASTE

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENT CHANGE
Government-generated solid waste	1,980	900	-54%

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Public Lighting

Emissions from public lighting owned by the County, such as streetlights, totaled 440 $MTCO_2e$ in 2017 (see **Table B-20**). This is a 47-percent decrease from the 830 $MTCO_2e$ reported in 2006.

TABLE B-20: 2006 BASELINE AND 2017 PUBLIC LIGHTING

SECTOR	2006 MTCO2E	2017 MTCO2E	PERCENT CHANGE
Public lighting	830	440	-47%

Water and Wastewater

The water and wastewater treatment sector includes the emissions generated by the electricity needed to move and process the water used and the wastewater generated by County government facilities (indirect water and wastewater), along with direct emissions caused by the processing of County-generated wastewater. Water use and wastewater generation at County facilities generated a total of 220 $MTCO_2e$ in 2017 (see **Table B-21**). The water and wastewater sector was not included in the 2006 baseline inventory.

TABLE B-21: 2006 BASELINE AND 2017 WASTEWATER TREATMENT

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$
Indirect Water	Not included	180
Indirect Wastewater	Not included	20
Direct Wastewater	Not included	20
Total	Not included	240
Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.		

Refrigerants

Vehicles and buildings with air conditioning use refrigerants that can leak from engines and appliances during normal operation and maintenance. These refrigerants are often GHGs that trap a very large amount of heat per unit of gas, known as gases with a very high global warming potential (GWP). Emissions from refrigerant leaks were accounted for in the 2017 GHG emissions inventory for County government operations. This sector was not included in the 2006 baseline inventory.

Refrigerant emissions contributed to 90 $MTCO_2e$ in 2017 (see **Table B-22**).

TABLE B-22: 2006 BASELINE AND 2017 REFRIGERANTS

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$
Refrigerants	Not included	90

CONSUMPTION-BASED INVENTORY EMISSIONS

As discussed in Chapter 3, the consumption-based inventory accounts for GHG emissions created by the goods and services used by community members of the unincorporated county, including residents, businesses, and employees. A consumption-based inventory assesses emissions associated with the manufacture, transportation, and disposal of these goods and services, regardless of where they occur.

In 2015, BAAQMD worked with the Cool Climate Network at the University of California, Berkeley, to prepare a consumption-based inventory for all Bay Area jurisdictions. This inventory includes GHG emissions from the following sources:

- Travel: GHG emissions from fuel use by on-road vehicles, vehicle manufacturing and repairs, public transportation, and air travel.
- Housing: GHG emissions from electricity and natural gas use in homes as well as other fuels associated with home heating (such as kerosene or fuel oil), electricity emissions from water and wastewater activities, and waste emissions. This category also includes emissions from the manufacture, transportation, and construction and demolition of materials used to construct houses.
- Food: GHG emissions from the growth, processing/manufacturing, and transportation of food products.
- Goods: GHG emissions from the manufacture, transportation, and disposal of consumer products, such as home furnishings, appliances and electronics, clothing, and healthcare and personal items.
- Services: GHG emissions from personal and business services, including entertainment and recreation, communication, education, healthcare, and maintenance and repair activities.

Some of these GHG emission sources are also included in the production-based inventory prepared as part of the 2024 CAP, and others are covered by either the production-based or consumption-based inventory but not both. **Table B-23** compares the sources of GHG emissions in the 2024 CAP production-based inventory and the BAAQMD/Cool Climate Network consumption-based inventory.

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TABLE B-23 COMPARISON OF SOURCES IN PRODUCTION-BASED AND CONSUMPTION-BASED GHG EMISSION INVENTORIES

Source of Emissions	Production-Based CAP Inventory	BAAQMD/Cool Climate Network Consumption-Based Inventory
Generation of electricity used	Included	Included
Combustion of natural gas used	Included	Included
Combustion of other home heating fuels used	Not included	Included
Fuel use from on-road vehicles	Included	Included
Fuel use from public transportation	Included	Included
Electricity use from BART	Included	Included
Vehicle manufacturing and repairs	Partially included*	Included
Air travel	Not included	Included
Fuel use from off-road equipment, including construction and landscaping equipment	Included	Not included
Generation of electricity used for water processing and transportation	Included	Included
Generation of electricity used for wastewater processing and transportation	Included	Unknown†
Direct wastewater process emissions	Included	Not included
Landfilling of solid waste	Included	Included
Reprocessing of recyclables	Partially included*	Included
Compost processing	Partially included*	Included
Manufacturing of home-construction materials	Partially included*	Included
Food growth, processing, production, and transportation	Partially included*	Included
Carbon sequestration in forests and street trees	Included	Not included
Other embedded emissions in goods and services	Not included	Included

Note: Due to differences in data sources and analysis methods, the same source of emissions in both inventories may produce different results.

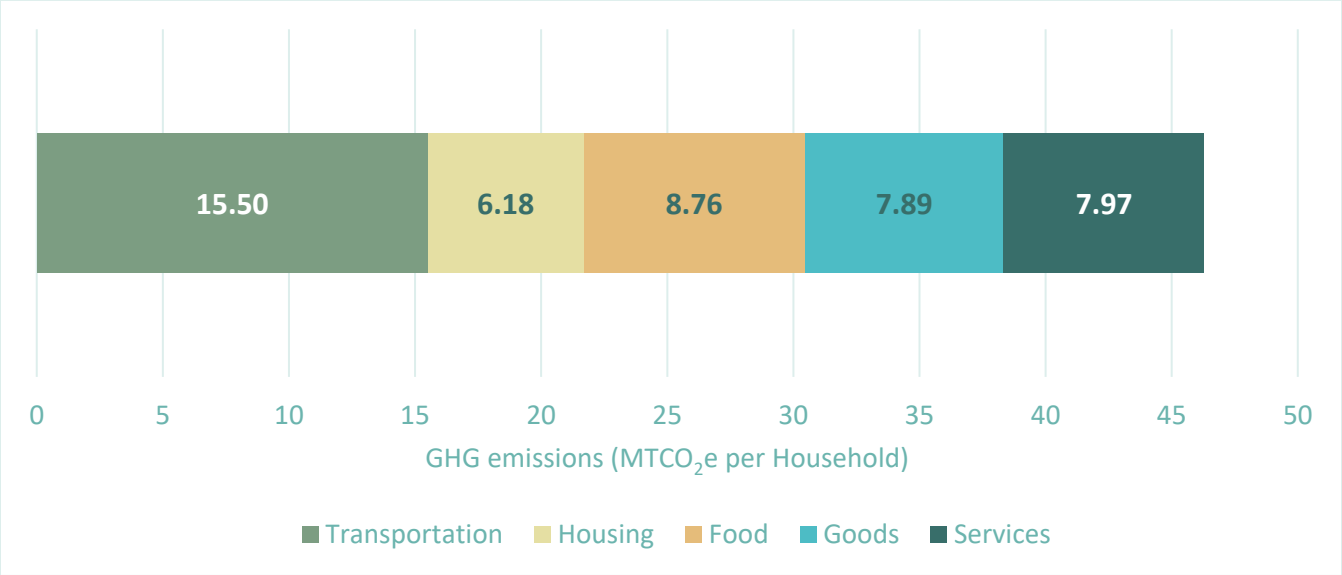
* Emissions from energy use, water use, and waste generation associated with these activities are included in the 2024 CAP Update inventory if these activities occur in Contra Costa County. Emissions from these activities outside of Contra Costa County and other emissions associated with these activities in Contra Costa County are not included in the 2024 CAP inventory.

† Emissions from these activities are not explicitly called out in the BAAQMD/Cool Climate Network consumption-based inventory but may be included in the total electricity use category.

Due to differences in data sources and analysis methods, the same source of emissions in both inventories may produce different results.

According to the consumption-based inventory, transportation is responsible for 34 percent of emissions produced by activities conducted and good consumed within unincorporated Contra Costa County. Food is responsible for 19 percent, goods and services for 17 percent each, and housing for 13 percent (see **Figure B-1**).

FIGURE B-1. CONSUMPTION-BASED INVENTORY RESULTS



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Community-Wide Forecast

The forecast of community-wide GHG emissions for the unincorporated area is based on the results of the 2019 community GHG emissions inventory. The project team assumed growth in these emissions consistent with the anticipated growth in unincorporated Contra Costa County's future population, jobs, and development patterns, developed as part of the Envision Contra Costa buildout calculations. The project team forecast GHG emissions for the calendar years 2030 and 2045. The forecast is a "worst case" scenario that does not assume any efforts are taken, at any level, to reduce GHG emissions beyond the policies that are already in effect in 2019.

For many sectors, the GHG forecast assumes that each person in the unincorporated area will continue to contribute the same amount of GHG emissions as they did in 2019, so that the amount of GHG emissions increases proportionally to demographic growth. There are some sectors that are not projected this way:

- Transportation, which is projected using a regional traffic demand model based partially on demographics and partially on the location of various land uses.
- Agriculture, which is forecast using future land use projections for the amount of agricultural land in the unincorporated area.
- Land use and sequestration, which is forecast using future land use projections for developed land, forested land, and any agricultural and open space land that is developed.
- Within the off-road equipment sector, emissions from construction and mining equipment are projected using the rate of population and job growth, emissions from industrial equipment are projected using future land use projections for industrial land, and emissions from Transportation Refrigeration Units are projected using the proportion of county-wide road miles in the unincorporated area.

The forecast does not project any change in activity or GHG emissions for alternative home heating fuels (propane, kerosene, and wood), direct access electricity, cargo-handling equipment, or oil drilling equipment. Additionally, emissions for the two informational sectors (stationary sources and wildfires) are not forecasted, owing to their informational and substantial uncertainty in projecting future activities for these sectors. These GHG emissions do not have a demographic indicator that staff can use to reasonably project the volume of these emissions in the future, particularly given that they are informational

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items and not included in the total community-wide emissions. **Table B-23** shows the demographic projections and their sources for the unincorporated area.

TABLE B-23: DEMOGRAPHIC PROJECTIONS, 2019 – 2045

Demographic	2019	2030	2045	Percentage Change, 2019-2045	Source
Population	174,150	199,360	239,720	38%	ABAG/MTC, Envision Contra Costa
Households	60,320	69,210	83,500	38%	ABAG/MTC, Envision Contra Costa
Jobs	38,760	42,480	48,150	24%	US Census Bureau, Envision Contra Costa
Service population*	212,910	241,840	287,870	35%	ABAG/MTC, US Census Bureau, Envision Contra Costa

* Service population is the sum of population and jobs

All numbers are rounded to the nearest 10.

Table B-24 shows unincorporated Contra Costa County's projected future GHG emissions relative to the 2019 inventory. Most sectors show an increase in GHG emissions due to the growing population. Agricultural emissions decrease because the amount of land use for agricultural purposes is projected to decline. Although the land use and sequestration sector is expected to remain a net carbon sink (negative emissions), the amount of emissions sequestered (removed from the atmosphere) by the activities in this sector are projected to decline. This is due to anticipated development of currently undeveloped land, removing the potential for this land to sequester carbon. Sequestration in forested and urbanized areas is projected to increase slightly.

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TABLE B-24: ABSOLUTE GHG EMISSIONS FORECAST, 2019–2045

Sector	2019 $MTCO_2E$	2030 $MTCO_2E$	2045 $MTCO_2E$	Percentage Change, 2019–2045
Transportation	464,040	542,020	605,080	30%
Residential energy	191,780	217,710	259,380	35%
Nonresidential energy	159,520	167,720	180,200	13%
Solid waste	220,760	229,450	260,490	18%
Agriculture	36,130	34,770	33,410	-8%
Off-road equipment	54,010	69,520	76,100	41%
Water and wastewater	4,870	5,530	6,590	35%
BART	190	220	260	37%
Land use and sequestration	-70,860	-67,580	-58,890	-17%
Total Annual $MTCO_2e$	1,060,440	1,199,360	1,362,620	**28%**
All values rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.				

Quantification

STATE AND REGIONAL GHG EMISSION REDUCTIONS FROM EXISTING ACTIONS

California has adopted and is committed to implementing policies that reduce statewide GHG emissions, including those in Contra Costa County. Many of these policies are laid out in the Climate Change Scoping Plan (Scoping Plan), a state document that outlines regulatory and market-based solutions to achieving California's GHG emission reduction goals. The Scoping Plan was first prepared in 2008, with successive updates in 2014, 2017, and 2022. These updates revised the state-level actions and identified additional opportunities for GHG emission reductions.

The Scoping Plan and related documents lay out several policies to reduce California's GHG emissions, although not all are directly applicable to Contra Costa County. The project team has assessed Contra Costa County's GHG emissions and identified five state policies that are direclty relevant to the community. This allows the 2024 CAP to provide "credit" to Contra Costa County for these policies. These state efforts are:

- **The Renewables Portfolio Standard (RPS)**, which requires increases in renewable and carbon-free electricity supplies. RPS was first established in 2002 and has been amended multiple times, most recently by SB 100 in 2018. It requires all electricity providers in the state to obtain at least 33 percent of their electricity from eligible renewable resources by the end of 2020, 60 percent of their electricity from eligible renewable resources by the end of 2030, and all of their electricity from carbon-free (although not necessarily eligible renewable) resources by the end of 2045. This policy reduces GHG emission from electricity use, including electricity used to transport and process water and wastewater, and electricity used for electric vehicles.
- **The Clean Car Standards,** which require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels. In 2002, California adopted AB 1493, the New Passenger Motor Vehicle Greenhouse Gas Emission Standards or Pavley standard. It required a reduction in tailpipe GHG emissions from new vehicles produced from 2009 to 2015. In 2012 CARB adopted an extension of this policy, the Advanced Clean Car Standards, which requires more stringent reductions in tailpipe GHG emissions from vehicles produced from 2016 to 2025. The Clean Car Standards reduce GHG emissions from on-road transportation. In August 2022, CARB adopted another expansion of these standards, known as the Advanced Clean Cars II standards. This regulation requires that all new light-duty vehicles (e.g., passenger cars, small trucks, and SUVs) sold in the state to be zero-emission by 2035, with interim targets for new light-duty vehicle sales beginning in 2026. There are some limited exceptions for plug-in hybrid vehicles. CARB adopted similar rules for heavy-duty vehicles and state and local government fleets in 2020 (Advanced Clean Trucks) and 2023 (Advanced Clean Fleets). Advanced Clean Cars II and Advanced Clean Fleets are not included in the modeling used to assess GHG reductions from the Clean Car Standards. These GHG reductions are counted as part of the reductions associated with Strategy TR-2.
- **The updated Title 24 building energy efficiency standards** require new buildings to achieve increased energy-efficiency targets. The latest version of these standards is set to go into effect January 1, 2023. California Code of Regulations, Title 24, Part 6 is California's energy efficiency standards for new and renovated buildings, applied at the local level through the project review and building permit process. The standards are strengthened every three years, with the ultimate goal of making new buildings net-zero energy, meaning that they would generate as much energy as they use. The most recent set of Title 24 standards went into effect on January 1, 2020. On August 11, 2021, the California Energy Commission (CEC) adopted the 2022 Title 24 standards. In December, it was approved by the California Building Standards Commission for

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inclusion into the California Building Standards Code. The 2022 Title 24 standards encourage efficient electric heat pumps, establish electric-ready requirements for new homes, expand solar photovoltaic and battery storage standards, and strengthen ventilation standards. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Title 24 standards.

The Low Carbon Fuel Standard (LCFS) mandates reduced carbon intensity of fuels used in off-road equipment. The Low Carbon Fuel Standard was adopted in 2009 and required a 10 percent reduction in the carbon intensity of all transportation and equipment fuels by 2020. This policy reduces GHG emissions from on-road transportation and from off-road equipment. The LCFS has since been revised several times, most recently in 2020. The 2020 LCFS requires further reductions in carbon intensity of around 1.25 percent every year until 2030.

- **The Short-Lived Climate Pollutant Reduction Strategy**, also known as Senate Bill (SB) 1383, requires that communities divert 75 percent of organic waste (food scraps, grass, and plant trimmings, etc.) away from landfills and toward alternatives such as composting or energy generation. As a part of this requirement, all jurisdictions must offer curbside composting to single-family and small multifamily properties (less than five units). Larger multifamily properties and businesses must either participate in curbside composting or subscribe to self-haul organic waste to a composting program or collection site. SB 1383 also includes requirements related to diverting surplus food to people in need, increasing the use of products made from recycled organics, and providing more detailed reporting statistics.
- **Renewable Natural Gas** assumes that biomethane and renewable hydrogen fuels will be blended into the fossil gas pipeline and that, in the 2030s, dedicated hydrogen pipelines will be constructed to serve certain industrial clusters.

In addition to these five state-level policies, the County's default electricity provider, MCE, has also taken action to reduce the GHG emissions from the electricity it supplies to Contra Costa community members, beyond the minimum required by RPS. In 2019, MCE electricity was approximately 60 percent renewable and 90 percent carbon-free. In 2023, MCE sourced over 95 percent of its electricity from carbon-free sources. Since MCE supplies more electricity from carbon-free sources than RPS requires it to, the County can receive "credit" for the GHG reductions that result from going beyond the State mininum.

Overall, these existing policies are expected to reduce Contra Costa County's future GHG emissions. Without these policies in place, community-wide GHG emissions in the unincorporated area are expected to be approximatley 1,300,320 $MTCO_2e$ by 2045, or 29

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percent above 2019 levels. With these polices enacted, community-wide GHG absolute emissions in the unincorporated area are projected to be approximately 836,100 $MTCO_2e$ by 2045, or 17 percent below 2019 levels. **Table B-25** shows the absolute reductions achieved by these policies.

TABLE B-25: ABSOLUTE GHG EMISSIONS WITH EXISTING ACTIONS (2019–2045)

	2019	2030	2045	Percentage Change, 2019–2045
Forecast emissions without state and regional actions	1,060,440	1,199,360	1,362,620	28%
Reductions from RPS	-	-24,620	-115,400	-
Reductions from Clean Car standards	-	-110,250	-214,120	-
Reductions from Title 24	-	10,460	33,710	-
Reductions from LCFS (off-road only)*	-	-740	-7,430	-
Reductions from SB 1383	-	-21,880	-53,870	-
Reductions from renewable natural gas		17,810	73,670	
Reductions from MCE clean energy procurement	-	-1,240	-	-
Reductions from all actions	**-**	**-185,520**	**-483,340**	**-**
Emissions with state and regional actions	**1,060,440**	**1,013,840**	**879,280**	**-17%**

Note: All numbers are rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.

* Due to the methods used in the forecast and assessment of state GHG reduction potential, future projections for off-road equipment GHG emissions are higher than forecast above.

TECHNICAL DATA FOR GHG REDUCTION STRATEGIES

This section discusses the data sources, methods, and assumptions for the quantification of the GHG-reduction strategies included in the Contra Costa County 2024 CAP. In addition to the sources presented here, these calculations also rely on the GHG inventory and forecast. These calculations rely on emission factors that reflect the reductions already achieved by the existing actions discussed in the previous section. **Table B-26** shows these emission factors.

TABLE B-26: EMISSION FACTORS WITH EXISTING ACTIONS (2019–2045)

Activity Type	Units	2019	2030	2045
Electricity (PG&E)	$MTCO_2e$/kWh	0.000108	0.000077	0.000000
Electricity (MCE)	$MTCO_2e$/kWh	0.000045	0.000044	0.000000
Electricity (direct access)	$MTCO_2e$/kWh	0.000187	0.000134	0.000000
Electricity (PG&E and MCE)	$MTCO_2e$/kWh	0.000054	0.000047	0.000000
Natural gas	$MTCO_2e$/Therms	0.005310	0.005311	0.005310
Propane	$MTCO_2e$/Gallons	0.005845	0.005845	0.005845
Kerosene	$MTCO_2e$/Gallons	0.010417	0.010417	0.010417
Wood	$MTCO_2e$/MMBTU	0.095664	0.095664	0.095664
On-road transportation	$MTCO_2e$/VMT	0.000408	0.000325	0.000408
Solid waste (MSW)	$MTCO_2e$/Tons	0.261659	0.261678	0.261676
Solid waste (ADC)	$MTCO_2e$/Tons	0.245383	0.245132	0.245854
Solid waste (combined)	$MTCO_2e$/Tons	0.004628	0.003958	0.260191
BART	$MTCO_2e$/Passenger miles	0.000013	0.000008	0.000013

For each strategy, this appendix discusses the following items:

- The savings in activity data (e.g., kWh of electricity or tons of solid waste) in 2030 and 2045 resulting from implementing the strategy as described. A negative value indicates an increase in activity data.
- The decreases in GHG emissions in 2030 and 2045 resulting from implementing the strategy as described.
- The assumptions made about the strategy's performance, such as the level of community participation required to achieve the specified reductions by 2030 and 2045.
- The performance targets, which are quantifiable metrics about the projected level of success the strategy must meet to achieve the specified reductions by 2030 and 2045.
- Sources: Key studies, analyses, and other sources of data used to inform the quantification. This does not include the GHG inventory, forecast, or other technical analyses prepared as part of the 2024 CAP or the 2045 Contra Costa General Plan.

CLEAN AND EFFICIENT BUILT ENVIRONMENT

Strategy BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Natural gas savings (therms)	2,608,380	2,616,320
Electricity savings (kWh)	-5,048,670	-5,151,330

GHG SAVINGS

	2030 $MTCO_2E$	20545$MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	13,620	11,120

KEY ASSUMPTIONS

	2030	2045
Cumulative percent of residential new construction built to be all-electric	95%	95%
Cumulative % of new office construction built to be all-electric	80%	95%
Cumulative % of new non-office commercial construction built to be all-electric	75%	90%
Cumulative % new non-residential buildings that are office space:	20%	20%

PERFORMANCE TARGETS

	2030	2045
Number of new all-electric residential units	8,450	22,020
Number of new all-electric commercial buildings	220	580

SOURCES

American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). 2015. "ASHRAE Technical FAQ".

California Energy Commission. 2006. *2006 California Commercial End-Use Survey (CEUS)*. https://www.energy.ca.gov/datB-reports/surveys/californiB-commercial-end-use-survey/2006-californiB-commercial-end-use-survey.

California Energy Commission. 2021. *2019 California Residential Appliance Saturation Study (RASS)*. https://www.energy.ca.gov/datB-reports/surveys/2019-residential-appliance-saturation-study.

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated County, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-neutral fuels.

In March 2023, BAAQMD adopted amendments to Regulation 9, Rules 4 and 6. These revisions require that, when existing natural-gas-powered space heaters and water heaters reach the end of their operational life, they be replaced with electric-powered models. These requirements are scheduled to take effect in 2027 to 2031 for water heaters (depending on the capacity of the unit) and in 2029 for space heaters.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity savings (kWh) – With BAAQMD rule	85,410,090	136,786,980
Natural gas savings (therms) – With BAAQMD rule	13,853,380	39,917,870
Propane savings (gallons) – With BAAQMD rule	404,380	838,540
Gallons kerosene	2,090	5,500
MMBTU wood	13,010	34,300

GHG SAVINGS

With BAAQMD rule	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	81,140	177,830

KEY ASSUMPTIONS

	2030	2045
Percent of existing homes conducting standard retrofits	20%	40%
Percent of existing homes upgrading to Title 24 Standards	20%	40%
Percent of existing mobile homes conducting standard retrofits	30%	60%
Percent of businesses conducting standard retrofits (not including fuel switching)	15%	25%
Percent of businesses retrofitting to current Title 24 standards (not including fuel switching)	15%	25%
Cumulative percent of existing commercial buildings eligible for fuel switching	40%	40%
Cumulative percent of residential cooktops and clothes dryers undergoing fuel switching	5%	60%
Cumulative percent of residential water and space heaters undergoing fuel switching	40%	95%
Cumulative percent of commercial cooktops and clothes dryers undergoing fuel switching	5%	50%
Cumulative percent of commercial water and space heaters undergoing fuel switching	40%	95%
Average number of newly electric appliances in units or commercial buildings undergoing electrification	2	4

PERFORMANCE TARGETS

	2030	2045
Number of housing units undergoing energy efficiency retrofits	14,160	28,310
Number of housing units brought up to current Title 24 energy efficiency standards	13,210	26,430
Number of commercial buildings undergoing energy efficiency retrofits	490	820
Number of commercial buildings brought up to current Title 24 energy efficiency standards	490	820
Number of existing residential units electrifying appliances	9,850	33,000
Number of existing commercial buildings electrifying appliances	100	620

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SOURCES

American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). 2015. "ASHRAE Technical FAQ".

California Energy Commission. 2006. *2006 California Commercial End-Use Survey (CEUS)*. https://www.energy.ca.gov/datB-reports/surveys/californiB-commercial-end-use-survey/2006-californiB-commercial-end-use-survey.

California Energy Commission. 2014. *Impact Evaluation of the California Comprehensive Residential Retrofit Programs*.

California Energy Commission. 2021. *2019 California Residential Appliance Saturation Study (RASS)*. https://www.energy.ca.gov/datB-reports/surveys/2019-residential-appliance-saturation-study.

California Public Utilities Commission. 2017. *Final Report: 2015 Home Upgrade Program Impact Evaluation*. https://www.calmac.org/publications/RES_5.1_HUP_FINAL_REPORT_ATR_06-30-17.pdf.

US Department of Energy. n.d. "Energy-Efficient Manufactured Homes." https://www.energy.gov/energysaver/energy-efficient-manufactured-homes.

Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity savings (kWh)	114,969,980	271,666,080

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	10,820	0

KEY ASSUMPTIONS

	2030	2045
Percent of existing homes installing solar energy systems	15%	35%
Percent of existing homes with solar energy systems and installing battery storage systems	20%	50%
Percent of new homes installing battery storage systems	40%	60%
Percent of existing businesses installing solar energy systems	3%	11%
Percent of existing businesses with solar energy systems and battery storage systems	15%	45%
Percent of residents enrolling in MCE	90%	90%
Percent of businesses enrolling in MCE	90%	90%
Percent of residents enrolling in 100% renewable tiers	10%	30%
Percent of businesses enrolling in 100% renewable tiers	5%	20%
Percent of direct access customers switching to MCE	5%	10%

PERFORMANCE TARGETS

	2030	2045
Residential solar systems installed	9,190	23,030
Residential battery systems installed	5,330	0
Nonresidential solar systems installed	30	290
Nonresidential battery systems installed	10	0
Residential electricity supplied by MCE (kWh)	271,041,850	291,475,310
Residential electricity provided at Deep Green tier (kWh)	25,732,490	83,017,260
Nonresidential electricity provided by MCE (kWh)	219,158,600	220,222,390
Nonresidential electricity provided at Deep Green tier (kWh)	10,521,500	42,290,280

SOURCES

California Distributed Generation Statistics. 2021. Interconnected Project Sites, 2021-09-30 [data set]. https://www.californiadgstats.ca.gov/archives/interconnection_rule21_projects/.

MCE. 2020. *Operational Integrated Resource Plan, 2021- 2030*. https://www.mcecleanenergy.org/wp-content/uploads/2020/10/MCE-Operational-Integrated-Resource-Plan_2021.pdf.

National Renewable Energy Laboratory. n.d. "PVWatts". https://pvwatts.nrel.gov/.

NO WASTE CONTRA COSTA

Strategy NW-1: Increase composting of organic waste.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Waste savings (tons)	5,580	9,190

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	2,240	4,000

KEY ASSUMPTIONS

	2030	2045
Current compost diversion rate	77%	77%
Target compost diversion rate	90%	95%

PERFORMANCE TARGETS

	2030	2045
Number of households with composting service	62,290	79,330
Number of businesses with composting service	2,930	3,510

SOURCES

California Air Resources Board. 2011. Landfill Methane Emissions Tool [data table]. https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool.

California Department of Resources Recycling and Recovery. 2019. "Residential Waste Stream by Material Type". https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=7&cy=7.

California Department of Resources Recycling and Recovery. 2019. "Waste Characterization Tool for California Jurisdictions". https://www2.calrecycle.ca.gov/WasteCharacterization/.

Contra Costa County. 2020. *Climate Action Plan Progress Report for 2020*. https://www.contracosta.ca.gov/AgendaCenter/ViewFile/Agenda/_12142020-3083.

Strategy NW-2: Reduce waste from County operations.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Waste savings (tons)	2,630	3,510

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	1,090	1,620

KEY ASSUMPTIONS

	2030	2045
Target composting diversion rate for County activities	85%	95%
Target recycling diversion rate for County activities	85%	95%

PERFORMANCE TARGETS

	2030	2045
Weekly average cubic yards of composted organics (uncompacted)	1,050	1,140
Weekly average cubic yards of recycled materials (uncompacted)	270	300

SOURCES

California Air Resources Board. 2011. Landfill Methane Emissions Tool [data table]. https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool.

California Department of Resources Recycling and Recovery. 2019. "Residential Waste Stream by Material Type." https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=7&cy=7.

California Department of Resources Recycling and Recovery. 2019. "Waste Characterization Tool for California Jurisdictions". https://www2.calrecycle.ca.gov/WasteCharacterization/.

Intergovernmental Panel on Climate Change. 2006. "2006 IPCC Guidelines for National Greenhouse Gas Inventories." https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html.

Strategy NW-3: Increase community-wide recycling and waste programs.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Waste savings (tons)	5,560	16,770

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	520	2,530

KEY ASSUMPTIONS

	2030	2045
Target community diversion rate	77%	85%
Decrease in non-organic and non-recyclable waste tonnage	20%	50%

PERFORMANCE TARGETS

	2030	2045
Reduction in landfilled recyclables (tons)	0	1,280
Decrease in non-compostable/recyclable tonnage (tons)	5,560	15,490
Pounds of waste per person per day	2.08	1.85

SOURCES

California Air Resources Board. 2011. Landfill Methane Emissions Tool [data table]. https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool.

California Department of Resources Recycling and Recovery. 2019. "Residential Waste Stream by Material Type". https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=7&cy=7.

California Department of Resources Recycling and Recovery. 2019. "Waste Characterization Tool for California Jurisdictions". https://www2.calrecycle.ca.gov/WasteCharacterization/.

United States Environmental Protection Agency. 2016. *Volume-to-Weight Conversion Factors*. https://www.epa.gov/sites/default/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf.

REDUCE WATER USE AND INCREASE DROUGHT RESILIENCE

Strategy DR-1: Reduce indoor and outdoor water use.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity savings (kWh)	1,436,210	2,560,780
Water (MG)	360	650

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	970	1,440

KEY ASSUMPTIONS

	2030	2045
Percent of existing homes with graywater systems	5%	20%
Percent of existing businesses with graywater systems	2%	10%
Percent of existing homes retrofitting water fixtures	60%	90%
Percent of existing businesses retrofitting water fixtures	60%	90%
Percent of new homes with graywater systems	10%	35%
Percent of new businesses with graywater systems	5%	20%

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PERFORMANCE TARGETS

	2030	2045
Number of residential graywater system installations	3,910	20,180
Number of commercial graywater systems installations	70	440
Number of nonresidential buildings receiving water efficiency upgrades	1,790	2,680
Number of residential buildings receiving water efficiency upgrades	36,190	54,290

SOURCES

Environmental Protection Agency. 2009. "Water Efficiency in the Commercial and Institutional Sector: Considerations for a WaterSense Program." https://www.epa.gov/sites/default/files/2017-03/documents/ws-commercial-ci-whitepaper.pdf

State of California, Natural Resources Agency, Department of Water Resources. 2014. "California Water Plan Update 2013."

State of California, Natural Resources Agency, Department of Water Resources. 2019. "California Water Plan Update 2018." https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/CaliforniB-Water-Plan/Docs/Update2018/Final/CaliforniB-Water-Plan-Update-2018.pdf

Water Research Foundation. 2016. "Residential End Uses of Water Study, Version 2: Executive Report."

Strategy DR-2: Ensure sustainable and diverse water supplies.

This is a supportive measure that does not result in direct measureable GHG emissions. There are no activity or GHG savings, assumptions, performance indicators, or sources associated with this measure.

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CLEAN TRANSPORTATION NETWORK

Strategy TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit for travel within, to, and from the county.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Vehicle Miles Traveled (VMT)	52,447,950	153,067,310

GHG SAVINGS

	2030 $MTCO_2E$	20545$MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	17,050	40,370

KEY ASSUMPTIONS

	2030	2045
Miles of bicycle lanes	45	132
Average round trip length for bicyclee trips (miles)	2.1	2.1
Is bike parking provided in most nonresidential locations?	Yes	Yes
% increase in combined housing units/acre due to TOD	15%	63%
% increase in jobs/acre due to TOD	10%	45%
Percent increase in transit frequency	5%	15%
Level of implementation (increase in transit frequency)	10%	25%
Percent increase in transit service miles	5%	15%
Percent of employers participating in TDM	5%	20%
Average trip reduction from voluntary TDM participation	15%	45%
Percent of county with expanded sidewalks	5%	15%
Change in percent of households that have access to electric bike sharing	5%	9%
Percent of multifamily units permanently designated as affordable	5%	15%
Percent of transit routes that receive supportive treatments	1%	2%

PERFORMANCE TARGETS

	2030	2045
Miles of bicycle lanes	50	130
Bicycle mode share	1%	1%
Bus ridership (commute share)	5%	15%
BART ridership (passenger miles)	17,227,850	22,459,900
VMT reduction from TDM programs	1,705,370	25,757,280
New affordable multifamily units	70	540
Percent of transit routes that receive supportive treatments	1%	2%
Change in percent of households that have access to electric bike sharing	5%	9%

SOURCES

California Air Pollution Control Officers Association. 2010. "Quantifying Greenhouse Gas Mitigation Measures." http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoB-quantifying-greenhouse-gas-mitigation-measures.pdf.

Contra Costa Transportation Authority. 2018. "Contra Costa Countywide Bicycle Pedestrian Plan." https://ccta.net/wp-content/uploads/2018/10/5b8ec26192756.pdf.

US Census. "Contra Costa County 2019 ACS 5-Year Estimates, Table B08006."

Strategy TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity used (kWh)	-111,003180	-253,986,510
Natural gas (gallons)	2,760	5,450
Diesel (gallons)	530,690	1,353,420
VMT	14,260	14,260

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	130,160	329,360

KEY ASSUMPTIONS

	2030	2045
Percent of county vehicles that are zero-emission	80%	95%
Percent of community fleet that is zero-emission (light-duty)	35%	85%
Target percent of total community TNC VMT from electric vehicles	75%	90%
Percent of community fleet that is zero-emission (heavy-duty)	10%	70%
Target percent total commercial Natural Gas VMT replaced by biomethane	2%	5%
Target percent total commercial Diesel VMT replaced by biomethane	5%	15%
Percent of lawn and garden fuel use converted to electric	30%	80%
Percent construction equipment fuel use converted to electric	30%	60%
Percent other commercial fuel use converted to electric	20%	55%
Number of EVs in EV car sharing	50	100

PERFORMANCE TARGETS

	2030	2045
New VMT from electric vehicles, community-wide	325,676,160	950,943,040
Reduction in municipal vehicle gasoline use (gallons)	230,120	250,030
New VMT from electric vehicles, TNC	82,961,910	101,629,820
Reduction in offroad gasoline use (gallons)	2,113,740	0
Reduction in offroad diesel use (gallons)	3,625,240	0
Increase in biomethane VMT	3,003,670	8,050,840
Number of EVs in car sharing	50	100

SOURCES

California Air Pollution Control Officers Association. 2010. "Quantifying Greenhouse Gas Mitigation Measures." http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoB-quantifying-greenhouse-gas-mitigation-measures.pdf.

California Air Resources Board. 2010. "Local Government Operations Protocol For the quantification and reporting of greenhouse gas emissions inventories." https://ww3.arb.ca.gov/cc/protocols/localgov/pubs/lgo_protocol_v1_1_2010-05-03.pdf.

California Air Resources Board. 2020. "2020 Emissions Model for Small Off-Road Engines – SORE2020." https://ww2.arb.ca.gov/sites/default/files/2020-09/SORE2020_Technical_Documentation_2020_09_09_Final_Cleaned_ADA.pdf.

California Air Resources Board. 2021. "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity." https://www.airquality.org/ClimateChange/Documents/Handbook%20Public%20Draft_2021-Aug.pdf.

California Air Resources Board. 2021. EMFAC2021 V1.0.1 Emission Inventory. https://arb.ca.gov/emfac/emissions-inventory/.

Contra Costa Transportation Authority. 2018. "Contra Costa Countywide Bicycle Pedestrian Plan." https://ccta.net/wp-content/uploads/2018/10/5b8ec26192756.pdf.

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US Department of Energy. 2021. "FuelEconomy.gov". https://fueleconomy.gov/.

RESILIENT COMMUNITIES AND NATURAL INFRASTRUCTURE

Strategy NI-4: Sequester carbon on natural and working lands in Contra Costa County.

ACTIVITY DATA SAVINGS

There are no activity data savings associated with this strategy.

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	22,630	88,910

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KEY ASSUMPTIONS

	2030	2045
Percent of irrigated crops with seasonal cover crops	15%	35%
Percent of irrigated crops practicing mulching	5%	35%
Percent of irrigated crops with compost application	15%	80%
Percent of irrigated crops with field borders	2%	8%
Percent of irrigated crops practicing alley cropping	10%	30%
Percent of irrigated crops with conservation crop rotation	25%	50%
Percent of irrigated crops practicing reduced tillage	15%	35%
Percent of irrigated crops practicing no tillage	5%	10%
Percent of orchards/vineyards with seasonal cover crops	5%	25%
Percent of orchards/vineyards practicing mulching	5%	25%
Percent of orchards/vineyards with compost application	15%	80%
Percent of orchards/vineyards with windbreaks	0%	2%
Percent of orchards with reduced tilling	10%	35%
Percent of vineyards with reduced tilling	10%	35%
Percent of pastures and rangeland with compost application	5%	15%
Percent of pastures and rangeland with prescribed grazing	15%	40%
Percent of pastures and rangeland practicing oak restoration	1%	5%
Percent of pastures and rangeland practicing riparian restoration	0%	1.2%
Percent of rangeland with range planting	2%	10%
Percent of grasslands with native grass restoration	2%	10%
Percent of forested areas undergoing annual fuel reduction	5%	25%

PERFORMANCE TARGETS

	2030	2045
Acres of irrigated crops with seasonal cover crops	3,770	8,130
Acres of irrigated crops practicing mulching	1,260	8,130
Acres of irrigated crops with compost application	3,770	18,590
Acres of irrigated crops with field borders	500	1,860
Acres of irrigated crops converted due to alley cropping	510	1,480
Acres of irrigated crops with conservation crop rotation	6,280	11,620
Acres of irrigated crops practicing reduced tillage	3,770	8,130
Acres of irrigated crops practicing no tillage	1,260	2,320
Acres of orchards or vineyards with seasonal cover crops	220	1,060
Acres of orchards or vineyards practicing mulching	220	1,060
Acres of orchards or vineyards with compost application	660	3,380
Acres of orchards or vineyards with windbreaks	-	80
Acres of orchards with reduced tilling	250	790
Acres of vineyards with reduced tilling	210	690
Acres of pastures and rangeland with compost application	7,430	21,430
Acres of pastures and rangeland with prescribed grazing	22,300	57,140
Acres of pastures and rangeland practicing oak restoration	1,490	7,140
Acres of pastures and rangeland practicing riparian restoration	-	1,710
Acres of rangeland with range planting	2,870	13,780
Acres of grasslands with native grass restoration	2,610	13,150
Acres of forested areas undergoing annual fuel reduction	3,030	15,250

SOURCES

California Air Resources Board. 2010. "Local Government Operations Protocol For the quantification and reporting of greenhouse gas emissions inventories." https://ww3.arb.ca.gov/cc/protocols/localgov/pubs/lgo_protocol_v1_1_2010-05-03.pdf.

Appendix 5.13-1 Noise Appendix

Appendices

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LOCAL REGULATIONS AND STANDARDS

88-3.612 - Noise.

(a) Except as provided in subsection (b) of this section, a commercial WECS may not generate or emit any noise at any time that exceeds a maximum level of sixty-five decibels (dBA), as measured at each line of the exterior project boundary.

(b) A land use permit issued for a commercial WECS may authorize a maximum noise level that exceeds the level specified in subsection (a) if the commercial WECS is adjacent to an already-existing or approved commercial WECS and upon a finding that existing legal offsite residences and general plan-designated residential areas will not be adversely affected.

(c) A residential WECS may not generate or emit any noise at any time that exceeds a maximum level of sixty decibels (dBA), as measured at each line of the parcel upon which the residential WECS is installed.

(d) The measurement of commercial or residential WECS noise levels may not be adjusted for, or averaged with, periods of non-operation of the WECS. A site-specific noise study may be required to confirm compliance with the applicable noise standard. If noise generated or emitted by a commercial or residential WECS exceeds the applicable standard, the WECS operator must take measures necessary to comply with the standard, which may include discontinued operation of one or more WECS.

(Ord. No. 2011-04, § VI, 4-5-11; Ord. 85-39 § 4).

82-44.410 - Conditions.

(a) The zoning administrator may condition the issuance of a temporary events permit by imposing any of the following requirements concerning the time, place, and manner of the event. The zoning administrator may consult with public works, fire, and law enforcement officials and may impose time, place, and manner conditions that are requested by those officials, provided the requested conditions are among the conditions specified below. No conditions other than those specified below may be placed on a permit. Conditions may not restrict expressive activity or the content of speech.

(1) Alteration of the date, time, route or location of the event proposed on the application.

(2) Conditions concerning accommodation of pedestrian or vehicular traffic.

(3) Conditions concerning parking, including but not limited to requirements for the use of shuttles from parking areas to the venue.

(4) Conditions concerning traffic control, including but not limited to requirements for the use of traffic cones or barricades.

(5) Requirements for provision of on-site restrooms.

(6) Requirements for use of security responsible for crowed control, fire watch, general security, and evacuation of occupants.

(7) Conditions concerning maximum occupancy, based on the size of the venue and for purposes of minimizing impacts on traffic and parking. In imposing conditions concerning maximum occupancy, the zoning administrator may consider the lot size of the event venue, proximity of surrounding residences, density of the underlying zoning district, and the location and size of any buildings between the venue and surrounding properties.

(8) Restrictions on the number and type of structures at the event, and inspection and approval of structures.

(9) Compliance with animal protection ordinances and laws.

(10) Requirements for use of garbage containers and cleanup.

(11) Conditions limiting the duration of time and hours of the event (including the time to prepare and clean up the venue) in order to minimize impacts on traffic and parking.

(12) Time, place, and manner restrictions on the use of amplified sound. The use of amplified sound is prohibited in a residential district unless allowed as a condition of a temporary event permit.

(b) When a temporary event permit is granted for any event in a residential zoning district or at a residence in any other zoning district, it is granted subject to the following conditions:

(1) The event shall not generate or emit any noise or sound that exceeds any of the levels specified in the table below measured at the exterior of any dwelling unit located on another

residential property. The noise generated or emitted shall not exceed the levels specified in the table for the duration of time specified in the table. Exterior noise levels shall be measured with a sound level meter. The permit shall incorporate the applicable "allowable exterior noise levels" specified in the table into the permit conditions only for the duration of time allowed for the event by the permit. For example, if the permit provides that an event shall end by seven p.m., the "allowable exterior noise levels" allowed between nine a.m. and eight p.m. shall be incorporated into the conditions, but the event must end by seven p.m.

Allowable Exterior Noise Levels

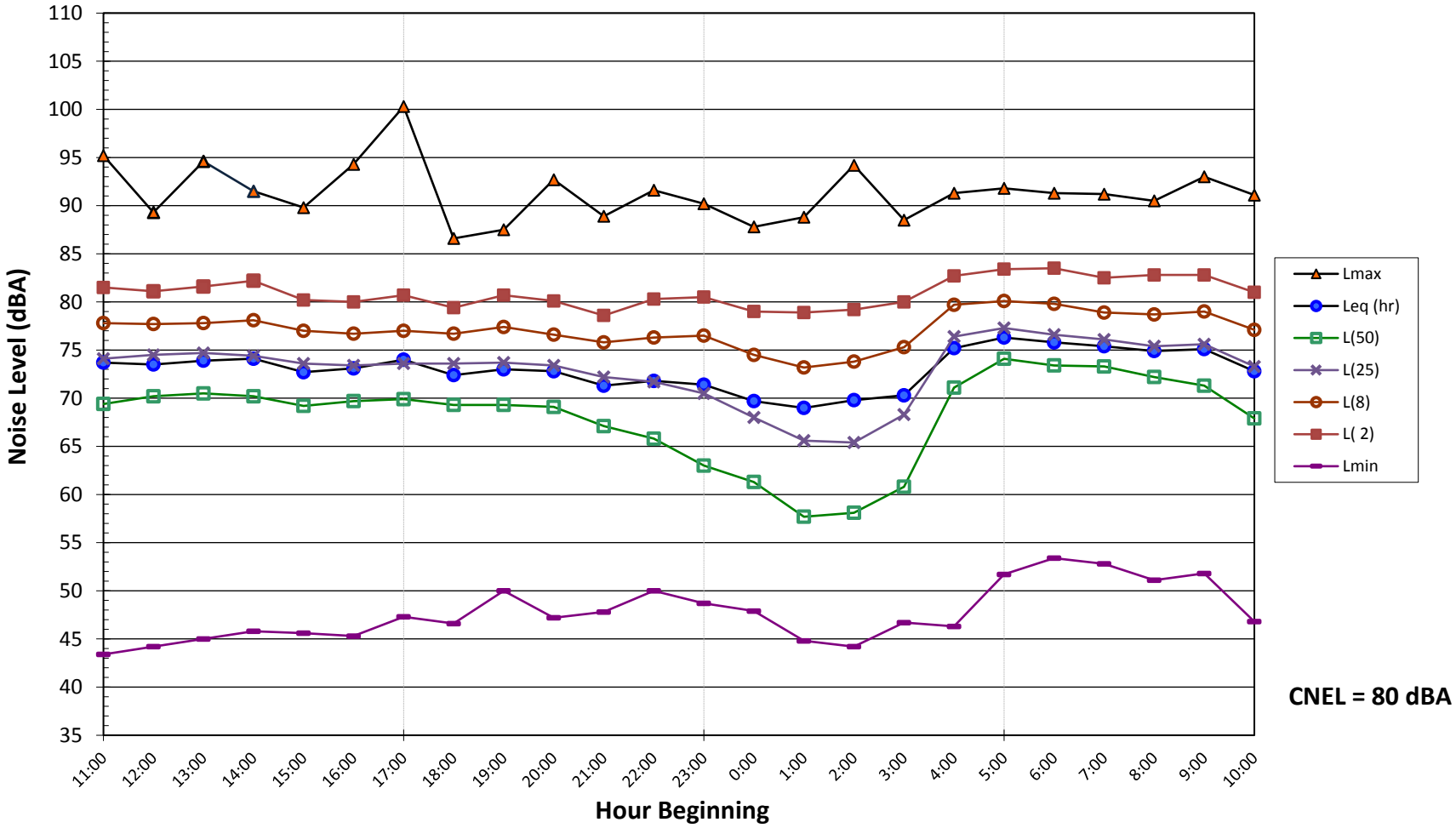
Cumulative Duration of Noise	9 a.m. - 8 p.m.	8 p.m. - 10 p.m.
30 minutes per hour	60 dBA	55 dBA
15 minutes per hour	65 dBA	60 dBA
5 minutes per hour	70 dBA	65 dBA
1 minute per hour	75 dBA	70 dBA
Level not to be exceeded at any time	80 dBA	75 dBA

(2) Amplified sound is prohibited after eight p.m. Sundays through Thursdays and after ten p.m. Fridays, Saturdays, and holidays. A temporary event permit shall not allow the use of amplified sound after these hours.

(Ord. No. 2010-11, § V, 7-13-10; Ord. 2005-25 § 2).

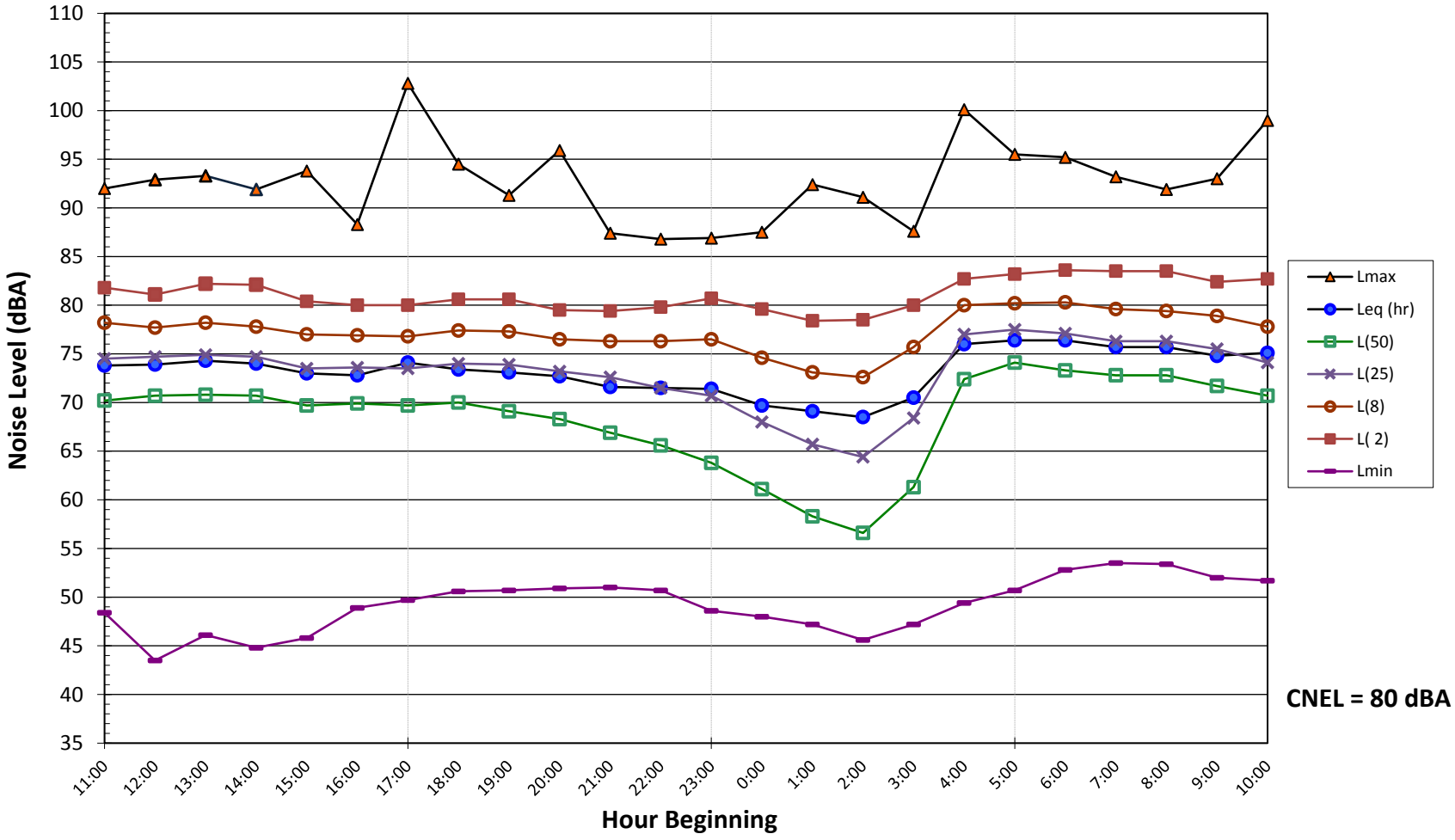
NOISE MONITORING LONG-TERM GRAPHS

Noise Levels at Noise Measurement Site LT-1
Contra Costa County, CA - General Plan Update
Tuesday, April 23, 2019

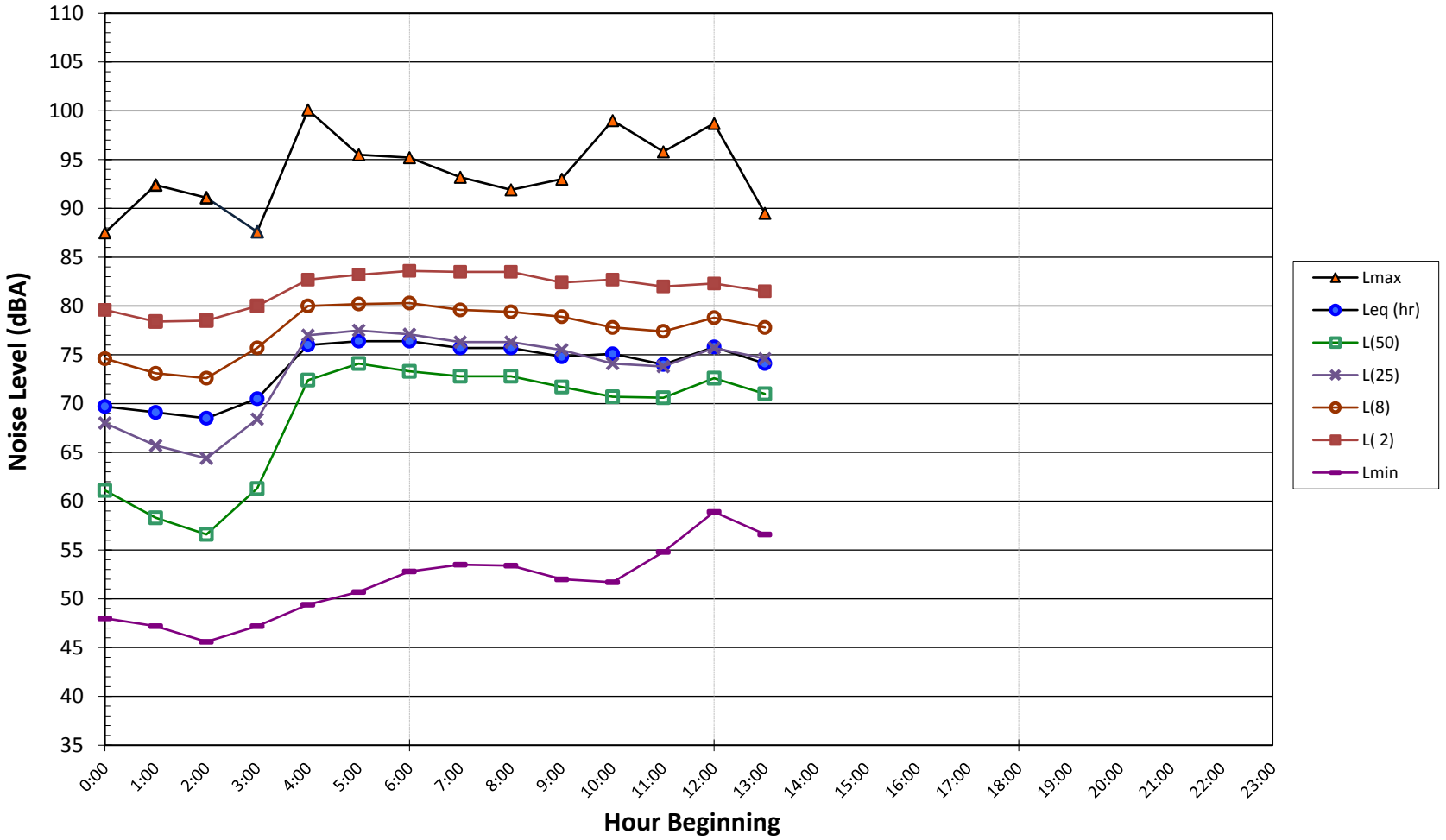


CNEL = 80 dBA

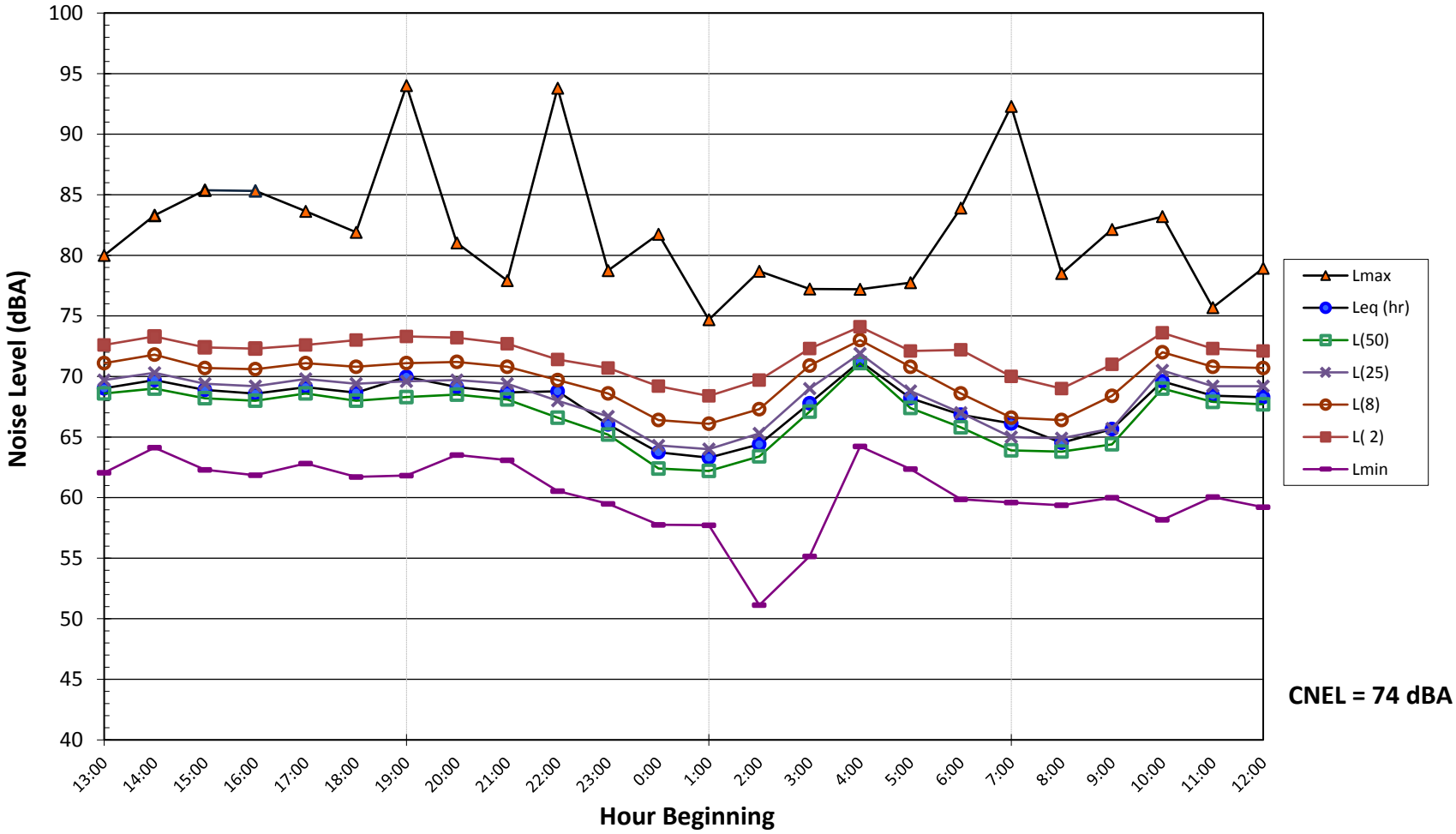
Noise Levels at Noise Measurement Site LT-1
Contra Costa County, CA - General Plan Update
Wednesday, April 24, 2019



Noise Levels at Noise Measurement Site LT-1
Contra Costa County, CA - General Plan Update
Thursday, April 25, 2019

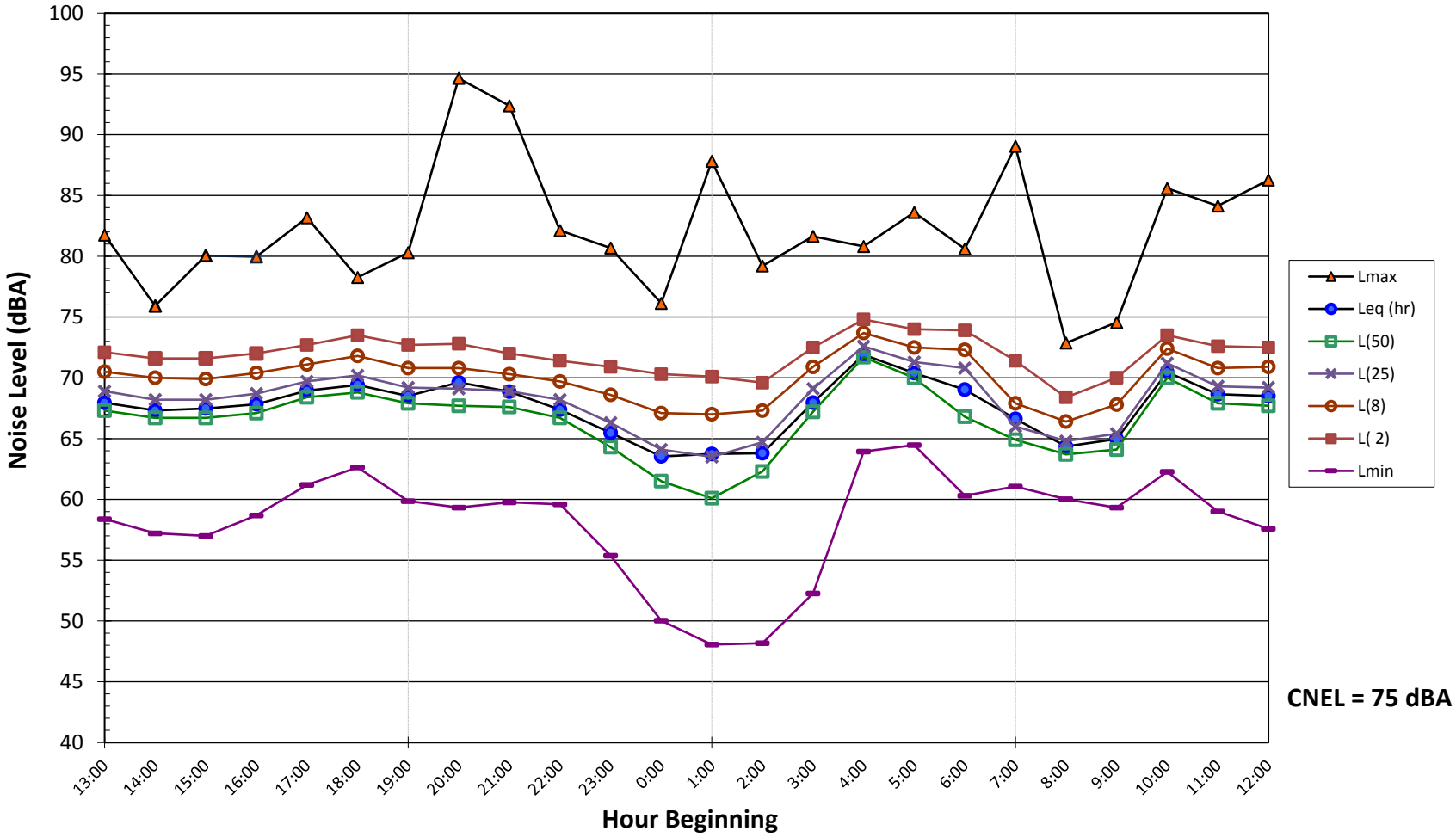


Noise Levels at Noise Measurement Site LT-2
Contra Costa County, CA - General Plan Update
Tuesday, April 23, 2019



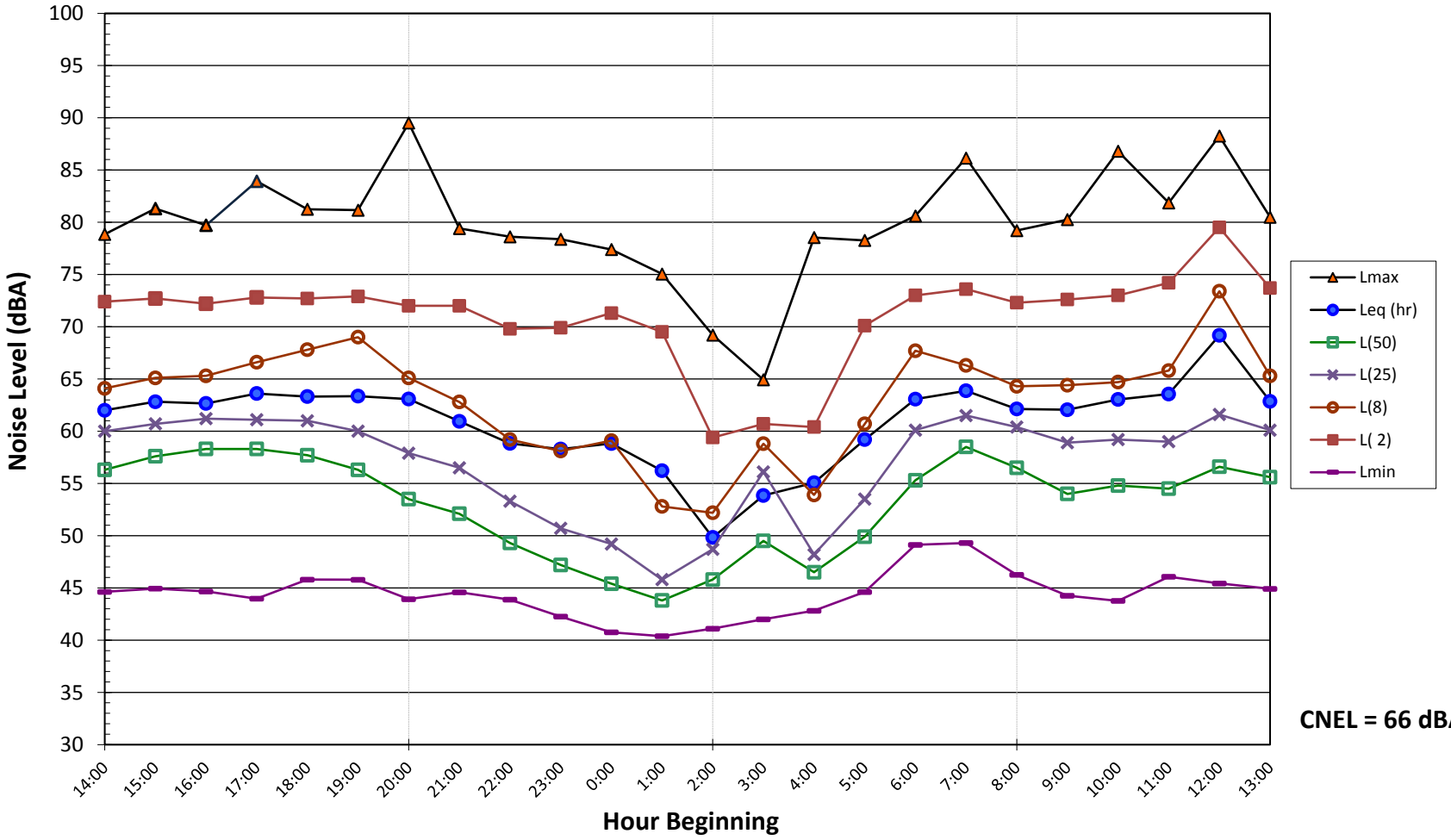
CNEL = 74 dBA

Noise Levels at Noise Measurement Site LT-2
Contra Costa County, CA - General Plan Update
Wednesday, April 24, 2019



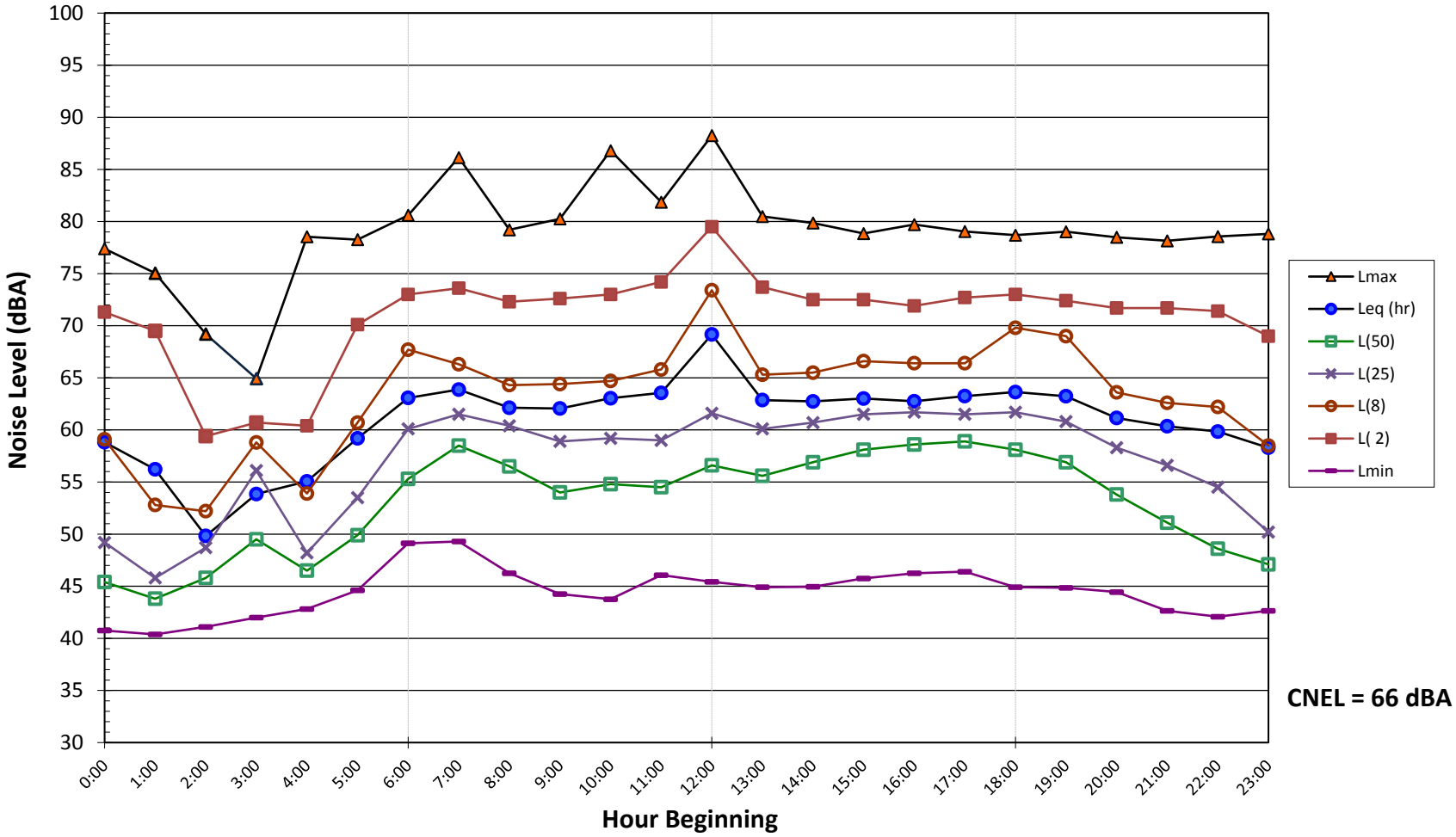
CNEL = 75 dBA

Noise Levels at Noise Measurement Site LT-3
Contra Costa County, CA - General Plan Update
Tuesday, April 23, 2019



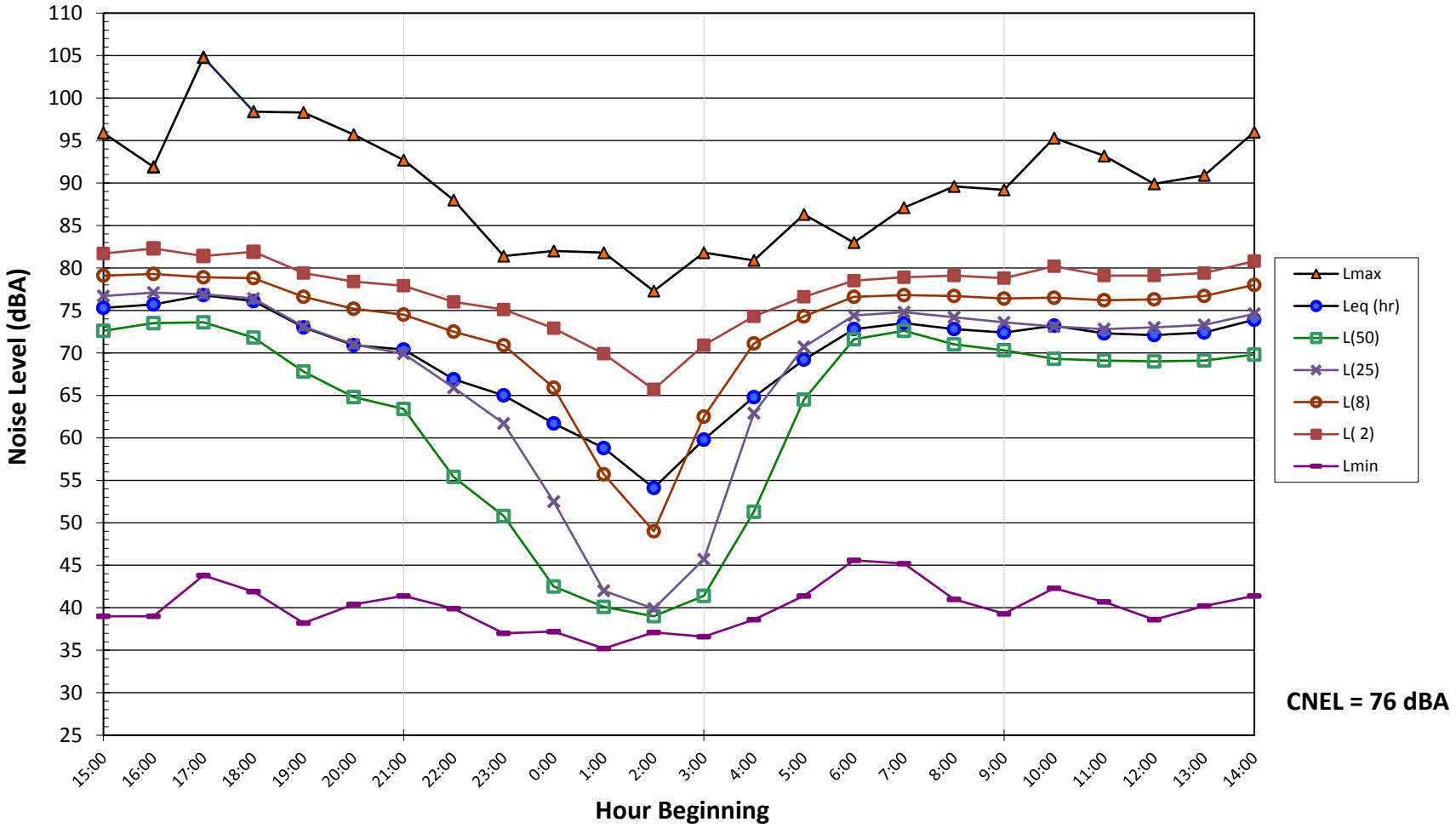
CNEL = 66 dBA

Noise Levels at Noise Measurement Site LT-3
Contra Costa County, CA - General Plan Update
Wednesday, April 24, 2019



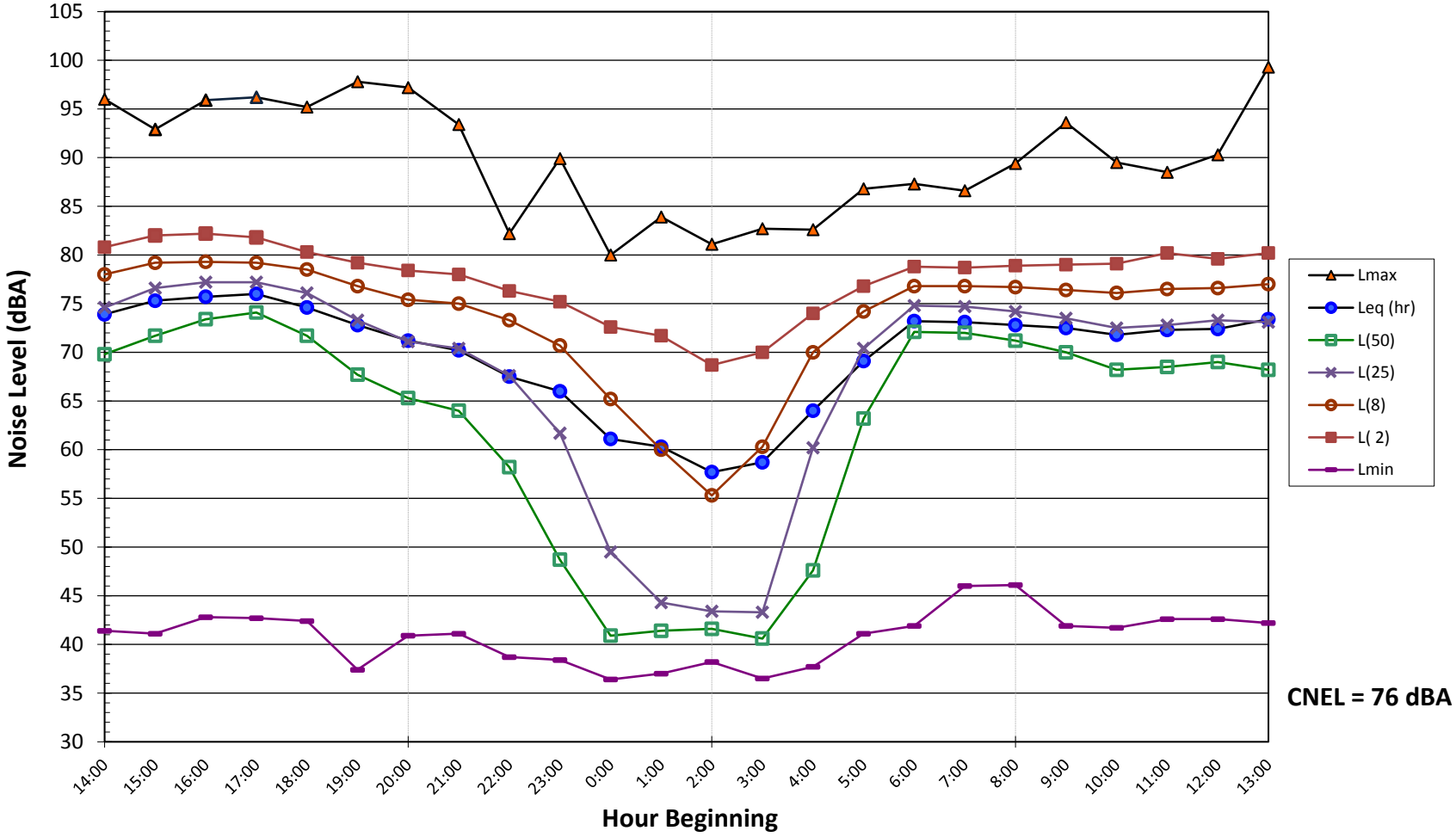
CNEL = 66 dBA

Noise Levels at Noise Measurement Site LT-4
Contra Costa County, CA - General Plan Update
Tuesday, April 23, 2019



CNEL = 76 dBA

Noise Levels at Noise Measurement Site LT-4
Contra Costa County, CA - General Plan Update
Wednesday, April 24, 2019



CNEL = 76 dBA

EXISTING CONDITIONS RAIL MODELING

FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	50
Future Train Speed (mph)	50
Number of Existing Trains in one Direction	9
Number of Future Trains in one Direction	9
Existing Number of Day Trains (7 am to 10 p.m.)	7
Future Number of Day Trains (7 am to 10 p.m.)	7
Existing Number of Night Trains (10 p.m. to 7 am)	2
Future Number of Night Trains (10 p.m. to 7 am)	2
Existing Average Number of Cars	44
Future Average Number of Cars	44
Existing Average Number of Locomotives	2.3
Future Average Number of Locomotives	2.3

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

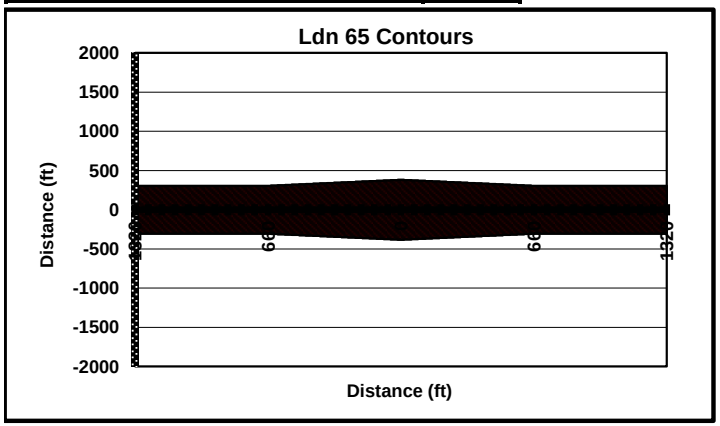
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

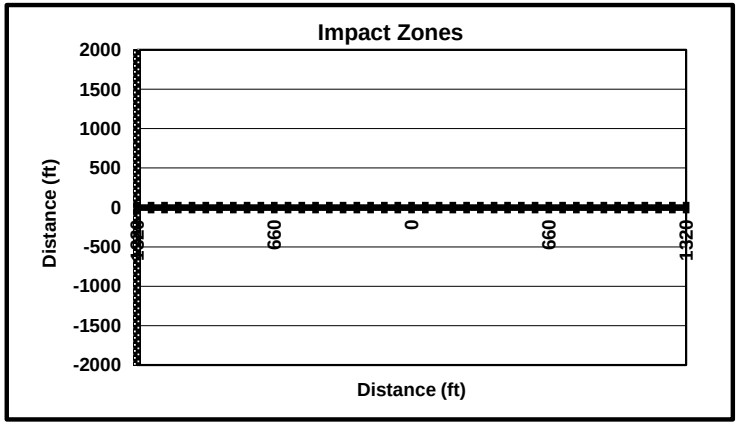
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	382
Future 65 Ldn Contour at X-ing	382
Existing 65 Ldn Contour at 1/2 zone length	305
Future 65 Ldn Contour at 1/2 zone length	305
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	50
Future Train Speed (mph)	50
Number of Existing Trains in one Direction	4
Number of Future Trains in one Direction	4
Existing Number of Day Trains (7 am to 10 p.m.)	2
Future Number of Day Trains (7 am to 10 p.m.)	2
Existing Number of Night Trains (10 p.m. to 7 am)	2
Future Number of Night Trains (10 p.m. to 7 am)	2
Existing Average Number of Cars	50
Future Average Number of Cars	50
Existing Average Number of Locomotives	4
Future Average Number of Locomotives	4

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

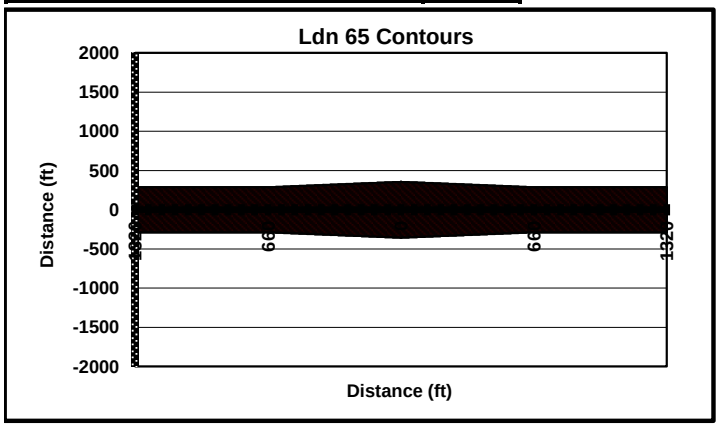
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

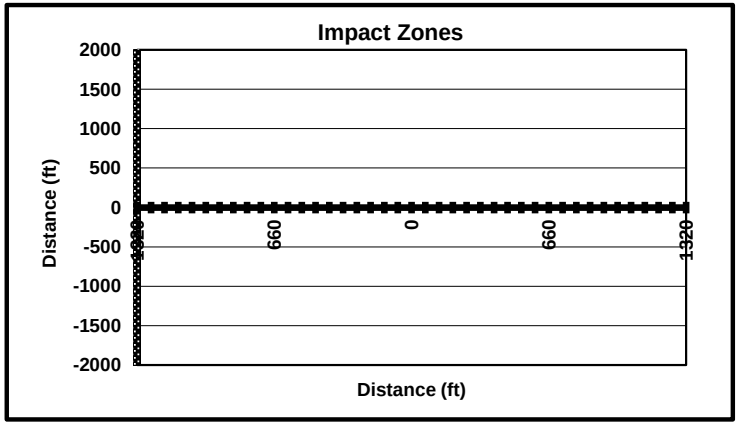
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	355
Future 65 Ldn Contour at X-ing	355
Existing 65 Ldn Contour at 1/2 zone length	286
Future 65 Ldn Contour at 1/2 zone length	286
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	10
Future Train Speed (mph)	10
Number of Existing Trains in one Direction	1
Number of Future Trains in one Direction	1
Existing Number of Day Trains (7 am to 10 p.m.)	1
Future Number of Day Trains (7 am to 10 p.m.)	1
Existing Number of Night Trains (10 p.m. to 7 am)	0
Future Number of Night Trains (10 p.m. to 7 am)	0
Existing Average Number of Cars	10
Future Average Number of Cars	10
Existing Average Number of Locomotives	1
Future Average Number of Locomotives	1

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

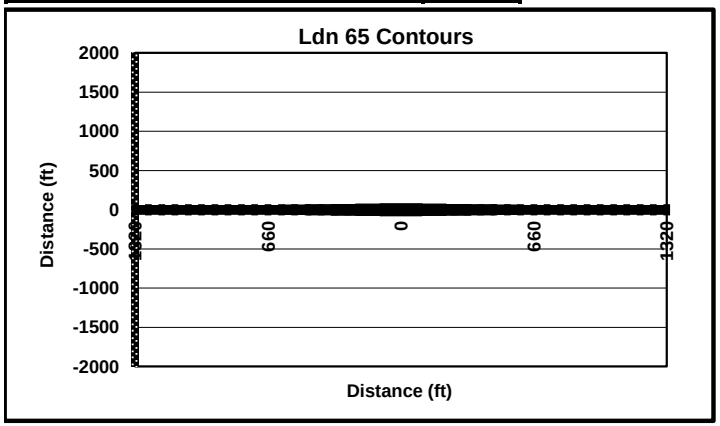
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

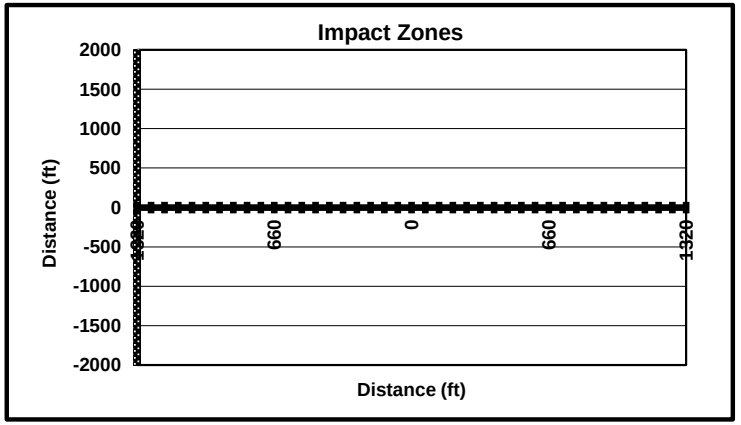
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	69
Future 65 Ldn Contour at X-ing	69
Existing 65 Ldn Contour at 1/2 zone length	47
Future 65 Ldn Contour at 1/2 zone length	47
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	10
Future Train Speed (mph)	10
Number of Existing Trains in one Direction	1
Number of Future Trains in one Direction	1
Existing Number of Day Trains (7 am to 10 p.m.)	1
Future Number of Day Trains (7 am to 10 p.m.)	1
Existing Number of Night Trains (10 p.m. to 7 am)	0
Future Number of Night Trains (10 p.m. to 7 am)	0
Existing Average Number of Cars	10
Future Average Number of Cars	10
Existing Average Number of Locomotives	1
Future Average Number of Locomotives	1

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

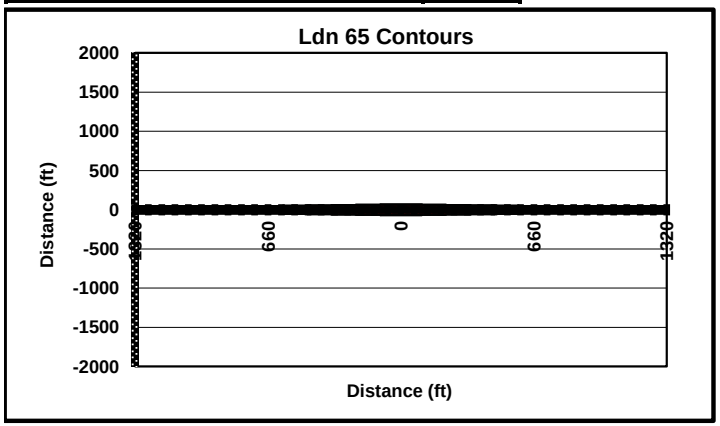
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

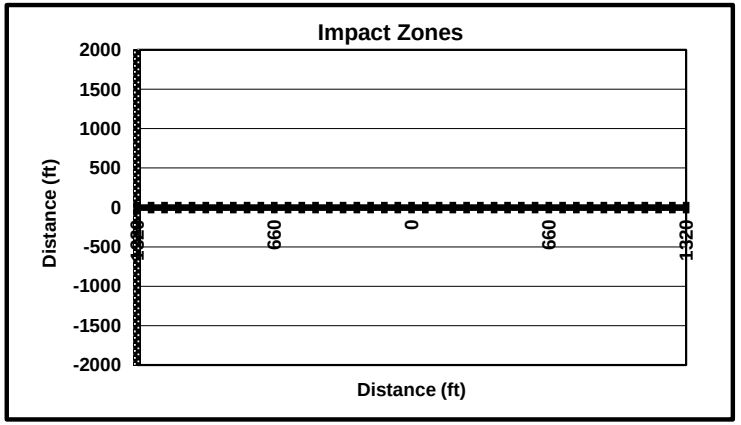
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	69
Future 65 Ldn Contour at X-ing	69
Existing 65 Ldn Contour at 1/2 zone length	47
Future 65 Ldn Contour at 1/2 zone length	47
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	10
Future Train Speed (mph)	10
Number of Existing Trains in one Direction	7
Number of Future Trains in one Direction	7
Existing Number of Day Trains (7 am to 10 p.m.)	7
Future Number of Day Trains (7 am to 10 p.m.)	7
Existing Number of Night Trains (10 p.m. to 7 am)	0
Future Number of Night Trains (10 p.m. to 7 am)	0
Existing Average Number of Cars	10
Future Average Number of Cars	10
Existing Average Number of Locomotives	1
Future Average Number of Locomotives	1

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

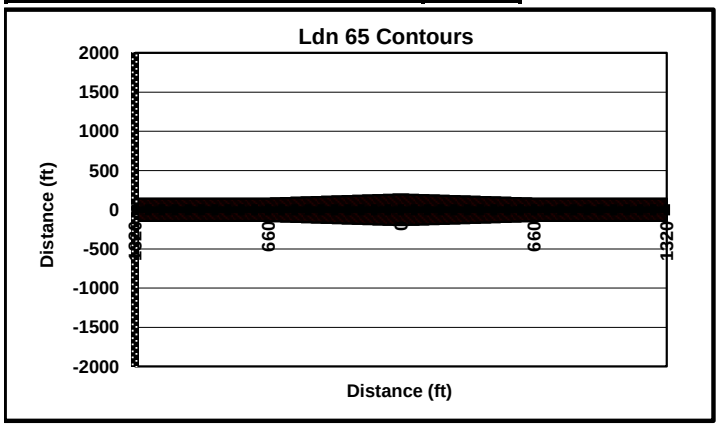
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

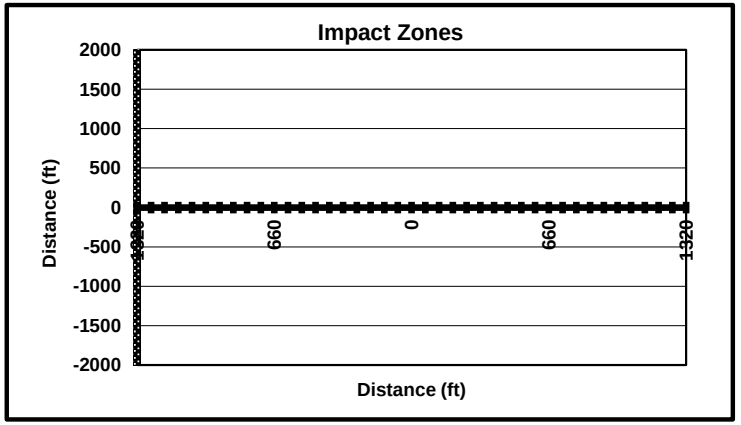
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	195
Future 65 Ldn Contour at X-ing	195
Existing 65 Ldn Contour at 1/2 zone length	142
Future 65 Ldn Contour at 1/2 zone length	142
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	10
Future Train Speed (mph)	10
Number of Existing Trains in one Direction	11
Number of Future Trains in one Direction	11
Existing Number of Day Trains (7 am to 10 p.m.)	11
Future Number of Day Trains (7 am to 10 p.m.)	11
Existing Number of Night Trains (10 p.m. to 7 am)	0
Future Number of Night Trains (10 p.m. to 7 am)	0
Existing Average Number of Cars	10
Future Average Number of Cars	10
Existing Average Number of Locomotives	1
Future Average Number of Locomotives	1

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

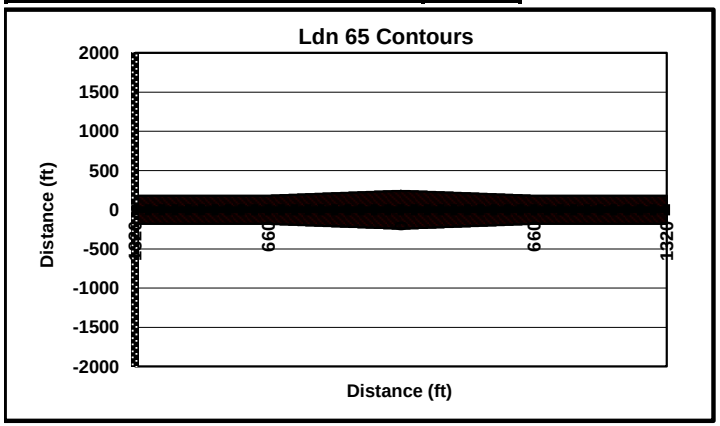
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

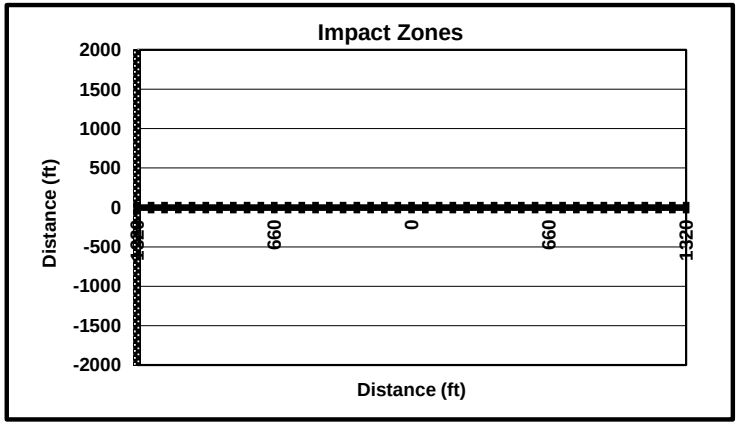
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	241
Future 65 Ldn Contour at X-ing	241
Existing 65 Ldn Contour at 1/2 zone length	178
Future 65 Ldn Contour at 1/2 zone length	178
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	97
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	50
Future Train Speed (mph)	50
Number of Existing Trains in one Direction	5
Number of Future Trains in one Direction	5
Existing Number of Day Trains (7 am to 10 p.m.)	5
Future Number of Day Trains (7 am to 10 p.m.)	5
Existing Number of Night Trains (10 p.m. to 7 am)	0
Future Number of Night Trains (10 p.m. to 7 am)	0
Existing Average Number of Cars	5
Future Average Number of Cars	5
Existing Average Number of Locomotives	1
Future Average Number of Locomotives	1

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

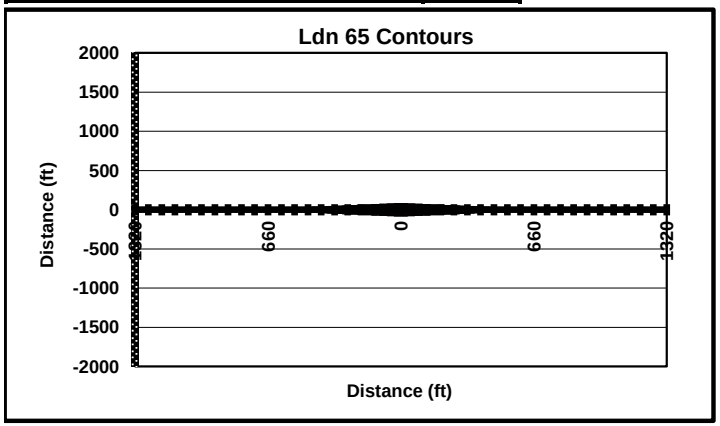
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

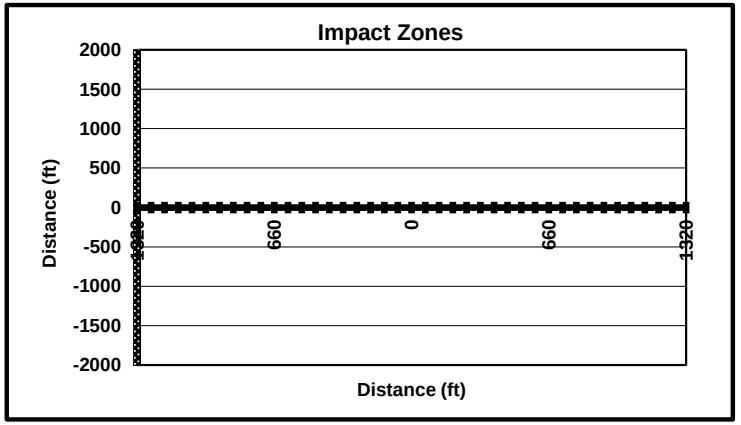
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	73
Future 65 Ldn Contour at X-ing	73
Existing 65 Ldn Contour at 1/2 zone length	0
Future 65 Ldn Contour at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: BNSF Richmond Yard Existing

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	61	58
Source 1	64	60	57
Source 2	59	55	52
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	35	distance (ft)	35		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	0.8	trains/hour	0.8		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)	10	speed (mph)	10		
(10 PM - 7 AM)	trains/hour	0.444	trains/hour	0.444		
	locos/train	1	length of cars (ft) / train	600		
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: BNSF Siberia Lead Existing

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	61	58
Source 1	64	60	57
Source 2	59	55	52
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	35	distance (ft)	35		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	0.8	trains/hour	0.8		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)	10	speed (mph)	10		
(10 PM - 7 AM)	trains/hour	0.444	trains/hour	0.444		
	locos/train	1	length of cars (ft) / train	600		
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: BNSF Stockton Sub Existing

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	57	59
Source 1	44	45	31
Source 2	40	42	9
Source 3	62	53	56
Source 4	63	54	56
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS								
Parameter	**Source 1**		**Source 2**		**Source 3**		**Source 4**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	210	distance (ft)	210	distance (ft)	210	distance (ft)	210
Daytime Hours	speed (mph)	50	speed (mph)	50	speed (mph)	50	speed (mph)	50
(7 AM - 10 PM)	trains/hour	0.667	trains/hour	0.667	trains/hour	0.267	trains/hour	0.267
	locos/train	1	cars/train	5	locos/train	4	length of cars (ft) / train	4000
Nighttime Hours	speed (mph)		speed (mph)		speed (mph)	50	speed (mph)	50
(10 PM - 7 AM)	trains/hour		trains/hour		trains/hour	0.444	trains/hour	0.444
	locos/train		cars/train		locos/train	4	length of cars (ft) / train	4000
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Jointed Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Embedded Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Aerial Structure?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Barrier Present?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Intervening Rows of of Buildings	number of rows	0	number of rows	0	number of rows	0	number of rows	0

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: BNSF Stockton Past Port Chicago Existing

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	58	59
Source 1	62	53	56
Source 2	63	56	56
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	210	distance (ft)	210		
Daytime Hours	speed (mph)	50	speed (mph)	50		
(7 AM - 10 PM)	trains/hour	0.267	trains/hour	0.444		
	locos/train	4	length of cars (ft) / train	4000		
Nighttime Hours	speed (mph)	50	speed (mph)	50		
(10 PM - 7 AM)	trains/hour	0.444	trains/hour	0.444		
	locos/train	4	length of cars (ft) / train	4000		
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: RPRC Chevron Lead Existing

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	66	53
Source 1	64	65	53
Source 2	57	59	36
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	5	distance (ft)	5		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	0.133	trains/hour	0.133		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)		speed (mph)			
(10 PM - 7 AM)	trains/hour		trains/hour			
	locos/train		length of cars (ft) / train			
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
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Case: RPRC Cutting Lead Existing

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	66	53
Source 1	64	65	53
Source 2	57	59	36
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	5	distance (ft)	5		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	0.133	trains/hour	0.133		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)		speed (mph)			
(10 PM - 7 AM)	trains/hour		trains/hour			
	locos/train		length of cars (ft) / train			
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
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Case: RPRC Harbor Lead Existing

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	67	46
Source 1	64	66	46
Source 2	59	61	29
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	15	distance (ft)	15		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	0.933	trains/hour	0.933		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)		speed (mph)			
(10 PM - 7 AM)	trains/hour		trains/hour			
	locos/train		length of cars (ft) / train			
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: RPRC LRT Lead Existing

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	67	44
Source 1	64	66	44
Source 2	59	61	27
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	20	distance (ft)	20		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	1.467	trains/hour	1.467		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)		speed (mph)			
(10 PM - 7 AM)	trains/hour		trains/hour			
	locos/train		length of cars (ft) / train			
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
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Case: UP Martinez Sub Existing East of Pinole

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	58	59
Source 1	52	51	43
Source 2	49	48	40
Source 3	61	52	54
Source 4	63	54	57
Source 5	48	40	42
Source 6	46	38	40
Source 7	42	42	32
Source 8	37	39	10

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS								
Parameter	**Source 1**		**Source 2**		**Source 3**		**Source 4**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	175	distance (ft)	175	distance (ft)	175	distance (ft)	175
Daytime Hours	speed (mph)	50	speed (mph)	50	speed (mph)	40	speed (mph)	40
(7 AM - 10 PM)	trains/hour	1.934	trains/hour	1.934	trains/hour	0.267	trains/hour	0.267
	locos/train	1	cars/train	5	locos/train	3	length of cars (ft) / train	5000
Nighttime Hours	speed (mph)	50	speed (mph)	50	speed (mph)	40	speed (mph)	40
(10 PM - 7 AM)	trains/hour	0.333	trains/hour	0.333	trains/hour	0.444	trains/hour	0.444
	locos/train	1	cars/train	5	locos/train	3	length of cars (ft) / train	5000
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Jointed Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Embedded Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Aerial Structure?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Barrier Present?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Intervening Rows of of Buildings	number of rows	0	number of rows	0	number of rows	0	number of rows	0

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Source 1 and 2 = Amtrak San Joaquin and Capitol Corridor
Source 3 and 4 = Freight trains
Source 5 and 6 - Amtrak Coast Starlight
Sources 7 and 8 - Amtrak California Zephyr

Source 5		**Source 6**		**Source 7**		**Source 8**	
Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Commuter Diesel Locomotive	2	Commuter Rail Cars	3
distance (ft)	175	distance (ft)	175	distance (ft)	175	distance (ft)	175
speed (mph)	50	speed (mph)	50	speed (mph)	50	speed (mph)	50
trains/hour	0.067	trains/hour	0.067	trains/hour	0.133	trains/hour	0.133
locos/train	2	cars/train	13	locos/train	2	cars/train	8
speed (mph)	50	speed (mph)	50	speed (mph)	0	speed (mph)	0
trains/hour	0.111	trains/hour	0.111	trains/hour	0	trains/hour	0
locos/train	2	cars/train	13	locos/train	0	cars/train	0
	0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
number of rows	0	number of rows	0	number of rows	0	number of rows	0

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: UP Martinez Sub Existing South of Pinole

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	58	59
Source 1	50	49	41
Source 2	49	48	41
Source 3	60	52	54
Source 4	63	55	57
Source 5	46	37	39
Source 6	46	38	40
Source 7	40	40	31
Source 8	37	39	9

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS								
Parameter	**Source 1**		**Source 2**		**Source 3**		**Source 4**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	220	distance (ft)	220	distance (ft)	220	distance (ft)	220
Daytime Hours	speed (mph)	60	speed (mph)	60	speed (mph)	50	speed (mph)	50
(7 AM - 10 PM)	trains/hour	1.934	trains/hour	1.934	trains/hour	0.267	trains/hour	0.267
	locos/train	1	cars/train	5	locos/train	3	length of cars (ft) / train	5000
Nighttime Hours	speed (mph)	60	speed (mph)	60	speed (mph)	50	speed (mph)	50
(10 PM - 7 AM)	trains/hour	0.333	trains/hour	0.333	trains/hour	0.444	trains/hour	0.444
	locos/train	1	cars/train	5	locos/train	3	length of cars (ft) / train	5000
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Jointed Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Embedded Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Aerial Structure?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Barrier Present?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Intervening Rows of of Buildings	number of rows	0	number of rows	0	number of rows	0	number of rows	0

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Source 1 and 2 = Amtrak San Joaquin and Capitol Corridor
Source 3 and 4 = Freight trains
Source 5 and 6 - Amtrak Coast Starlight
Sources 7 and 8 - Amtrak California Zephyr

Source 5		Source 6		Source 7		Source 8	
Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Commuter Diesel Locomotive	2	Commuter Rail Cars	3
distance (ft)	220	distance (ft)	220	distance (ft)	220	distance (ft)	220
speed (mph)	60	speed (mph)	60	speed (mph)	60	speed (mph)	60
trains/hour	0.067	trains/hour	0.067	trains/hour	0.133	trains/hour	0.133
locos/train	2	cars/train	13	locos/train	2	cars/train	8
speed (mph)	60	speed (mph)	60	speed (mph)	0	speed (mph)	0
trains/hour	0.111	trains/hour	0.111	trains/hour	0	trains/hour	0
locos/train	2	cars/train	13	locos/train	0	cars/train	0
	0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
number of rows	0	number of rows	0	number of rows	0	number of rows	0

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: UP Tracy Sub Existing

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	67	51
Source 1	64	65	51
Source 2	60	62	29
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3		
Distance (source to receiver)	distance (ft)	10	distance (ft)	10		
Daytime Hours	speed (mph)	50	speed (mph)	50		
(7 AM - 10 PM)	trains/hour	0.667	trains/hour	0.667		
	locos/train	1	cars/train	5		
Nighttime Hours	speed (mph)		speed (mph)			
(10 PM - 7 AM)	trains/hour		trains/hour			
	locos/train		cars/train			
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

FUTURE RAIL CONDITIONS MODELING

FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	50
Future Train Speed (mph)	50
Number of Existing Trains in one Direction	6
Number of Future Trains in one Direction	6
Existing Number of Day Trains (7 am to 10 p.m.)	3
Future Number of Day Trains (7 am to 10 p.m.)	3
Existing Number of Night Trains (10 p.m. to 7 am)	3
Future Number of Night Trains (10 p.m. to 7 am)	3
Existing Average Number of Cars	50
Future Average Number of Cars	50
Existing Average Number of Locomotives	4
Future Average Number of Locomotives	4

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

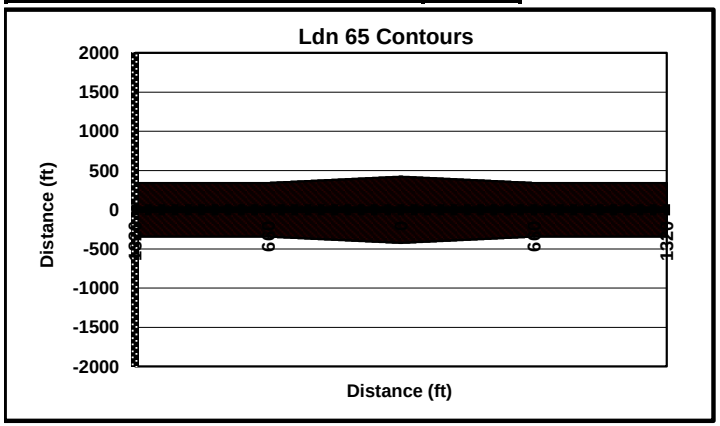
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

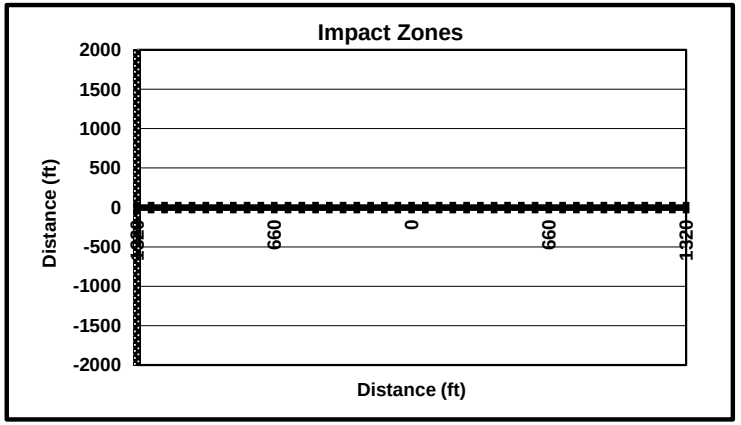
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	421
Future 65 Ldn Contour at X-ing	421
Existing 65 Ldn Contour at 1/2 zone length	341
Future 65 Ldn Contour at 1/2 zone length	341
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	50
Future Train Speed (mph)	50
Number of Existing Trains in one Direction	13
Number of Future Trains in one Direction	13
Existing Number of Day Trains (7 am to 10 p.m.)	10
Future Number of Day Trains (7 am to 10 p.m.)	10
Existing Number of Night Trains (10 p.m. to 7 am)	3
Future Number of Night Trains (10 p.m. to 7 am)	3
Existing Average Number of Cars	44
Future Average Number of Cars	44
Existing Average Number of Locomotives	2.38
Future Average Number of Locomotives	2.38

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

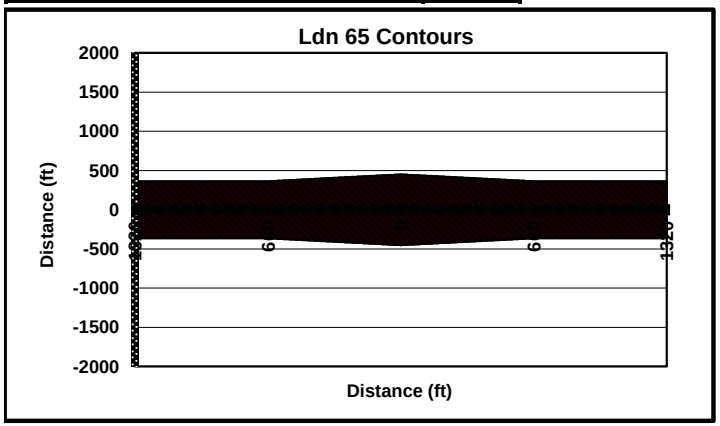
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

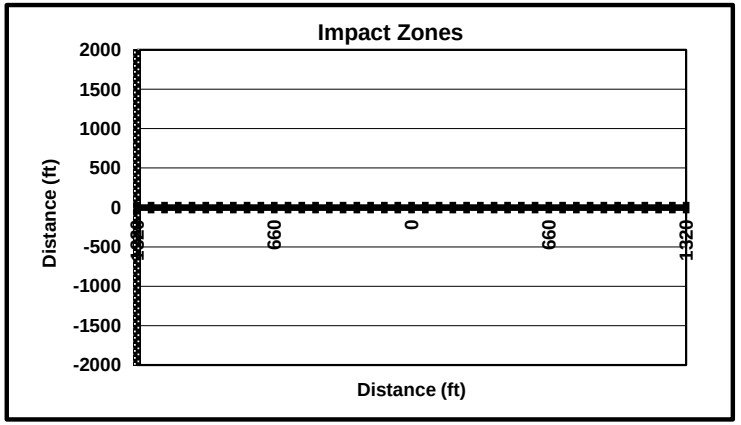
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	449
Future 65 Ldn Contour at X-ing	449
Existing 65 Ldn Contour at 1/2 zone length	361
Future 65 Ldn Contour at 1/2 zone length	361
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	10
Future Train Speed (mph)	10
Number of Existing Trains in one Direction	1.5
Number of Future Trains in one Direction	1.5
Existing Number of Day Trains (7 am to 10 p.m.)	1.5
Future Number of Day Trains (7 am to 10 p.m.)	1.5
Existing Number of Night Trains (10 p.m. to 7 am)	0
Future Number of Night Trains (10 p.m. to 7 am)	0
Existing Average Number of Cars	10
Future Average Number of Cars	10
Existing Average Number of Locomotives	1
Future Average Number of Locomotives	1

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

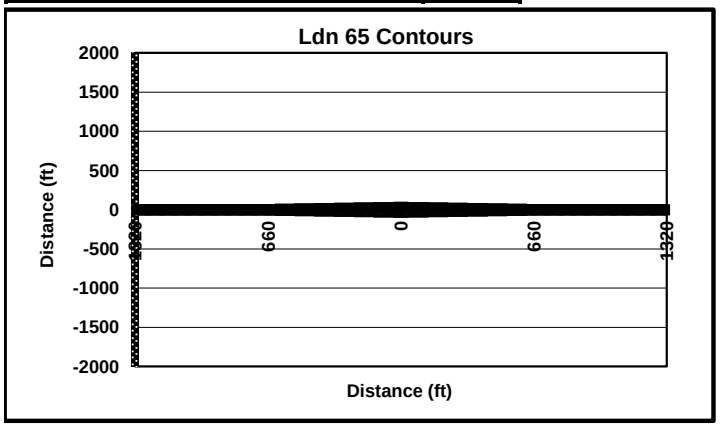
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

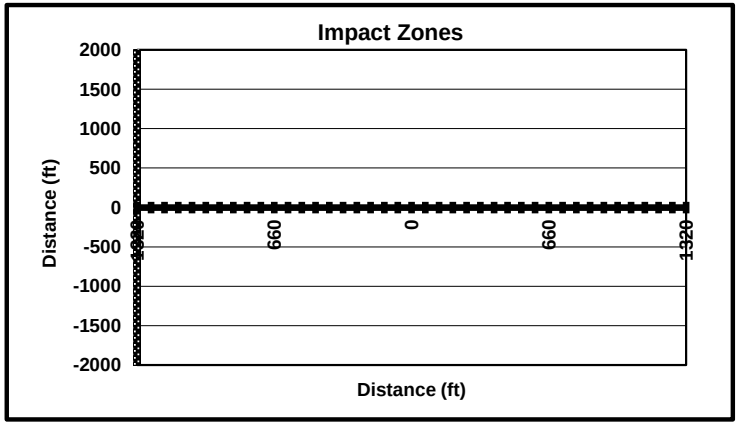
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	87
Future 65 Ldn Contour at X-ing	87
Existing 65 Ldn Contour at 1/2 zone length	60
Future 65 Ldn Contour at 1/2 zone length	60
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	10
Future Train Speed (mph)	10
Number of Existing Trains in one Direction	1.5
Number of Future Trains in one Direction	1.5
Existing Number of Day Trains (7 am to 10 p.m.)	1.5
Future Number of Day Trains (7 am to 10 p.m.)	1.5
Existing Number of Night Trains (10 p.m. to 7 am)	0
Future Number of Night Trains (10 p.m. to 7 am)	0
Existing Average Number of Cars	10
Future Average Number of Cars	10
Existing Average Number of Locomotives	1
Future Average Number of Locomotives	1

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

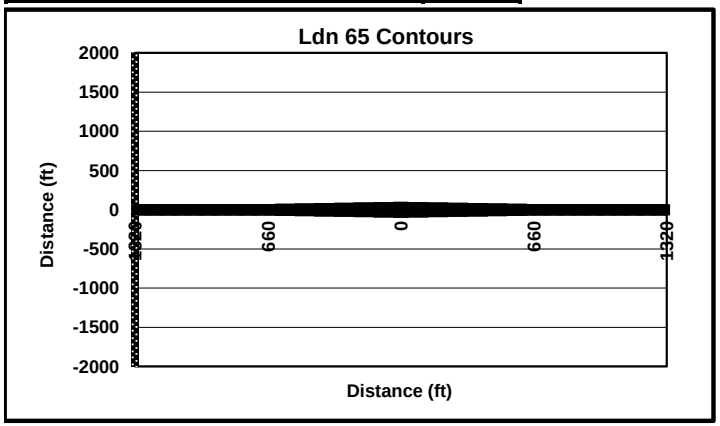
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

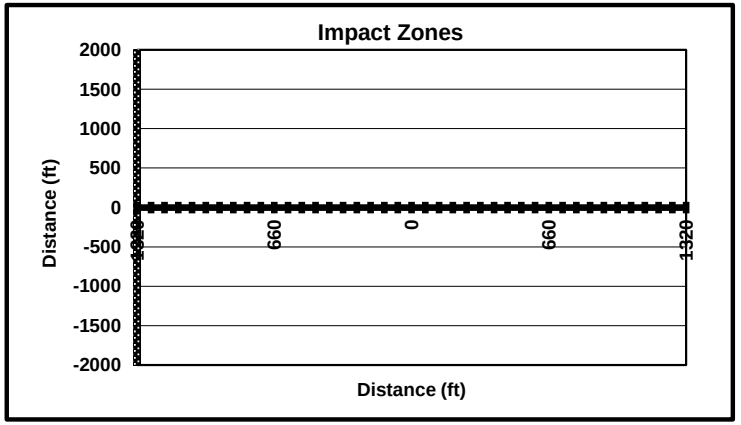
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	87
Future 65 Ldn Contour at X-ing	87
Existing 65 Ldn Contour at 1/2 zone length	60
Future 65 Ldn Contour at 1/2 zone length	60
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	10
Future Train Speed (mph)	10
Number of Existing Trains in one Direction	10.5
Number of Future Trains in one Direction	10.5
Existing Number of Day Trains (7 am to 10 p.m.)	10.5
Future Number of Day Trains (7 am to 10 p.m.)	10.5
Existing Number of Night Trains (10 p.m. to 7 am)	0
Future Number of Night Trains (10 p.m. to 7 am)	0
Existing Average Number of Cars	10
Future Average Number of Cars	10
Existing Average Number of Locomotives	1
Future Average Number of Locomotives	1

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

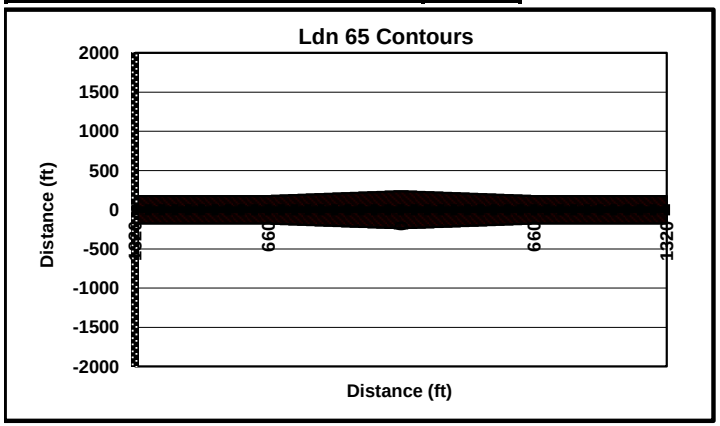
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

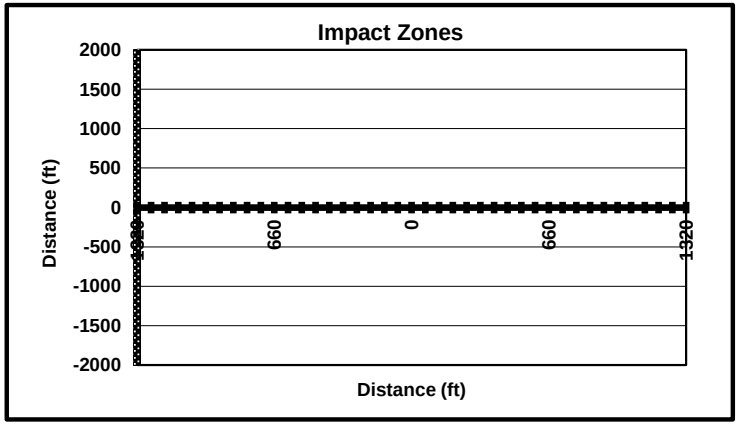
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	236
Future 65 Ldn Contour at X-ing	236
Existing 65 Ldn Contour at 1/2 zone length	174
Future 65 Ldn Contour at 1/2 zone length	174
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	10
Future Train Speed (mph)	10
Number of Existing Trains in one Direction	16.5
Number of Future Trains in one Direction	16.5
Existing Number of Day Trains (7 am to 10 p.m.)	16.5
Future Number of Day Trains (7 am to 10 p.m.)	16.5
Existing Number of Night Trains (10 p.m. to 7 am)	0
Future Number of Night Trains (10 p.m. to 7 am)	0
Existing Average Number of Cars	10
Future Average Number of Cars	10
Existing Average Number of Locomotives	1
Future Average Number of Locomotives	1

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

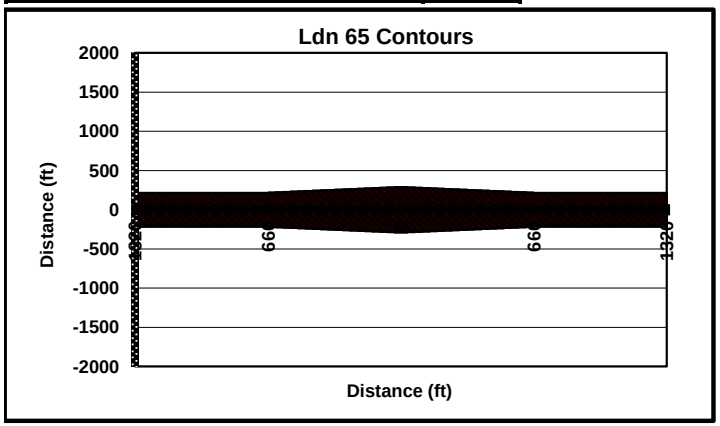
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

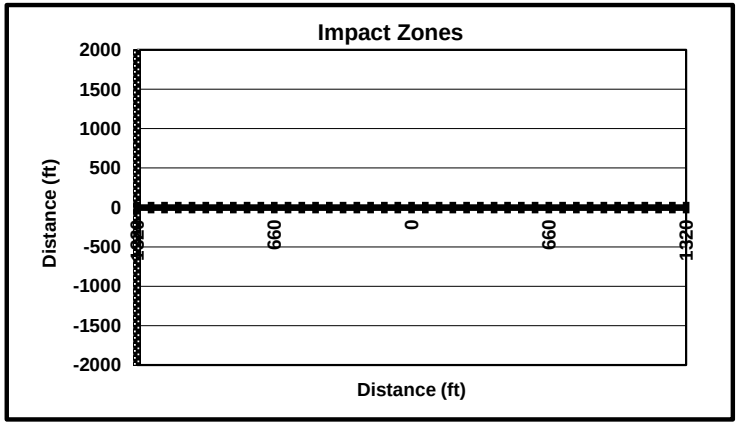
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	289
Future 65 Ldn Contour at X-ing	289
Existing 65 Ldn Contour at 1/2 zone length	216
Future 65 Ldn Contour at 1/2 zone length	216
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





FRA Grade Crossing Noise Model

User Input	
Noise Situation (Pick from List)	1
Horn Lmax (dBA) @ 100 feet	104
Horn Location on Locomotive(Pick from List)	1
Non Train Noise Environment (pick from list)	2
Shielding (Pick from List)	4
Length of Impact Area (pick from list)	1
Existing Train Speed (mph)	50
Future Train Speed (mph)	50
Number of Existing Trains in one Direction	12
Number of Future Trains in one Direction	12
Existing Number of Day Trains (7 am to 10 p.m.)	10.5
Future Number of Day Trains (7 am to 10 p.m.)	10.5
Existing Number of Night Trains (10 p.m. to 7 am)	1.5
Future Number of Night Trains (10 p.m. to 7 am)	1.5
Existing Average Number of Cars	119
Future Average Number of Cars	119
Existing Average Number of Locomotives	2.25
Future Average Number of Locomotives	2.25

Noise Situation	
Horns Existing and Future	1
Horns in Future Only	2
No Horns Existing and Future	3

Horn Location on Locomotive			
National Average (50% front, 50% middle)			1
All Front Mounted			2
All Middle Mounted			3
User Defined	80	% front mounted horns	4

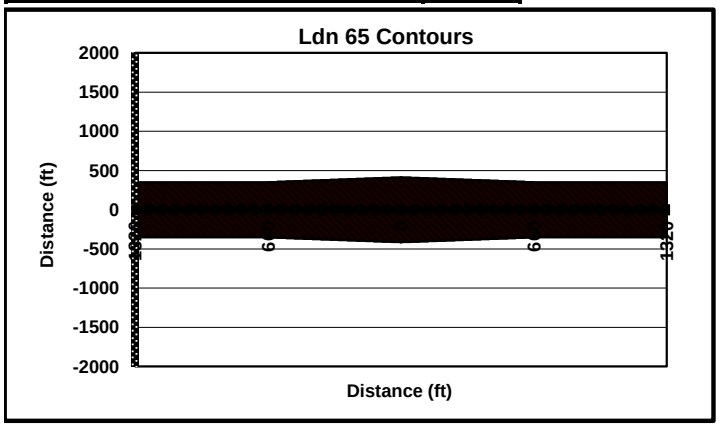
Non Train Noise Environment			
Urban			1
Suburban			2
Rural			3
User Defined Ldn =	50	dBA	4

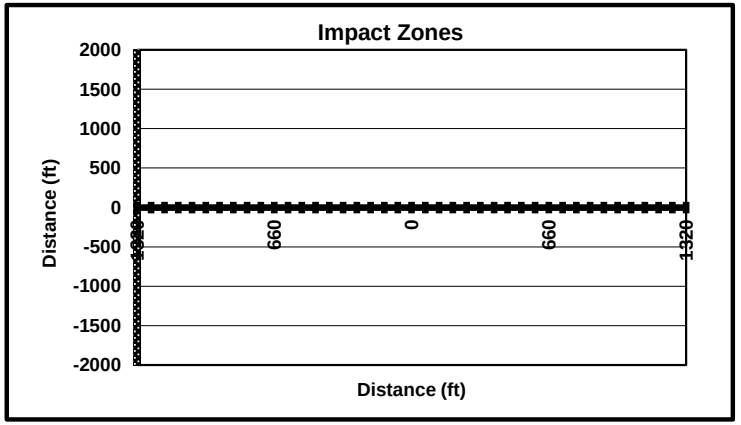
Shielding	
Dense Urban	1
Light Urban	2
Dense Suburban	3
Light Suburban	4
Rural	5
No Shielding	6

Length of Impact Area	
1/4 mile	1
20 seconds	2
15 seconds	3

Ldn 65 Contours Numeric Output (in feet)	
Existing 65 Ldn Contour at X-ing	413
Future 65 Ldn Contour at X-ing	413
Existing 65 Ldn Contour at 1/2 zone length	351
Future 65 Ldn Contour at 1/2 zone length	351
Zone Length	1320
1/2 Zone Length	660

Impact Zones Numeric Output (in feet)	
Impact Distance at X-ing	0
Severe Impact Distance at X-ing	0
Impact Distance at 1/2 zone length	0
Severe Impact Distance at 1/2 zone length	0
Zone Length	1320
1/2 Zone Length	660





Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
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Case: BNSF Stockton Sub Future

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	57	59
Source 1	44	45	30
Source 2	40	42	8
Source 3	62	54	56
Source 4	63	55	57
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS								
Parameter	**Source 1**		**Source 2**		**Source 3**		**Source 4**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	265	distance (ft)	265	distance (ft)	265	distance (ft)	265
Daytime Hours	speed (mph)	50	speed (mph)	50	speed (mph)	50	speed (mph)	50
(7 AM - 10 PM)	trains/hour	0.933	trains/hour	0.933	trains/hour	0.4	trains/hour	0.4
	locos/train	1	cars/train	5	locos/train	4	length of cars (ft) / train	4000
Nighttime Hours	speed (mph)		speed (mph)		speed (mph)	50	speed (mph)	50
(10 PM - 7 AM)	trains/hour		trains/hour		trains/hour	0.667	trains/hour	0.667
	locos/train		cars/train		locos/train	4	length of cars (ft) / train	4000
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Jointed Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Embedded Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Aerial Structure?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Barrier Present?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Intervening Rows of of Buildings	number of rows	0	number of rows	0	number of rows	0	number of rows	0

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
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Case: BNSF Stockton Past Port Chicago Future

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	57	59
Source 1	62	54	56
Source 2	63	55	57
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	265	distance (ft)	265		
Daytime Hours	speed (mph)	50	speed (mph)	50		
(7 AM - 10 PM)	trains/hour	0.4	trains/hour	0.4		
	locos/train	4	length of cars (ft) / train	4000		
Nighttime Hours	speed (mph)	50	speed (mph)	50		
(10 PM - 7 AM)	trains/hour	0.667	trains/hour	0.667		
	locos/train	4	length of cars (ft) / train	4000		
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
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Case: RPRC Chevron Lead Future

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	66	52
Source 1	64	65	52
Source 2	58	60	35
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	6	distance (ft)	6		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	0.2	trains/hour	0.2		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)		speed (mph)			
(10 PM - 7 AM)	trains/hour		trains/hour			
	locos/train		length of cars (ft) / train			
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
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Case: RPRC Cutting Lead Future

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	66	52
Source 1	64	65	52
Source 2	58	60	35
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	6	distance (ft)	6		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	0.2	trains/hour	0.2		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)		speed (mph)			
(10 PM - 7 AM)	trains/hour		trains/hour			
	locos/train		length of cars (ft) / train			
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
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Case: RPRC Harbor Lead Future

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	67	44
Source 1	64	66	44
Source 2	59	61	27
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	20	distance (ft)	20		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	1.4	trains/hour	1.4		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)		speed (mph)			
(10 PM - 7 AM)	trains/hour		trains/hour			
	locos/train	1	length of cars (ft) / train			
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
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Case: RPRC LRT Lead Future

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	67	42
Source 1	64	66	42
Source 2	58	60	25
Source 3	0	0	0
Source 4	0	0	0
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS						
Parameter	**Source 1**		**Source 2**		**Source 3**	
Source Num.	Freight Locomotive	9	Freight Cars	10		
Distance (source to receiver)	distance (ft)	28	distance (ft)	28		
Daytime Hours	speed (mph)	10	speed (mph)	10		
(7 AM - 10 PM)	trains/hour	2.2	trains/hour	2.2		
	locos/train	1	length of cars (ft) / train	600		
Nighttime Hours	speed (mph)		speed (mph)			
(10 PM - 7 AM)	trains/hour		trains/hour			
	locos/train		length of cars (ft) / train			
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		
Jointed Track?	Y/N	n	Y/N	n		
Embedded Track?	Y/N	n	Y/N	n		
Aerial Structure?	Y/N	n	Y/N	n		
Barrier Present?	Y/N	n	Y/N	n		
Intervening Rows of of Buildings	number of rows	0	number of rows	0		

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
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Case: UP Martinez Sub Future East of Pinole

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	58	59
Source 1	53	51	45
Source 2	50	48	42
Source 3	61	52	54
Source 4	63	54	57
Source 5	46	38	40
Source 6	44	36	38
Source 7	41	41	30
Source 8	35	37	8

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS								
Parameter	**Source 1**		**Source 2**		**Source 3**		**Source 4**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	230	distance (ft)	230	distance (ft)	230	distance (ft)	230
Daytime Hours	speed (mph)	50	speed (mph)	50	speed (mph)	40	speed (mph)	40
(7 AM - 10 PM)	trains/hour	2.733	trains/hour	2.733	trains/hour	0.4	trains/hour	0.4
	locos/train	1	cars/train	5	locos/train	3	length of cars (ft) / train	5000
Nighttime Hours	speed (mph)	50	speed (mph)	50	speed (mph)	40	speed (mph)	40
(10 PM - 7 AM)	trains/hour	0.667	trains/hour	0.667	trains/hour	0.667	trains/hour	0.667
	locos/train	1	cars/train	5	locos/train	3	length of cars (ft) / train	5000
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Jointed Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Embedded Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Aerial Structure?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Barrier Present?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Intervening Rows of of Buildings	number of rows	0	number of rows	0	number of rows	0	number of rows	0

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Source 1 and 2 = Amtrak San Joaquin and Capitol Corridor
Source 3 and 4 = Freight trains
Source 5 and 6 - Amtrak Coast Starlight
Sources 7 and 8 - Amtrak California Zephyr

Source 5		Source 6		Source 7		Source 8	
Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Commuter Diesel Locomotive	2	Commuter Rail Cars	3
distance (ft)	230	distance (ft)	230	distance (ft)	230	distance (ft)	230
speed (mph)	50	speed (mph)	50	speed (mph)	50	speed (mph)	50
trains/hour	0.067	trains/hour	0.067	trains/hour	0.133	trains/hour	0.133
locos/train	2	cars/train	13	locos/train	2	cars/train	8
speed (mph)	50	speed (mph)	50	speed (mph)		speed (mph)	
trains/hour	0.111	trains/hour	0.111	trains/hour		trains/hour	
locos/train	2	cars/train	13	locos/train		cars/train	
	0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
number of rows	0	number of rows	0	number of rows	0	number of rows	0

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
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Case: UP Martinez Sub Future South of Pinole

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	58	59
Source 1	51	49	43
Source 2	50	48	42
Source 3	60	52	54
Source 4	63	55	57
Source 5	44	36	38
Source 6	44	36	38
Source 7	39	39	29
Source 8	35	37	7

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS								
Parameter	**Source 1**		**Source 2**		**Source 3**		**Source 4**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	285	distance (ft)	285	distance (ft)	285	distance (ft)	285
Daytime Hours	speed (mph)	60	speed (mph)	60	speed (mph)	50	speed (mph)	50
(7 AM - 10 PM)	trains/hour	2.733	trains/hour	2.733	trains/hour	0.4	trains/hour	0.4
	locos/train	1	cars/train	5	locos/train	3	length of cars (ft) / train	5000
Nighttime Hours	speed (mph)	60	speed (mph)	60	speed (mph)	50	speed (mph)	50
(10 PM - 7 AM)	trains/hour	0.667	trains/hour	0.667	trains/hour	0.667	trains/hour	0.667
	locos/train	1	cars/train	5	locos/train	3	length of cars (ft) / train	5000
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Jointed Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Embedded Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Aerial Structure?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Barrier Present?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Intervening Rows of of Buildings	number of rows	0	number of rows	0	number of rows	0	number of rows	0

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Source 1 and 2 = Amtrak San Joaquin and Capitol Corridor
Source 3 and 4 = Freight trains
Source 5 and 6 - Amtrak Coast Starlight
Sources 7 and 8 - Amtrak California Zephyr

Source 5		**Source 6**		**Source 7**		**Source 8**	
Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Commuter Diesel Locomotive	2	Commuter Rail Cars	3
distance (ft)	285	distance (ft)	285	distance (ft)	285	distance (ft)	285
speed (mph)	60	speed (mph)	60	speed (mph)	60	speed (mph)	60
trains/hour	0.067	trains/hour	0.067	trains/hour	0.133	trains/hour	0.133
locos/train	2	cars/train	13	locos/train	2	cars/train	8
speed (mph)	60	speed (mph)	60	speed (mph)		speed (mph)	
trains/hour	0.111	trains/hour	0.111	trains/hour		trains/hour	
locos/train	2	cars/train	13	locos/train		cars/train	
	0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
Y/N	n	Y/N	n	Y/N	n	Y/N	n
number of rows	0	number of rows	0	number of rows	0	number of rows	0

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project
Copyright 2006, HMMH Inc.
Case: UP Tracy Sub Future

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	65	60	59
Source 1	44	45	29
Source 2	40	42	7
Source 3	59	54	53
Source 4	64	59	58
Source 5	0	0	0
Source 6	0	0	0
Source 7	0	0	0
Source 8	0	0	0

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS								
Parameter	**Source 1**		**Source 2**		**Source 3**		**Source 4**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	270	distance (ft)	270	distance (ft)	270	distance (ft)	270
Daytime Hours	speed (mph)	50	speed (mph)	50	speed (mph)	50	speed (mph)	50
(7 AM - 10 PM)	trains/hour	0.933	trains/hour	0.933	trains/hour	0.467	trains/hour	0.467
	locos/train	1	cars/train	5	locos/train	4	length of cars (ft) / train	10000
Nighttime Hours	speed (mph)		speed (mph)		speed (mph)	50	speed (mph)	50
(10 PM - 7 AM)	trains/hour		trains/hour		trains/hour	0.333	trains/hour	0.333
	locos/train		cars/train		locos/train	4	length of cars (ft) / train	10000
Wheel Flats?		0.00%	% of cars w/ wheel flats	0.00%		0.00%	% of cars w/ wheel flats	0.00%
Jointed Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Embedded Track?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Aerial Structure?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Barrier Present?	Y/N	n	Y/N	n	Y/N	n	Y/N	n
Intervening Rows of of Buildings	number of rows	0	number of rows	0	number of rows	0	number of rows	0

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

Appendix 5.16-1 Vehicle Miles Traveled (VMT) Analysis Methodology and Results for the Contra Costa County General Plan Update Memorandum

Appendices

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FEHR PEERS

Memorandum

Date: June 2, 2023

To: Tanya Sundberg, PlaceWorks

From: Julie Morgan and Bruno Lertora, Fehr & Peers

Subject: Vehicle Miles Traveled (VMT) Analysis Methodology and Results for the Contra Costa County General Plan Update

WC18-3554

This memorandum presents the results of the transportation analysis prepared for the proposed Contra Costa County General Plan 2045, herein referred to as the Project, in Contra Costa County, California. The purpose of this memorandum is to present the methodology and results of the VMT analysis for the Project.

Project Characteristics

The Contra Costa County General Plan 2045 includes proposed changes in housing units and employment in unincorporated areas throughout the County. **Table 1** shows a summary of the proposed land use changes within each subarea of unincorporated Contra Costa County (the subareas are as defined in the Contra Costa Countywide Travel Demand Model). The lead consultant for the General Plan (PlaceWorks) provided data to Fehr & Peers that reflected the location and magnitude of the proposed land use changes. Please see the EIR for a detailed description of the Project.

Table 1: Proposed Land Use Changes by County Subarea

Subarea	Proposed Land Use Change in Unincorporated Contra Costa County, 2020-2045		
	Single Family Units	Multi-Family Units	Employees
Central	1,235	3,670	2,685
East	4,193	4,851	2,962
Tri-Valley	673	107	-
West	970	7,489	3,749
Total	**7,071**	**16,117**	**9,396**

Source: Placeworks; Fehr & Peers 2023.

Vehicle Miles Traveled Analysis

The California Environmental Quality Act (CEQA) Guidelines were updated in December 2019 per Senate Bill 743 (SB 743) to remove consideration of vehicle delay or Level of Service (LOS) from CEQA analysis and to require the use of Vehicle Miles Traveled (VMT) as a metric to evaluate a project's environmental impact on the transportation system. VMT measures the amount of driving generated by the project and is related to a variety of environmental effects that are linked to the usage of motor vehicles. SB 743 changes the focus of transportation impact analysis in CEQA from measuring *impacts on drivers* to measuring the *environmental impact of driving*.

The relevant CEQA Guidelines Appendix G Transportation Section checklist questions are:

Would the project:

a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
d. Result in inadequate emergency access?

Criterion B is the formal implementation of the SB 743 requirement to analyze VMT as part of the CEQA Transportation section. The relevant subsection of CEQA Guidelines section 15064.3(b) reads as follows:

(1) **Land Use Projects.** Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle

miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

(4) **Methodology.** A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

As noted in subsection (4), Contra Costa County, under its discretion as lead agency, has the authority to select the analysis methodology and CEQA significance criteria for use in the Transportation section of the General Plan Update EIR. Contra Costa County prepared and adopted the *Contra Costa County Transportation Analysis Guidelines* (the "Guidelines") in June 2020, which contains the County's recommended procedures for conducting VMT analysis. These Guidelines are primarily focused on the analysis requirements for individual, site-specific land use projects; however, some of the concepts contained in the Guidelines can be applied to larger scale land use plans such as the General Plan, as further described below.

Project Screening

In the County's Guidelines, there are four screening criteria that can be applied to screen projects out of conducting a full VMT analysis.

1. **Small Projects.** Projects that generate or attract fewer than 110 daily vehicle trips, or projects of 10,000 square feet or less of non-residential space or 20 residential units or less or otherwise generating less than 836 VMT per day.
2. **Projects Located in Transit Priority Areas (TPAs).** Residential, retail, office projects, or mixed-use projects, proposed within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor.
3. **Projects Located in Low VMT Areas.** Residential projects at 15% or below the baseline County-wide home-based average VMT per capita, or employment projects at 15% or below the baseline Bay Area average commute VMT per employee in areas with low VMT that incorporate similar VMT reducing features (i.e., density, mix of uses, transit accessibility).
4. **Public Facilities.** Public facilities (e.g., emergency services, passive parks (low-intensity recreation, open space), libraries, community centers, public utilities) and government buildings.

As described above, these Guidelines are primarily focused on analyzing the effects of individual, site-specific land use projects, and the screening criteria are designed as such. The proposed

General Plan is a long-range and large-scale plan that will affect land uses of a wide range of sizes and types, in a range of locations throughout the unincorporated County, and over a long planning horizon. As such, the General Plan Project does not fit within any of the above screening criteria and thus requires a full VMT assessment.

VMT Analysis Methodology

As described in the Guidelines, VMT should be estimated using the Contra Costa Countywide Travel Demand Model that is maintained by the Contra Costa Transportation Authority (often referred to as the CCTA Model). The CCTA Model allows analysts to forecast regional and local travel behavior as a function of local land use development decisions, transportation network infrastructure planning, and land use and network policies. The currently available CCTA Model reflects data included in Plan Bay Area 2040 and has a horizon year of 2040. Although the Bay Area Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) was recently updated with adoption of Plan Bay Area 2050, the currently available CCTA Model is still the best available tool for analysis of VMT impacts in Contra Costa County as it has the greatest level of detail of land uses and transportation facilities throughout the County.

The basic method is to insert the proposed project into the CCTA model and apply the model to determine both the trip generation and trip lengths of the vehicle trips associated with the proposed project. This calculation is done in the Model via the production and attraction trip matrices to be able to attribute automobile vehicle trips to the land use that generates the trip. The CCTA Model accounts for all trips within the nine-county Bay Area, and accounts for trips between the Bay Area and neighboring regions.

As described earlier in this memo, the location and magnitude of the residential and employment changes anticipated as a result of the proposed General Plan Update were provided by PlaceWorks and were incorporated into the CCTA model. As directed by the consultant team, the CCTA model was applied for two different scenarios and VMT calculations were prepared for each one:

- **Baseline No Project:** VMT was calculated using the year 2020 CCTA Model. This scenario serves as the baseline or point of comparison for environmental impact determinations related to the 2045 General Plan scenario.
- **Cumulative Plus Project:** VMT was calculated using the year 2045 CCTA Model with the Project's land use changes added to the appropriate transportation analysis zones (TAZs). The horizon year of the CCTA model available at the time this analysis was conducted was 2040. To create a year 2045 scenario, land use in the areas outside of unincorporated Contra Costa County was extrapolated based on the 2020 and 2040 data sets from the available CCTA model. Further, the recently-adopted Plan Bay Area 2050 was checked to see if additional transportation network enhancements were planned in Contra Costa

between 2040 and 2045 and that information was used to update the 2040 CCTA Model roadway network to reflect anticipated year 2045 conditions.

Policy Considerations

Contra Costa County has a Transportation Demand Management (TDM) ordinance and guidelines[1] to encourage project developers to use creative and effective ways to reduce motor vehicle trips and their associated impacts. The ordinance requires that all residential projects containing 13 or more dwelling units provide information to the residents about public transit, ridesharing, and active transportation options available in the vicinity of the project. Both residential and non-residential project developers are required to consult with the local transit provider about any needed infrastructure to connect the project with nearby transit services. Further, the guidelines present a range of potential TDM measures that project developers can consider, ranging from physical improvements that would be incorporated into the project's design (such as bike racks, traveler information kiosks, or pedestrian facilities linking the project site to a nearby transit stop) or operational programs that would be implemented once the project is occupied (such as providing transit or rideshare incentives).

The County is developing an updated Climate Action Plan (CAP) to guide its approach to reducing greenhouse gas emissions countywide. The CAP includes a VMT reduction strategy and several associated implementation actions that are aimed toward reducing motor vehicle travel and associated emissions. Strategy TR-1 is to "Improve the viability of walking, biking, zero-carbon commuting, and using public transit for travel within, to, and from the county;" the implementation actions associated with that strategy are to:

- Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report; Active Transportation Plan; and equity-focused plans, programs, and policies.
- Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities.
- Work with CCTA to fill gaps in the countywide Low Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bike facilities.
- Establish or join a shared mobility program that provides access to conventional bikes, e-bikes, and other micromobility modes.
- Support efforts to expand the service area and frequency of regional transit agencies, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT.

[1] Contra Costa County Transportation Demand Management Ordinance Guide, December 2009, https://www.contracosta.ca.gov/DocumentCenter/View/50168/TDM-Ordinance-Guide---FINAL, accessed June 1, 2023.

- Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance.
- Market the county's Northern Waterfront to attract innovative companies with jobs for residents.
- Require large residential, nonresidential, and mixed-use developments to participate in Transportation Demand Management strategies, including providing shuttle services between residential developments or employment centers and key transit centers, providing nonmotorized transportation options, offering telecommuting opportunities, and encouraging use of pre-tax commute benefits.
- Improve county-wide safety for cyclists by advocating for the passage of Vulnerable Road User Laws.
- Secure additional funding for the maintenance and expansion of bicycle, pedestrian, and public transit operations and infrastructure improvements.
- Coordinate with CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions.
- Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.
- Encourage and support increased regional integration of transit systems to promote more equitable fare structures, fare integration, easier transfers, including coordinated transfers between different transit systems and reduced wait times, improved information sharing, and generally a more seamless and modern system.

The TDM measures and VMT reduction strategies described above can be effective at reducing the VMT generated by individual developments when implemented in appropriate locations and with appropriate supporting resources, as noted in the statewide guidance on TDM effectiveness: California Air Pollution Control Officers Association's (CAPCOA) Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity.[2] Because this Project is a General Plan Update that will guide long-range development over a broad geographic area, it is not possible to predict with precision which strategies may be implemented at specific locations and at specific times. Further, the CCTA Model does not readily account for many of these measures, particularly those related to site-specific physical improvements, pedestrian and bicycle facilities, and ongoing operational or incentive programs. For those reasons, the potential effects of the TDM and VMT reduction strategies outlined in this section are not included in the VMT estimates presented here.

VMT Metrics

The County's Guidelines present several forms of VMT metrics that can be used to evaluate the impacts of a project. For example, it is recommended that residential projects use a metric of VMT per resident for all home-based trips, while employment projects use a metric of VMT per

[2] California Air Pollution Control Officers Association's (CAPCOA) Handbook, December 2021. Available at: https://www.airquality.org/ClimateChange/Documents/Final%20Handbook_AB434.pdf, accessed September 20, 2022.

employee for only the home-based-work trip purpose. Mixed-use projects are recommended to use a metric of total VMT per service population (where service population is the summation of residential population and employment).

Because this Project is a General Plan Update that will involve land development of many different types, sizes, and locations, the metric of total VMT per service population was determined to be the most appropriate for this analysis, as it captures all trip purposes from all types of development.

VMT Thresholds

The County's Guidelines present thresholds of significance that can be used to determine the significance of a project's VMT impacts. The basic threshold is that a project's VMT metric be at least 15% below a specific point of comparison. The point of comparison varies depending on the type of project: for residential projects, the point of comparison is the countywide average home-based VMT per capita, while for employment projects the point of comparison is the Bay Area regional average commute VMT per employee. For mixed-use projects, the threshold is that the project's total VMT per service population be at least 15% below the countywide average VMT per service population.

VMT Results

Results from the two CCTA model scenarios described above are presented in **Table 2**.

Table 2: Summary of VMT Results

Boundary	Project Area Values	Baseline (2020) No Project	Cumulative (2045) Plus Project
Unincorporated Contra Costa County	Total VMT	6,764,785	8,130,277
	Service Population[1]	203,484	274,311
	Total VMT per Service Population	33.2	29.6
Contra Costa County (combined incorporated and unincorporated areas)	Total VMT	40,148,708	48,504,298
	Service Population[1]	1,360,651	1,712,018
	Total VMT per Service Population	29.5	28.3

Source: Contra Costa Countywide Travel Demand Model; Fehr & Peers 2023.
Notes:
1. Service Population is defined as the sum of residential population and employment.

Please contact us with any questions.

October 2024 | Final Environmental Impact Report
State Clearinghouse No. 2023090467

CONTRA COSTA COUNTY 2045 GENERAL PLAN AND CLIMATE ACTION PLAN FINAL EIR

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PLACEWORKS

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1. Introduction

1.1 INTRODUCTION

This Final Environmental Impact Report (FEIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) as amended (Public Resources Code §§ 21000 et seq.), the State CEQA Guidelines (California Code of Regulations §§ 15000 et seq.), and the Contra Costa County CEQA Guidelines.

According to the CEQA Guidelines, Section 15132, the FEIR shall consist of:

(a) The Draft Environmental Impact Report (DEIR) or a revision of the DEIR;

(b) Comments and recommendations received on the DEIR either verbatim or in summary;

(c) A list of persons, organizations, and public agencies comments on the DEIR;

(d) The responses of the Lead Agency to significant environmental points raised in the review and consultation process; and

(e) Any other information added by the Lead Agency.

This document contains responses to comments received on the DEIR for the Contra Costa County 2045 General Plan (proposed General Plan Update) and 2024 Climate Action Plan (CAP) during the public review period, which began February 9, 2024, and closed April 8, 2024. This document represents the independent judgment of Contra Costa County, the Lead Agency. This document and the circulated DEIR comprise the FEIR, in accordance with CEQA Guidelines, Section 15132.

1.2 FORMAT OF THE FEIR

This document is organized as follows:

Section 1, Introduction. This section describes CEQA requirements and content of this FEIR.

Section 2, Response to Comments. This section provides a list of agencies and interested persons commenting on the DEIR, copies of comment letters received during the public review period, and individual responses to written comments. This section also includes responses to verbal comments received at a public hearing held by the County Zoning Administrator on March 18, 2024, regarding the DEIR. To facilitate review of the responses, agency comment letters are labeled with a letter, and public comments are labeled with a number. Within each comment letter, individual comments have been numbered, and the comment letter is followed by responses with references to the corresponding comment number.

Section 2.1, Master Responses. Several commenters raised similar issues; rather than responding individually, Master Responses have been developed to address the comments comprehensively. A reference to the Master Response is provided, where relevant, in responses to individual comments.

Section 3, Revisions to the DEIR. This section contains revisions to the DEIR text and figures resulting from comments received by agencies and interested persons as described in Section 2, and/or errors and omissions discovered subsequent to release of the DEIR for public review.

The responses to comments contain material and revisions that will be added to the text of the FEIR. Contra Costa County staff has reviewed this material and determined that none of this material constitutes the type of significant new information that requires recirculation of the DEIR for further public comment under CEQA Guidelines Section 15088.5. None of this new material indicates that the project will result in a significant new environmental impact not previously disclosed in the DEIR. Additionally, none of this material indicates that there would be a substantial increase in the severity of a previously identified environmental impact that will not be mitigated, or that there would be any of the other circumstances requiring recirculation described in Section 15088.5.

1.3 CEQA REQUIREMENTS REGARDING COMMENTS AND RESPONSES

CEQA Guidelines Section 15204(a) outlines parameters for submitting comments on DEIRs and reminds persons and public agencies that the focus of review and comment of DEIRs should be "on the sufficiency of the document in identifying and analyzing possible impacts on the environment and ways in which significant effects of the project might be avoided or mitigated. Comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate the significant environmental effects. At the same time, reviewers should be aware that the adequacy of an EIR is determined in terms of what is reasonably feasible. …CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters. When responding to comments, lead agencies need only respond to significant environmental issues and do not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIR."

CEQA Guidelines Section 15204(c) further advises, "Reviewers should explain the basis for their comments, and should submit data or references offering facts, reasonable assumptions based on facts, or expert opinion supported by facts in support of the comments. Pursuant to Section 15064, an effect shall not be considered significant in the absence of substantial evidence." Section 15204(d) also states, "Each responsible agency and trustee agency shall focus its comments on environmental information germane to that agency's statutory responsibility." Section 15204(e) states, "This section shall not be used to restrict the ability of reviewers to comment on the general adequacy of a document or of the lead agency to reject comments not focused as recommended by this section."

In accordance with CEQA, Public Resources Code Section 21092.5, copies of the written responses to public agencies will be forwarded to those agencies at least 10 days prior to certifying the EIR. The responses will be forwarded with copies of this FEIR, as permitted by CEQA, and will conform to the legal standards established for response to comments on DEIRs.

2. Response to Comments

Section 15088 of the CEQA Guidelines requires the Lead Agency (Contra Costa County) to evaluate comments on environmental issues received from public agencies and interested parties who reviewed the DEIR and prepare written responses.

This section provides all comments received on the DEIR and Contra Costa County's responses to each comment. When multiple commenters raised similar issues, rather than responding individually, the County prepared Master Responses to address the comments comprehensively.

Comment letters and specific comments are given letters and numbers for reference purposes. Where sections of the DEIR are excerpted in this document, the sections are shown indented. Changes to the DEIR text resulting from comments received are shown in Section 3.2, *DEIR Revisions in Response to Written Comments,* of this FEIR.

The following is a list of agencies and persons that submitted comments on the DEIR during the public review period and one received after the public review period.

Number Reference	Commenting Person/Agency	Date of Comment	Page No.
Agencies & Organizations			
A	East Bay Municipal Utility District	March 13, 2024	2-3
B	Department of Toxic Substances Control	March 22, 2024	2-27
C	Delta Stewardship Council	April 4, 2024	2-33
D	Alameda County Water District	April 4, 2024	2-45
E	Contra Costa Building and Construction Trades Council	April 5, 2024	2-51
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G	California Department of Transportation, Aeronautics Division	April 8, 2024	2-59
H	California Department of Transportation, District 4 Office of Community and Regional Planning	April 8, 2024	2-65
I	City of Lafayette	April 8, 2024	2-71
J	Communities for a Better Environment and Asian Pacific Environmental Network	April 8, 2024	2-75
K	Contra Costa Water District	April 8, 2024	2-91
L	Committee for Industrial Safety	April 8, 2024	2-103
M	Delta Protection Commission	April 8, 2024	2-111
Residents			
1	Jan Callaghan	March 18, 2024	2-135
Comments Received After Close of the Public Review Period			
N	Committee for Industrial Safety	April 22, 2024	2-139

2.1 MASTER RESPONSE 1

The lead agency's obligations related to responses to comments are described in CEQA Guidelines Section 15088, Evaluation of and Response to Comments. Responses to comments have been prepared consistent with the requirements set forth under CEQA Guidelines Section 15088. No additional response is needed if the comment does not raise a significant environmental issue (CEQA Guidelines Section 15088[a]). Lead agencies need only respond to significant environmental issues and do not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIR (CEQA Guidelines Section 15088[c]).

The key purpose of reviewing and commenting on a DEIR includes sharing expertise, disclosing agency analyses, checking for accuracy, detecting omissions, discovering public concerns, and soliciting counter proposals. CEQA Guidelines Section 15204, Focus of Review, in part states:

> a) In reviewing draft EIRs, persons and public agencies should focus on the sufficiency of the document in identifying and analyzing the possible impacts of the environment and the ways in which the significant effects of the project might be avoided or mitigated…CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commenters. When responding to comments, lead agencies need only respond to significant environmental issues and do not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIR.
>
> c) Reviewers should explain the basis for their comments, and should submit data or references offering facts, reasonable assumptions based on facts, or expert opinion supported by facts in support of the comments. Pursuant to Section 15064, an effect shall not be considered significant in the absence of substantial evidence.

Comments that are the focus of this Master Response do not identify significant environmental issues related to the analysis in the DEIR or do not provide documentation in support of the comments; therefore, no response is required. However, the comments are part of the public record and will be forwarded to the County Planning Commission and Board of Supervisors prior to the public hearings on the project.

2. Response to Comments

LETTER A – East Bay Municipal Utility District (19 pages)

EAST BAY
MUNICIPAL UTILITY DISTRICT

March 13, 2024

Will Nelson, Principal Planner
Contra Costa County
Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

Re: Notice of Availability of a Draft Environmental Impact Report – Contra Costa County 2045 General Plan and Climate Action Plan 2024 Updates

Dear Mr. Nelson:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Draft Environmental Impact Report (EIR) for the Contra Costa County 2045 General Plan and Climate Action Plan 2024 Updates located in Contra Costa County (County). EBMUD provided comments on the Notice of Preparation of the Draft EIR for the project on October 16, 2023. EBMUD's original comments (see enclosure) still apply regarding water service, Mokelumne Aqueducts, water recycling, and water conservation.

A-1

If you have any questions concerning this response, please contact Timothy R. McGowan, Senior Civil Engineer, Major Facilities Planning Section at (510) 287-1981.

Sincerely,

David J. Rehnstrom
Manager of Water Distribution Planning

DJR:AT:djr
wdpd24_027_Contra Costa County 2045 General Plan and Contra Costa County Climate Action Plan 2024.doc

Attachment: EBMUD's October 16, 2023 comment letter

Recycled Paper

EAST BAY
MUNICIPAL UTILITY DISTRICT

October 16, 2023

Will Nelson, Principal Planner
Contra Costa County
Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

Re: Notice of Preparation for the Contra Costa County 2045 General Plan and Climate Action Plan Environment Impact Report and Notice of Public Scoping Meeting

Dear Mr. Nelson:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Contra Costa County 2045 General Plan and Climate Action Plan located in the Contra Costa County (County). EBMUD has the following comments.

WATER SERVICE

Effective January 1, 2018, water service for new multiunit structures shall be individually metered or sub-metered in compliance with Section 537 of California's Water Code & Section 1954.201-219 of California's Civil Code, which encourages conservation of water in multifamily residential and mixed-use multi-family and commercial buildings by requiring metering infrastructure for each dwelling unit, including appropriate water billing safeguards for both tenants and landlords. EBMUD water services shall be conditioned for all development projects within the General Plan area that are subject to these metering requirements and will be released only after the project sponsor has satisfied all requirements and provided evidence of conformance with Section 537 of California's Water Code & Section 1954.201-2019 of California's Civil Code. A-2

Main extensions that may be required to serve any specific developments within the General Plan area to provide adequate domestic water supply, fire flows, and system redundancy will be at the project sponsor's expense. Please see the attached EBMUD documents for California (Waterworks Standards) Code of Regulations, Title 22, Section 64572 (Water Main Separation) and EBMUD requirements for placement of water mains (Attachment 1). Pipeline and fire hydrant relocations and replacements due to modifications of existing streets, and off-site pipeline improvements, also at the project sponsor's expense, may be required depending on EBMUD metering requirements and fire flow requirements set by the local fire department. When the development plans are finalized for individual projects within the General Plan, project sponsors for individual projects should contact EBMUD's New Business Office and request a water service A-3

estimate to determine costs and conditions of providing water service to the development. Engineering and installation of new and relocated pipelines and services require substantial lead time, which should be provided for in the project sponsor's development schedule. A-3

EBMUD's Standard Site Assessment Report indicate the potential for contaminated soils or groundwater to be present within development projects within the General Plan area. The project sponsor should be aware that EBMUD will not install piping or services in contaminated soil or groundwater (if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste or that may be hazardous to the health and safety of construction and maintenance personnel wearing Level D personal protective equipment. Nor will EBMUD install piping or services in areas where groundwater contaminant concentrations exceed specified limits for discharge to the sanitary sewer system and sewage treatment plants. The project sponsor must submit copies to EBMUD of all known information regarding soil and groundwater quality within or adjacent to the project boundary and a legally sufficient, complete and specific written remediation plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of contaminated soil and groundwater. A-4

EBMUD will not design piping or services until soil and groundwater quality data and remediation plans have been received and reviewed and will not start underground work until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists, or the information supplied by the project sponsor is insufficient, EBMUD may require the project sponsor to perform sampling and analysis to characterize the soil and groundwater that may be encountered during excavation, or EBMUD may perform such sampling and analysis at the project sponsor's expense. If evidence of contamination is discovered during EBMUD work on the project site, work may be suspended until such contamination is adequately characterized and remediated to EBMUD standards.

MOKELUMNE AQUEDUCTS

EBMUD's Mokelumne Aqueducts (Aqueduct) right-of-way (owned in fee) is located within portions of the County (see Attachment 2 - Map of EBMUD Aqueducts within Contra Costa County). Any projects being planned within or immediately adjacent to EBMUD property will need to follow EBMUD's Procedure 718 – Raw Water Aqueduct Right-of-Way Non-Aqueduct Uses. A copy of the procedure is attached for your reference (see Attachment 3). A-5

Design drawings for any project encroachment (roadway, utility, facility, etc.) or restoration projects crossing or within the Aqueduct right-of-way will need to be submitted to EBMUD for review of possible drainage, site grading, fencing, construction access, and other conditions that may impact EBMUD property. EBMUD requires a full set of drawings (full size or 11" x 17") as well as an electronic copy in PDF format. All submittals shall be sent to the attention of Vincent H. Pon, P.E., Superintendent of A-6

Aqueduct Section, 1804 West Main Street, Stockton, CA 95203. Additional information and an encroachment package are included in EBMUD's Procedure 718. Applications for non-EBMUD uses will not be processed unless accompanied by the appropriate application fees outlined in the current applicable Water and Wastewater System Schedule of Rates and Charges and Fees. Contractors must secure an encroachment permit from EBMUD Aqueduct Section prior to mobilizing and starting construction work. A pre-construction meeting with EBMUD is mandatory. A-6

When a project involves the construction of a retaining wall and fence along EBMUD property line; these must be constructed completely outside of EBMUD property, including all footings. The project sponsor shall contact EBMUD's Survey Section to coordinate identifying, locating and marking correct property lines. A-7

WATER RECYCLING

EBMUD's Policy 9.05 requires that customers use non-potable water, including recycled water, for non-domestic purposes when it is of adequate quality and quantity, available at reasonable cost, not detrimental to public health and not injurious to plant, fish and wildlife to offset demand on EBMUD's limited potable water supply. A-8

The County's boundaries include the City of San Ramon and Town of Danville that fall within and around the service area of the Dublin San Ramon Services District - EBMUD Recycled Water Authority (DERWA) and EBMUD's San Ramon Valley's Recycled Water Project transmission and distribution pipeline infrastructure. New projects and developments present several opportunities for recycled water uses ranging from landscape irrigation, toilet flushing, cooling, and other non-potable commercial and industrial applications that can be served by existing or expanded recycled water pipelines in the future. In 2019, DERWA and the participating agencies implemented a moratorium on new recycled water connections in San Ramon and Danville pending securing additional wastewater sources that can be utilized to expand the treatment and service of recycled water within the San Ramon Valley Region. Therefore, as EBMUD advances plans and implements its recycled water supply expansion in that region, EBMUD requests the County and their developers coordinate closely with EBMUD and consider potential recycled water uses during the planning of the various General Plan components to further explore the options and requirements relating to recycled water use. Accordingly, EBMUD will assess and consider the feasibility of providing recycled water to specific project areas for appropriate uses. A-9 A-10

WATER CONSERVATION

Individual projects within the General Plan area presents an opportunity to incorporate water conservation measures. EBMUD requests that the County include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance," (Division 2, Title 23, California Code of A-11

Regulations, Chapter 2.7, Sections 490 through 495). The project sponsor should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.
If you have any questions concerning this response, please contact Timothy R. McGowan, Senior Civil Engineer, Major Facilities Planning Section at (510) 287-1981.

A-11

Sincerely,

David J. Rehnstrom
Manager of Water Distribution Planning

DJR:EZ:djr
wdpd23_227 Contra Costa County 2045 General Plan and Climate Action Plan.doc

Attachments:
1. Applicant Pipeline Design Criteria
2. Map of Mokelumne Aqueducts
3. EBMUD Procedure 718 – Authorized Uses of Pipeline Rights-of-Way

EAST BAY MUNICIPAL UTILITY DISTRICT

Applicant Pipeline Design Criteria

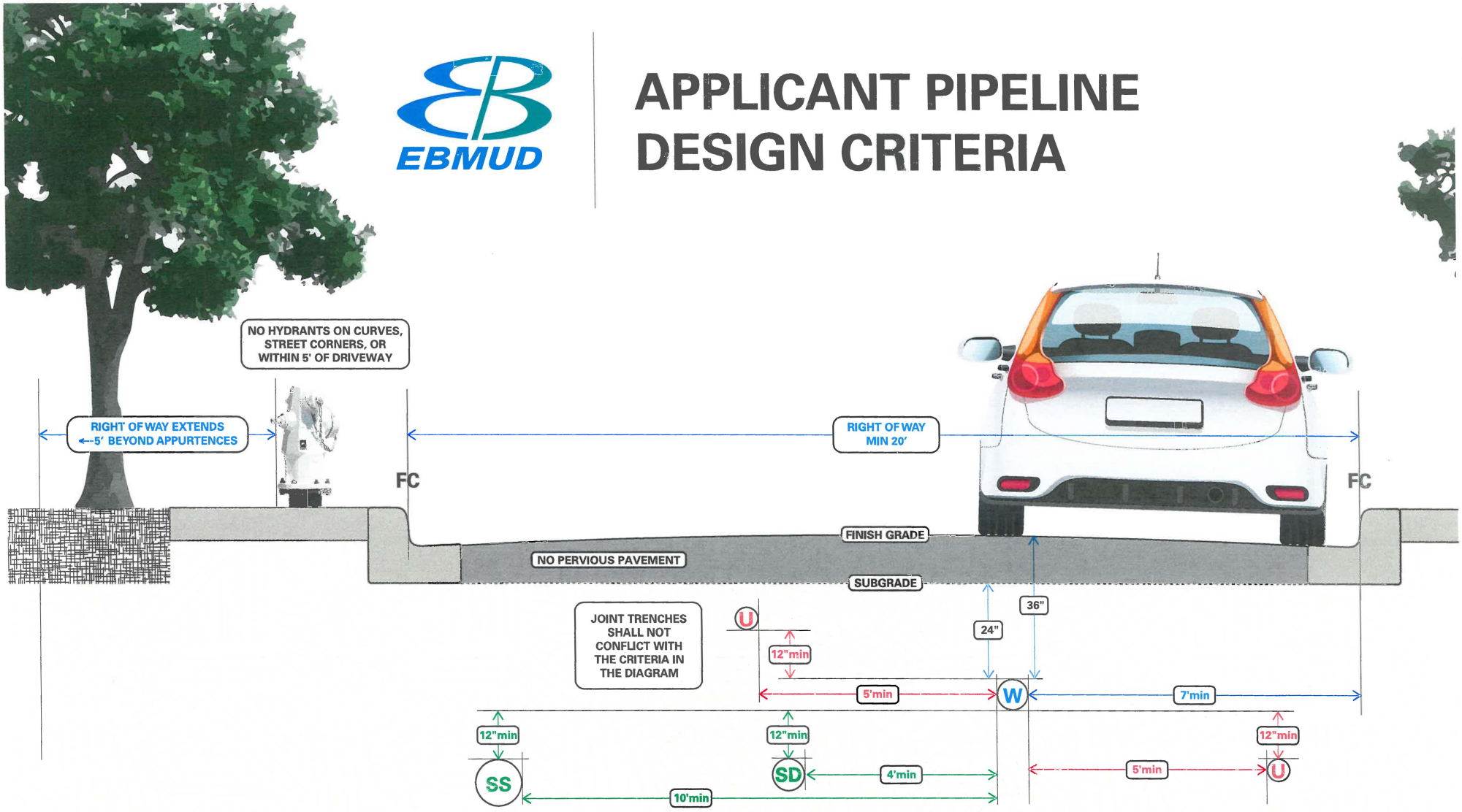
EBMUD values applicant pipeline projects and is committed to providing a thorough and efficient design. To ensure an efficient design process and to avoid significant delays the design criteria below should be adhered to when submitting improvement plans.

Design Criteria

- Water mains shall be seven (7) feet from face of curb.
- Water mains shall maintain a minimum one (1) foot vertical and five (5) foot horizontal clearance from other utilities.
- Gas mains shall meet the one (1) foot vertical separation requirement by installing the gas main below the water main only.
- Water mains shall maintain a minimum ten (10) foot horizontal clearance (O.D. to O.D.) and be located a minimum one (1) foot above any sewer main. Title 22 CCR
- Water mains shall maintain a minimum four (4) feet horizontal clearance (O.D. to O.D.) and be located a minimum one (1) foot above any storm drain. Title 22 CCR
- Water mains shall have a 36-inch cover to final grade and 24-inch cover to pavement subgrade.
- Joint trenches that are in conflict with the criteria above may delay the project. Submit to EBMUD final joint trench plans (no intent plans) which include the size of the joint trench and the utilities located inside.
- Water mains shall not be installed under pervious pavement.
- Water mains installed under decorative pavement, pavers, or stamped concrete will require an additional paving agreement.
- Hydrants shall not be located on curved sections of street, street corners, or within five feet of a driveway.
- Right of ways for 6-inch and 8-inch water mains shall be a minimum of 20 feet wide and extend five (5) feet past the water main centerline.
- Right of ways for 12-inch to 24-inch water mains shall be a minimum of 20 feet wide and extend eight (8) feet past the water main centerline.

Please contact the New Business Office representative assigned to your project if there are any questions regarding the requirements listed above. Meeting this criteria will enable the most efficient design possible.

APPLICANT PIPELINE DESIGN CRITERIA



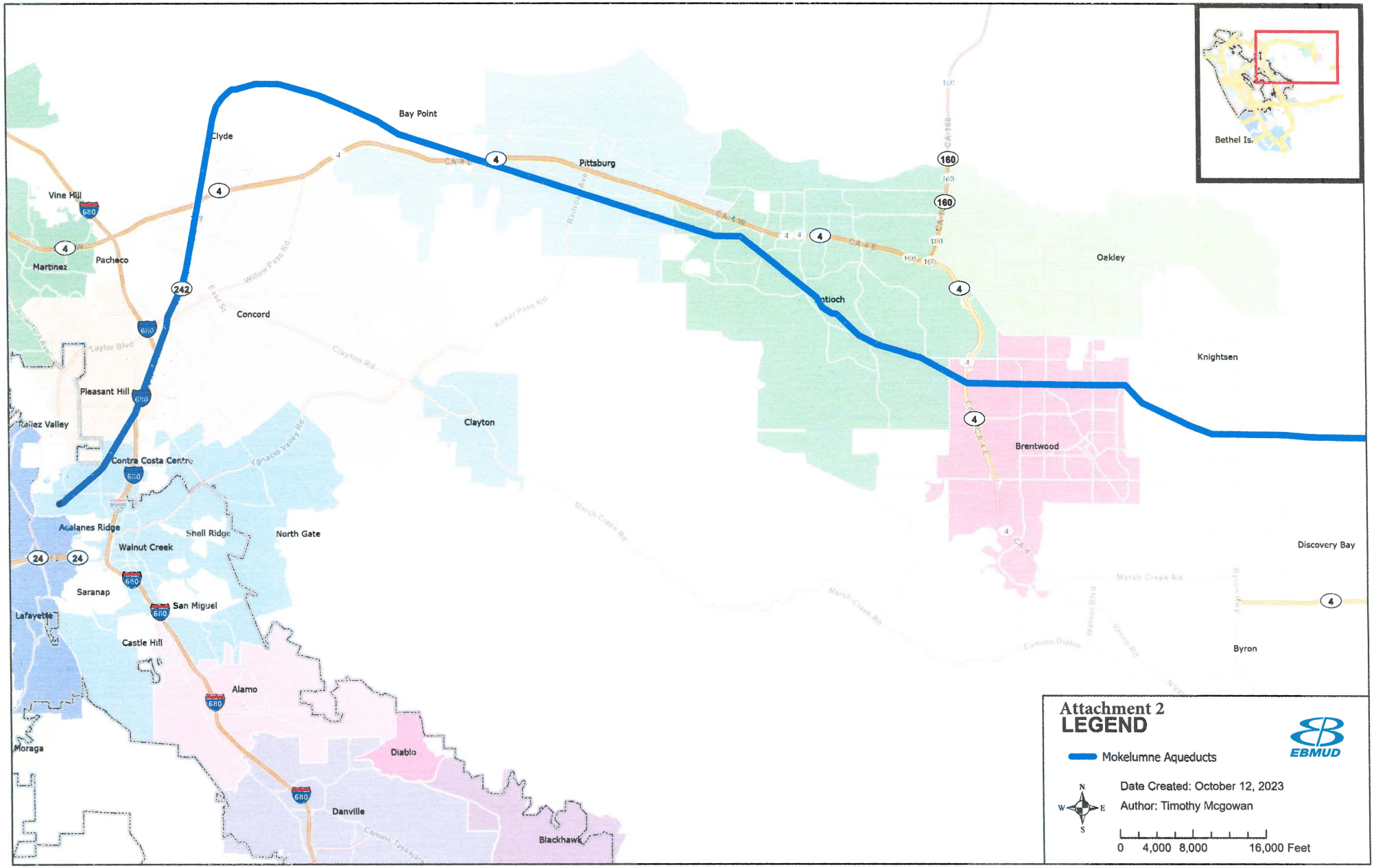
W = WATER
24" cover to subgrade
36" cover to final grade
7' inset from face of curb

U = UTILITY
min 12" vertical clearance
min 5' horizontal clearance

SS = SANITARY SEWER
min 12" below water
min 10' horizontal clearance

SD = STORM DRAIN
min 12" below water
min 4' horizontal clearance

FC= FACE OF CURB


Bay Point
Clyde
Pittsburg
Vine Hill
Martinez
Pacheco
Concord
Oakley
Knightsen
Pleasant Hill
Clayton
Brentwood
Contra Costa Centre
Walnut Creek
Acalanes Ridge
Shell Ridge
North Gate
Saranap
San Miguel
Lafayette
Castle Hill
Alamo
Moraga
Diablo
Danville
Blackhawk
Discovery Bay
Byron
Bethel Is.
Attachment 2
LEGEND
Mokelumne Aqueducts
EBMUD
Date Created: October 12, 2023
Author: Timothy Mcgowan
0 4,000 8,000 16,000 Feet

EBMUD

AUTHORIZED USES OF PIPELINE RIGHTS-OF-WAY

EFFECTIVE	08 JUL 20
SUPERSEDES	25 MAY 17
LEAD DEPARTMENT	O&M

PURPOSE – To establish procedures and criteria for review and authorization of overhead, surface, and sub-surface use of District-owned and easement established property containing raw and distribution water aqueducts and pipelines ("pipelines") for purposes other than installation, maintenance, and operation of District pipelines.

Forms Used

L-14	Limited Land Use Permit
K-47	Work Request Agreement
N-15	Certificate of Public Liability Insurance
N-17	Certificate of Workers' Compensation Insurance
	Application for Use of EBMUD Property or Request for Information
	General Fund Receipts for Miscellaneous Payments

Authority and Responsibility

Use, development, and control of fee-owned and easement established rights-of-way for District and non-District uses must be consistent with the District's operations, maintenance, security, and the rights and obligations of the District. District and non-District uses of District-owned pipeline rights-of-way may be permitted, at the District's sole discretion, only if the uses conform to Policy 7.01, Aqueduct and Distribution Pipeline Rights-of-Way Maintenance and the requirements of this Procedure.

- No use of District pipeline rights of way or property by others will be permitted as a condition to meet city/county zoning requirements or to obtain any land use permit, approval, or entitlement affecting properties not owned by the District.
- No use of District properties by others will be permitted except under terms of a written agreement.
- Use of pipeline rights-of-way for District purposes shall have the concurrence of the Director of Operations and Maintenance and shall include all applicable protections required for similar third-party use.
- The Board of Directors has exclusive authority to approve any proposed right-of-way use requiring the adoption and implementation of one or more mitigation measures to minimize potentially significant environmental impacts.
- The decision whether to authorize any party other than the District to use District-owned property containing pipelines for any non-District purpose is a legislative act undertaken at the sole discretion of District staff. No notice or hearing is required to consider an application for use of such property, and staff's decision is not subject to appeal.

Acceptable long-term uses of the pipeline rights-of-way include but are not necessarily limited to: utility crossings, road crossings, limited agriculture, equestrian and pedestrian trails, parks, oil and gas leases, and District-owned ground water wells. Acceptable long-term uses of rights-of-way and easements for future pipelines will be evaluated upon facility completion. Such uses will be authorized in writing. All approved uses will conform to the requirements and limitations described in the attached EBMUD Requirements for Entry or Use of Pipeline Rights-of-Way (Requirements for Entry or Use) and all other conditions as specified in the written approval.

The Water Supply Division and the Water Treatment and Distribution Division are each primarily responsible to implement this Procedure with respect to proposed uses of rights-of-way containing a facility "owned" by that Division. Facility "ownership" for this purpose is determined based on which Division has "Overall Responsibility" for the facility according to Table 1 of Procedure 706 – Facilities: Inspection, Maintenance and Repair. Wherever this Procedure allocates responsibility to both Divisions in the

alternative, the responsibility shall rest with the Division which owns the facility within the right-of-way which is proposed to be used.

The Water Supply or the Water Treatment and Distribution Divisions are responsible for monitoring permitted uses and detecting and preventing unauthorized uses of pipeline rights-of-way, respectively.

The Office of General Counsel and the Manager of Real Estate Services will be consulted when an unauthorized user will not voluntarily desist.

The Water Supply or the Water Treatment and Distribution Divisions are responsible for coordinating the development of recommendations with respect to the terms and conditions to be stipulated when a District or non-District use of a pipeline right-of-way is to be permitted.

The Director of Engineering and Construction shall be consulted as necessary to provide location analysis or to determine what structural, grading, drainage, corrosion protection or other engineering measures are required and to obtain estimates of engineering, design and inspection costs.

Inquiries and Applications for Use

Applications and inquiries for use of pipeline rights-of-way shall be processed by the Water Operations Department. Applications for non-District uses will not be processed unless accompanied by the appropriate application fees specified in the District's "Water and Wastewater System Schedules of Rates and Charges, Capacity Charges, and Other Fees".

The **Water Operations Department** is responsible for:

- Providing requirements for use of the District's pipeline rights-of-way to applicants requesting use of the right-of-way. See the attached Requirements for Entry or Use.
- Providing requirements to applicants for proposed work located adjacent to the District's pipeline rights-of-way which has the potential to impact the District's pipelines (e.g., proposed excavations that may include use of tiebacks that could result in a vertical encroachment and/or excavations that have the potential for ground movements that could damage District pipelines).
- Checking for completeness of any permit (e.g., Encroachment Permit Application) to ensure compliance with the requirements for entry or use of pipeline rights-of-way contained in Requirements for Entry or Use plus any other conditions applicable to the proposed use.
- Collecting engineering, plan review and construction inspection costs and documentation of insurance coverage, if necessary.
- Monitoring existing encroachments and inspection of the construction of new approved encroachments.
- Providing information to the Engineering and Construction Department for technical input regarding additional permit requirements or special restrictions that may be applicable (in addition to those outlined in the Requirements for Entry or Use).
- Assuring proper environmental documentation for proposed uses through consultation with the Water Distribution Planning Division, when appropriate. Policy 7.01, Aqueduct and Distribution Pipeline Rights-of-Way Maintenance, requires the District to ensure that any construction impacts from third-party use of District rights of way are mitigated to the level of "no significant impact."

Real Estate Services is responsible for:

- Advising the Manager of Water Supply or the Manager of Water Treatment and Distribution of any real estate matters which relate to a specific proposed use.
- Collecting application fees and charges, preparing and executing limited land use permits, leases, easements, and all other property-related agreements (except for revocable licenses and temporary entry permits) and recommending fees and charges appropriate to the property use allowed, and for securing payment. See the current applicable Water and Wastewater System Schedule of Rates and Charges and Fees.
- Maintaining records relating to rights-of-way crossings and use, and providing information to the Engineering and Construction Department for the update of District pipeline drawings.

Types of Permit License or Easement

The Manager of Water Supply or Manager or Water Treatment and Distribution shall keep available the forms listing the general requirements set forth in Requirements for Entry or Use for each of the following:

Temporary Entry/Temporary Construction Permit

For temporary access to pipeline rights-of-way such as for surveying, potholing, construction, for temporary access via the District's right-of-way to property adjacent to the right-of-way, and other similar short-term situations.

Revocable License and Revocable Landscape License

For pipelines, sewers, storm drains, overhead and underground cables, public trails, landscaping and other crossings or lateral encroachments.

Limited Land Use Permit

Provides for agricultural or other surface use of the right-of-way for a period not to exceed one year (vehicular parking is prohibited). These permits are renewable annually if inspection reveals satisfactory conformance to conditions of permit.

Easement

For streets, highways, large pipelines, canals and railroads, and other permanent publicly-owned encroachments. Easements are officially recorded with the county having jurisdiction. The consideration for the easement (e.g., fee) will be based on the value of the property being encumbered.

The Manager of Water Supply or Manager of Water Treatment and Distribution shall request review of any proposed revisions to application forms and lists of requirements from the Engineering and Construction Department, Real Estate Services Division, Office of General Counsel, and the District's Pipe Committee.

Processing Applications

Temporary Entry Permits

The Manager of Water Supply or Manager or Water Treatment and Distribution may issue temporary entry and construction permits including imposing standard and temporary conditions relating to the use. The Manager of Real Estate Services and the Office of General Counsel will be consulted regarding unusual circumstances.

Revocable Licenses

The Manager of Water Supply or Manager of Water Treatment and Distribution, if warranted, shall conduct a field investigation to determine pipeline protection requirements and in consultation with the Design Division or the Pipeline Infrastructure Division, will set forth the engineering and operating requirements.

The Manager of Water Supply or Manager of Water Treatment and Distribution, shall then specify any and all requirements, including special conditions to the applicant, and discuss the terms and conditions of the license agreement as well as any processing, design and inspection costs and license fee. The Manager of Water Supply or Manager of Water Treatment and Distribution may then enter into a standard license agreement with relevant special conditions on behalf of the District. The Manager of Real Estate Services and the Office of General Counsel shall be consulted regarding any unusual circumstances.

Copies of all revocable licenses issued by the Water Supply Division or the Water Treatment and Distribution Division shall be provided to the Manager of Real Estate Services.

Limited Land Use Permits

The Manager of Water Supply or Manager of Water Treatment and Distribution, shall convey the District's requirements to the applicant and investigate to determine any special conditions.

Real Estate Services shall prepare the Limited Land Use Permit (Form L-14) in duplicate, including special conditions or stipulations, accompanied by a District-prepared location sketch that will refer to pipeline stationing and other appropriate location identifiers, including adjacent pipeline structures.

Engineering and Construction Department shall prepare the location sketch.

After payment of the stipulated consideration determined by Real Estate Services, the Manager of Water Supply or Manager of Water Treatment and Distribution shall review and execute the permit. These copies are then returned to the Manager of Real Estate Services, together with any stipulated consideration.

Forty-five days before expiration of a Limited Land Use Permit, the Manager of Real Estate Services shall notify the Manager of Water Supply or Manager of Water Treatment and Distribution, who shall investigate the permittee's operations. If renewal of the permit is recommended, the permit will be renewed by letter from the Manager of Real Estate Services.

Leases and Easements

The Water Supply or Water Treatment and Distribution Divisions shall conduct a field investigation to determine requirements for pipeline protection and, in consultation with the Design Division or Pipeline Infrastructure Division, if necessary, will set forth the engineering and operating requirements.

If structural or corrosion protective facilities are required, the Manager of Water Supply or Manager of Water Treatment and Distribution shall request the Manager of Design Division or Pipeline Infrastructure Division to proceed with the required design or plan reviews. (During design, the designer will communicate with the applicant's engineer.) Upon completion of design, the plans will be delivered to the applicant via the Manager of Water Supply or Manager of Water Treatment and Distribution, who will arrange for inspection as required.

The Manager of Real Estate Services shall discuss with the applicant the terms of the agreement and the amount of the consideration, including any processing, design, and inspection costs. Real Estate Services shall obtain an appraisal and engineering estimates, if necessary.

Upon agreement with the applicant, the Manager of Real Estate Services, shall draft, for review and approval by the Manager of Water Supply Division or the Manager of Water Treatment and Distribution Division and Office of General Counsel, an agreement granting the applicant the property interest under the terms and for the consideration as approved. Real Estate Services shall assure that evidence of insurance is provided, if required. The lease or easement shall be submitted to the District's Board of Directors for approval, if required by Procedure 108, Real Estate Transactions. Two copies of the lease or easement shall be sent to the applicant with instructions to sign and return the copies, together with the consideration, to the Manager of Real Estate Services. Easements shall be recorded and the applicant shall provide the Manager of Real Estate Services with the recording data.

Approvals

District and non-District uses of pipeline right-of-ways shall be confirmed in writing, listing any special conditions which may apply to the proposed use to the requesting District departments or third parties by the Manager of Water Supply or Manager of Water Treatment and Distribution.

Terminations

Any third-party use of the District's pipeline property may be terminated at the District's sole discretion, so long as the termination is authorized by and done in a manner compliant with the terms and conditions of the permit, license, or lease that governs the use. If the Water Supply Division or the Water Treatment and Distribution Division terminates any permit or license, the Manager of Real Estate Services and the Design Division shall be so notified by memo. The Office of General Counsel may be consulted before undertaking a termination which may affect the District's legal interests.

Terms and Conditions

The final determination of generally applicable terms and conditions appropriate for District uses of pipeline properties rests with the Director of Operations and Maintenance.

A specific third party applicant for use of pipeline property may be required, as a condition of approval of the application, to comply with the generally applicable terms and conditions, or with different or additional terms and conditions that are determined to be in the District's best interest. The decision to approve or deny an application, and the selection of terms and conditions of any approval, shall rest with the Director of Operations and Maintenance. There is no right to an administrative appeal or hearing, and the decision of the Director or designee is final.

Records

The Manager of Real Estate Services shall maintain a file containing copies of all documents relating to right-of-way crossings or uses, except for temporary encroachment permits, and is responsible for the assignment of right-of-way crossing numbers to approved documents.

The Engineering and Construction Department shall maintain as-built and right-of-way drawings and other information of pipelines. Updates to these drawings shall be made following:

1. Grant of Revocable License or Easement. Notice to be supplied by the Manager of Real Estate Services.

2. Completion of crossing construction covered by license or easement. Notice, including "as built" location data, to be supplied by the applicant to the Water Supply Division or Water Treatment and Distribution Division for transmittal to the Engineering and Construction Department. This notice will be routed through the Engineering and Construction Department, as necessary, then to the Manager of Real Estate Services.

3. Termination of any pipeline right-of-way use. Notice to be supplied by the Manager of Real Estate Services.

Required Fees

Pipeline right-of-way fees for the processing of applications and documents related to proposed uses are included in the "Water and Wastewater System Schedules of Rates and Charges, Capacity Charges, and Other Fees". The Manager of Water Supply and Manager of Water Treatment and Distribution are responsible for periodic review and updating of Requirements for Entry or Use. The Manager of Real Estate Services is responsible for review and updating of Fees and Documentation Charges, Use of Aqueduct and Distribution Pipeline Rights-of-Way by Others.

References

Policy 7.01 – Aqueduct and Distribution Pipeline Rights-of-Way Maintenance
Procedure 108 – Real Estate Transactions
Procedure 436 – Miscellaneous Accounts Receivable and Cash Receipts
Procedure 706 – Facilities: Inspection, Maintenance and Repair
Requirements for Entry or Use of Pipeline Rights-of-Way (attached)
Water and Wastewater System Schedules of Rates and Charges, Capacity Charges, and Other Fees (as updated periodically)

EBMUD

EBMUD REQUIREMENTS FOR
ENTRY OR USE OF **PIPELINE RIGHTS-OF-WAY**

East Bay Municipal Utility District

1. Requests for encroachment rights or for other uses of the District's raw and distribution water aqueduct and pipeline ("pipeline") properties shall be directed to the Manager of Water Supply, 1804 West Main Street, Stockton, California 95203. Property uses shall only be permitted subject to appropriate written permit, license, easement, or lease agreement.

2. Requests for property uses shall be in writing and accompanied by a completed application, application fees, plan and profile drawings of the area and work involved. District pipeline stationing and adjacent above-ground structures must be shown. Applicant's horizontal and vertical control must be correlated to the District's. Drawings and maps shall be ANSI D size (22x34 inch) or ANSI B size (11x17 inch) and must also be provided in electronic .pdf format. Application must include complete insurance documentation.

3. The applicant must indemnify, defend, and hold harmless the District and associated personnel from and against any claims, losses, and liability arising by reason of the applicant's use of District's property or the applicant's acts or omissions pursuant to any permit or approval issued by the District, on such terms as the District may require. The applicant may be required to provide evidence of insurance coverage.

4. All requests for uses of District property must be consistent with requirements and limitations set forth by Procedure 718 and will be reviewed and approved on a case-by-case basis.

5. District land and facilities shall be restored to a condition as good as that which existed before applicant's entry on the right-of-way.

6. Applicant's use of property shall not increase District costs or interfere with District access, operations, maintenance, or repair of its facilities.

7. The applicant must pay the District the appraised value of the easement or lease, if appropriate, for the rights granted to the applicant. Appropriate environmental documentation must be completed in accordance with the California Environmental Quality Act before the rights can be granted. The District may require the applicant to prepare the documentation at its expense before the application will be considered for approval. The District will review the environmental documentation to determine whether it (i) adequately describes the applicant's project, (ii) contains a detailed disclosure and analysis of the project's impacts, (iii) describes feasible measures to mitigate any construction impacts to the District's right-of-way to a level of no significant impact, and (iv) is otherwise legally sufficient. The District may rely on any existing environmental documentation for the applicant's project if the District determines that the existing documentation meets the above-described standards.

8. For any District-approved encroachment, the applicant must pay the District for any of the following measures, as determined necessary by the District:

    a. Design of structural protective measures
    b. Design of fences or other structures
    c. Corrosion control protective measures
    d. District engineering, plan review, and inspection of activities
    e. Environmental documentation
    f. Application, permit or license fees.

9. The plan for the execution of the work must be approved by the District.

10. The type and weight of equipment working over the pipelines must be approved by the District.

11. The use of vibratory compaction equipment is prohibited on the pipeline right-of-way unless otherwise approved by EBMUD. Allowable compaction effort, allowable equipment, and maximum depth of each lift of fill shall be subject to District review and approval before start of construction.

12. A minimum of 48 hours notice must be given to the District before work commences on District pipeline right-of-way. Contact information will be provided in permit.

13. A minimum of 48 hours notice must be given to the District before work commences on District pipeline right-of-way. Contact information will be provided in permit.

14. A preconstruction meeting is required prior to start of work.

15. No building or portions of buildings shall be constructed on the property. No other types of structures shall be constructed unless specific approval is given by the District.

16. No longitudinal encroachments such as drainage ditches; gas, phone, or electrical lines; pipelines, or roads will be permitted. All property line fences (including footings) must be located completely outside pipeline property lines.

17. District staff shall monitor pile driving or other work which can result in vibration and occurs within 100 feet of the aqueducts. District staff shall also monitor other work located within 100 feet of the pipeline right-of-way, if such work has the potential to result in ground movements that could damage the District's facilities (i.e., large excavations with potential for horizontal or vertical ground deformations within the District's rights-of-way).

18. Railroad, freeway and highway crossings of the pipeline right-of-way shall be on permanent bridges with a minimum vertical clearance of 14 feet 6 inches between the finished ground surface and the underside of the bridge. Crossings of pipeline rights of way, on grade will be over structurally-encased aqueducts with a sleeve for a fourth aqueduct.

19. Street and road crossings constructed on grade shall incorporate protection of the pipelines. Protective measures will be designed by applicant's licensed engineer to District standards with specific District approval of each design.

20. Existing pipeline protective measures such as concrete slabs shall not be cut, penetrated, or otherwise disturbed. If a protective measure is cut, penetrated, or disturbed, it shall be replaced with a new protective measure, designed by applicant's licensed engineer to District standards with specific District approval of design.

21. Traffic control fences or approved barriers shall be installed along each side of the street, road or trail before opening to the public.

22. Temporary construction fences and barricades shall be installed by contractor as directed by the District.

23. No geotechnical exploration such as drilling or boring shall be allowed on an pipeline right-of-way without prior written approval from the District.

24. Any changes in finished grade in the pipeline right-of-way must be approved by the Aqueduct Section. Earth fills or cuts on adjacent property shall not encroach onto District property except where authorized for vehicular crossings on grade and where the District determines that there will be no detrimental effect on or maintenance of the pipelines.

25. Crossings shall be perpendicular to the pipelines and on a constant grade across District property.

26. Sanitary sewers, water lines, petroleum product lines, or other lines crossing above the pipelines must be encased in a steel, polyvinyl chloride (PVC), or reinforced concrete pipe conduit or be imbedded in reinforced concrete with a minimum vertical clearance of two (2) feet between the casing/embedment and the top of District pipelines. The casing shall extend the entire width of the pipelines right-of-way.

27. All pipelines crossing below the pipelines must be encased in a steel or reinforced concrete conduit and provide a minimum of three (3) feet of clearance between the casing and the bottom of the District pipelines.

28. Trenchless construction methods such as horizontal directional drilling or jack-and-bore between the top of the pipelines and the bottom of the protective structure (slab) are prohibited.

29. On pressurized pipe crossings, shutoff valves shall be provided outside and adjacent to both sides of District property.

30. At the point of crossing, steel pipeline crossings and steel casings shall incorporate electrolysis test leads, bond leads, and leads necessary for interference testing. Corrosion control devices, when required, must be approved by the District.

31. Cathodic protection for steel encasements must be installed as follows:

    - Provide a dielectric coating to the exterior surface of the steel casing within the District's right-of-way, 16 mil epoxy or equivalent.
    - Provide galvanic protection to the portion of the steel casing within the District's right-of-way in accordance with the National Association of Corrosion Engineers RP-01-69.
    - If the carrier pipe is constructed of ductile iron or steel, provide electrical isolation between the carrier and casing using casing insulators; redwood skids are not permitted.
    - Provide test results to the District demonstrating the adequacy of the cathodic protection system, and the adequacy of the electrical isolation of the carrier (if metallic) from the casing. The District reserves the right to witness any such tests.

32. Gravity drainage of District property shall be maintained. Open channels constructed across the right-of-way shall be paved with reinforced concrete. Headwalls, inlets, and other appurtenances shall be located outside District property. Drainage facilities shall be provided outside the District's property at the top and/or toe of fill slopes or cuts constructed adjacent to District property to assure adequate drainage.

33. Overhead electrical power conductors across the property shall be a minimum of 30 feet above ground. Communication and cable TV crossings shall be a minimum of 20 feet above the ground. Supporting poles or towers shall be located outside the pipelines right-of-way.

34. Buried electrical cables passing over the pipelines shall be installed in PVC conduit and encased in red concrete across the entire width of the right-of-way. In some cases, PVC-coated steel conduit with a red concrete cap may be substituted. All other buried cables shall be installed in conduits and marked in the appropriate Underground Service Alert (USA) colored marking materials and with surface signs installed at 4-foot intervals that include the utility name, type, and emergency contact information across the entire width of the right-of-way. The minimum vertical clearance between the conduit and the top of the District's pipelines is two (2) feet.

35. Electrical or telecommunications cables shall not be allowed to pass under the pipelines.

36. Vehicular parking and storage of equipment or material on aqueduct or distribution pipelines property are prohibited.

37. All District survey monuments and markers shall be undisturbed. If any District survey markers or monuments must be disturbed, they will be replaced or relocated by the District at applicant's expense prior to the start of any ground disturbing work.

38. All pipeline crossings involving mechanical excavation on the right-of-way require potholing of all pipelines at the site of the proposed crossing. Visible reference markings showing the pipeline alignments and depths to top of pipe shall be maintained for the duration of any mechanical excavation on District property. Excavations within two (2) feet of pipelines shall be made by hand. Entry permits are required for pothole work.

39. All grading or excavating of the right-of-way requires USA notification and the maintenance of a current inquiry identification number.

40. Certified six-sack mix is the minimum acceptable concrete batch to be used on the pipelines right-of-way. Concrete compression strength shall be 3,000 per square inch (PSI) or better at 28 days. If samples do not reach 3,000 PSI at 28 days, the entire section of slab or encasement related to that sample must be removed and replaced at applicant's expense.

41. Each truckload of concrete to be placed on the right-of-way may be sampled by the District. No water may be added to the mix after sampling.

42. Maximum allowable slump is three inches. All concrete exceeding three inches will be rejected and cannot be used on the right-of-way.

43. No traffic will be allowed over protective slabs until 3,000 PSI is reached.

44. All work areas shall be inspected by the District for final approval. As-built drawing submittals are required for District approval.

45. No work is allowed on weekends or District-recognized holidays unless otherwise authorized in the required permit.

A. Response to Comments from East Bay Municipal Utility District, dated March 13, 2024.

A-1 The East Bay Municipal Utility District (EBMUD) provided their original comments on the Notice of Preparation (dated October 16, 2023), regarding water service, Mokelumne Aqueducts, water recycling, and water conservation.

Refer to response to Comments A-2 to A-11.

A-2 EBMUD states that water services shall be conditioned for all development projects within the General Plan area in compliance with Section 537 of California's Water Code and Section 1954.201-219 of the California's Civil Code requirements, which requires individually or sub-metered water service for multi-unit structures. Water services will be released after the project sponsor has satisfied all requirements with Section 537 of California's Water Code and Section 1954.201-219 of the California's Civil Code.

As this is a State mandate, future development proposed under the General Plan area would have to comply with Section 537 of California's Water Code and Section 1954.201-219 of the California's Civil Code. This comment does not describe any inadequacies of the DEIR; therefore, no changes to the DEIR are necessary. See Master Response 1 for further explanation.

A-3 EBMUD states that main extensions may be required to serve any specific development within the General Plan area to provide adequate domestic water supply, fire flows, and system redundancy will be at the project sponsor's expense. EBMUD provides documents for California (Waterworks Standards) Code of Regulations, Title 22, Section 64572 (Water Main Separation) and EDMUD requirements for placement of water mains. EBUMD states that once development plans are finalized for individual projects within the General Plan area, project sponsors should contact EBMUD's New Business Office and request a water service estimate to determine cost and conditions for providing water service to development.

The DEIR is a programmatic EIR and does not analyze specific development projects. This comment refers to future developers and projects within the EBMUD service area, and indicates that such projects must follow listed requirements and procedures to ensure water services. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary. See Master Response 1 for further explanation.

A-4 EBMUD states that they will not install piping or services in contaminated soil or groundwater. EBMUD states that project sponsors must submit copies of all known information regarding soil and groundwater quality within or adjacent to the project boundary and a specific remediation plan for removal, treatment, and disposal of contaminated soils and groundwater. EBMUD will review remediation plans and determine the proper actions for development after review.

See response to Comment A-3. Impact 5.9-2, on page 5.9-41 of the DEIR, states that if future housing development facilitated by the General Plan area is found to be on a State-prepared list of hazardous waste sites pursuant to Government Code 65962.5, then future development would be required to do an environmental site assessment by a qualified professional to ensure that any proposed development, redevelopment, or reuse would not create a substantial hazard to the public or the environment. The analysis also states compliance with local, state, and federal level regulations would remedy all potential impacts caused by hazardous substances.

A-5 EBMUD states any project within or adjacent to EBMUD's Mokelumne Aqueduct property will need to follow EBMUD's procedure 718 – Raw Water Aqueduct Right-of-Way Non-Aqueduct Uses which the agency has attached for reference.

See response to Comment A-3. The DEIR is a programmatic EIR. Future development would be required to comply with all applicable regulations, including EBMUD's procedures. As this comment does not address any inadequacies of the DEIR, no further response is necessary. See Master Response 1 for further explanation.

A-6 EBMUD states that design drawings for any project encroachment (roadway, utility, facilities, etc.) or restoration projects crossing or within the Aqueduct right-of-way will need to be submitted to EBMUD for review of conditions that may impact EBMUD property. EBMUD indicates the items that must be included in the submittal and actions that must be done prior. EBMUD states that application for non-EBMUD uses will not be processed unless accompanied by the appropriate fees outlined in the Water and Wastewater System Schedule of Rates and Charges Fees, secure an encroachment permit from, and a mandatory pre-construction meeting with EBMUD.

See response to Comment A-3.

A-7 EBMUD states that when a project involves the construction of a retaining wall and fence along EBMUD property lines then the project sponsor must coordinate with EBMUD to ensure that all structures and development be constructed outside EBMUD's property.

See response to Comment A-3.

A-8 EBMUD states that EBMUD's Policy 9.05 requires that customers use non-potable water for domestic purposes, when it is of adequate quality and quantity, to offset demand on EBMUD's limited potable water supply.

This comment refers to future users within the EBMUD service area. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary. See Master Response 1 for further explanation.

A-9 EBMUD states that the county's boundaries include the City of San Ramon and Town of Danville, which fall within the Dublin San Ramon Service District-EBMUD Recycled Water Authority (DERWA) and EBMUD's San Ramon Valley's Recycled Water Project. EBMUD lists appropriate recycled water uses (such as toilet flushing, irrigation, etc.).

This comment refers to future projects and associated water uses within the DERWA and EBMUD's San Ramon Valley's Recycled Water Project area. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary. See Master Response 1 for further explanation.

A-10 EBMUD requests that the County and developers coordinate with EBMUD and consider potential recycled water uses during the planning of the various General Plan components to further explore the options and requirements related to recycled water use.

This comment refers to future developers and specific individual projects within the EBMUD service area. The General Plan includes policies COS-P7.1, which requires new development to reduce water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water, where available; COS-P7.9, which supports wastewater reclamation and reuse programs that maximize use of treated recycled water; and PFS-P4.2, which encourages water service providers to require separate service connections and meters for recycled water use or where large quantities of water are used for special purposes, such as landscape irrigation. The DEIR is a programmatic EIR, therefore, project-level information is not known at this time, and it would be speculative to assume this information. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary.

A-11 EBMUD requests that the County include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance." EBMUD states that project sponsors should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all applicable water-efficiency measures are installed at the project sponsor's expense.

The County Ordinance Code includes Chapter 82-26 – Water Efficient Landscapes, which was adopted in 2022 to comply with applicable State law. Future projects and developers would need to comply with the County Ordinance Code as well as EBMUD's Water Service Regulations. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary. See Master Response 1 for further explanation.

2. Response to Comments

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LETTER B – Department of Toxic Substances Control (3 pages)

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Yana Garcia
Secretary for
Environmental Protection

Gavin Newsom
Governor

SENT VIA ELECTRONIC MAIL

March 22, 2024

Will Nelson
Principal Planner
Contra Costa County, Department of Conservation and Development
30 Muir Road
Martinez, CA 94553
will.nelson@dcd.cccounty.us

RE: DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR) FOR THE CONTRA COSTA COUNTY 2045 GENERAL PLAN AND CONTRA COSTA COUNTY CLIMATE ACTION PLAN 2024 UPDATES (AKA ENVISION CONTRA COSTA) DATED FEBRUARY 9, 2024 STATE CLEARINGHOUSE # 2023090467

Dear Will Nelson,

The Department of Toxic Substances Control (DTSC) received a DEIR for the Contra Costa County 2045 General Plan and Contra Costa County Climate Action Plan 2024 Updates (aka Envision Contra Costa). Contra Costa County is one of the nine San Francisco Bay Area counties. The County has prepared comprehensive updates to its existing General Plan and Climate Action Plan (CAP), which are applicable to the county's unincorporated areas. The DEIR study area coincides with the unincorporated areas covered by the General Plan and CAP. Based on our project review; we request consideration of the following comments: B-1

1. The proposed Project encompasses multiple active and nonactive mitigation and clean-up sites where DTSC has conducted oversight that may be impacted as a result of this Project. This may restrict what construction B-2

activities are permissible in the proposed Project areas in order to avoid any impacts to human health and the environment. B-2

2. Due to the broad scope of the Project, DTSC is unable to determine the locations of the proposed sites, whether they are listed as having documented contamination, land use restrictions, or whether there is the potential for the sites to be included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Therefore, DTSC recommends providing further information on the proposed project and areas that may fall under DTSC's oversight within future environmental documents. Once received, DTSC may provide additional comments on the future environmental documents as further information becomes available. Please review the project area in EnviroStor; DTSC's public-facing database. B-3

DTSC believes Contra Costa County must address these comments to determine if any significant impacts under the California Environmental Quality Act (CEQA) will occur and, if necessary, avoid significant impacts under CEQA. DTSC recommends the department connect with our unit if any hazardous waste projects managed or overseen by DTSC are discovered. Please refer to the Contra Costa County EnviroStor Map for additional information about the areas of potential contamination B-4

DTSC appreciates the opportunity to comment on the DEIR for the Contra Costa County 2045 General Plan and Contra Costa County Climate Action Plan 2024 Updates (aka Envision Contra Costa. Thank you for your assistance in protecting California's people and environment from the harmful effects of toxic substances. If you have any questions or would like any clarification on DTSC's comments, please respond to this letter or via email for additional guidance. B-5

Sincerely,



Tamara Purvis
Associate Environmental Planner
HWMP - Permitting Division – CEQA Unit
Department of Toxic Substances Control
Tamara.Purvis@dtsc.ca.gov

cc: (via email)

Governor's Office of Planning and Research
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B. Response to Comments Department of Toxic Substances Control, dated March 22, 2024.

B-1 The Department of Toxic Substances Control (DTSC) has received the DEIR for the Contra Costa County 2045 General Plan and Climate Action Plan 2024 Updates, which are comprehensive updates to the county's unincorporated areas, and request consideration of the project review.

Contra Costa County appreciates DTSC comments and recommendations that may assist the County in adequately analyzing and minimizing impacts regarding hazards and hazardous materials. Refer to responses in comments B-2 through B-5.

B-2 DTSC indicates that the proposed project may impact multiple mitigation and clean-up sites under their oversight, which could potentially restrict future construction activities under the proposed project in order to prevent potential health and environmental impacts.

Section 5.9, *Hazards and Hazardous Materials*, of the DEIR includes Impact 5.9-2, starting on page 5.9-41. Impact 5.9-2 analyzes the potential environmental impacts of the implementation of the proposed project, which could facilitate development of a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The impact states that future development within these sites would have to adhere to the proposed General Plan and the regulations and policies of the agency assigned to the site (i.e., DTSC, Water Quality Control Board, CUPA, or USEPA). The analysis in the DEIR adequately discusses potential environmental impact from future development in hazardous sites and addresses DTSC concerns. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary.

B-3 DTSC states that they are unable to determine the locations of proposed sites, their potential contamination, land use restrictions, or inclusion on a hazardous materials list due to the project's broad scope. DTSC recommends providing more information on the project and areas under its oversight in future environmental documents, which may be updated as more information becomes available.

DEIR Chapter 2, *Introduction*, explains that the DEIR fulfills the requirements for a Program EIR, which is more conceptual than a Project EIR with a more general discussion of impacts. As a programmatic analysis, the specific information DTSC is referring to cannot be fully provided during this stage of the environmental review since there is no specific project-level development proposed at this time. Once specific project-level development is proposed, the County as lead agency for the project would determine whether subsequent CEQA analysis is required. Future project-level CEQA documents, such as EIRs and Negative Declarations, would address DTSC's comment. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary.

2. Response to Comments

B-4 DTSC urges Contra Costa County to address their comments to determine potential impacts under CEQA and, if necessary, avoid significant impacts. DTSC recommends the County contact DTSC's unit if any hazardous waste projects managed or overseen by DTSC are discovered. DTSC recommends reviewing the Contra Costa EnviroStor Map, which provides more information on potential contamination areas.

See response to Comment B-3 regarding the scope of the DEIR and future project-level CEQA analyses. The County refers CEQA documents for projects on identified hazardous materials sites to DTSC for review and comment. Furthermore, project sponsors and developers would be responsible for contacting DTSC in the case that hazardous materials are discovered as well as adhering to State regulations and the proposed General Plan and CAP policies and strategies. Table 5.9-1, *Active Hazardous Materials Sites in the EIR Study Area,* on page 5.9-16 of the DEIR, provides the results of an online EnviroStor and GeoTracker databases search for active hazardous materials sites in the EIR Study Area. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary.

B-5 DTSC is grateful for the opportunity to comment on the DEIR for the Contra Costa County 2045 General Plan and Climate Action Plan 2024 Updates, expressing gratitude for their support in protecting California's people and environment from toxic substances' harmful effects.

Contra Costa County appreciates DTSC comments and recommendations that may assist the County in adequately analyzing and minimizing impacts regarding hazards and hazardous materials. Refer to responses in B-2 through B-4.

LETTER C – Delta Stewardship Council (7 pages)

Delta Stewardship Council
A CALIFORNIA STATE AGENCY

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Sacramento, CA 95814

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DELTACOUNCIL.CA.GOV

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Vacant

MEMBERS
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Daniel Zingale

EXECUTIVE OFFICER
Jessica R. Pearson

April 4, 2024

Will Nelson
County of Contra Costa
Department of Conservation and Development
30 Muir Street
Martinez, CA 94553

Delivered via email: AdvancePlanning@dcd.cccounty.us

RE: Comments on Draft Environmental Impact Report for the County 2045 General Plan and Climate Action Plan Update, SCH# 2023090467.

Dear Will Nelson:

Thank you for the opportunity to review and comment on the County of Contra Costa Draft Environmental Impact Report (DEIR) for the 2045 General Plan and Climate Action & Adaptation Plan Update (2045 General Plan). The Council recognizes that the objective(s) of the County's General Plan and Climate Action Plan Update (project) are to determine the extent and types of development needed to achieve the community's long-range vision for physical, economic, social, and environmental goals, achieve compliance with applicable State and regional policies and provide the basis for establishing and setting priorities for detailed programs.

C-1

The Council is an independent state agency established by the Sacramento-San Joaquin Delta Reform Act of 2009, Wat. Code, sections 85000 et seq. (Delta Reform Act). The Delta Reform Act charges the Council with furthering California's coequal goals of providing a more reliable water supply and protecting, restoring, and

enhancing the Sacramento-San Joaquin River Delta (Delta) ecosystem, which are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. (Wat. Code, § 85054.)

C-1

The Council is charged with furthering California's coequal goals for the Delta through the adoption and implementation of the Delta Plan, a comprehensive long-term management plan for the Delta and Suisun Marsh. (Wat. Code, § 85300) The Delta Plan contains regulatory policies, which are set forth in California Code of Regulations, title 23, section 5001 et seq. The Delta Reform Act granted the Council specific regulatory and appellate authority over certain actions of State or local public agencies that take place in whole or in part in the Delta ("covered actions"). (Wat. Code, §§ 85210, 85225, 85225.10.) A state or local public agency that proposes to undertake a covered action is required to prepare a written Certification of Consistency with detailed findings as to whether the covered action is consistent with the Delta Plan and submit that certification to the Council prior to initiating the implementation of the project. (Wat. Code, § 85225)

The Delta Reform Act also directs the Council to review and provide timely advice to local and regional planning agencies regarding the consistency of local and regional planning documents with the Delta Plan. The Council's input includes, but is not limited to, reviewing the consistency of local and regional planning documents with the ecosystem restoration needs of the Delta and reviewing whether the lands set aside for natural resource protection are sufficient to meet the Delta's ecosystem needs. (Wat. Code, §85212)

C-2

COVERED ACTION DETERMINATION AND CERTIFICATION OF CONSISTENCY WITH THE DELTA PLAN

Based on the project location and project description provided in the DEIR, the project appears to meet the definition of a covered action. Water Code section 85057.5(a) states that a covered action is a plan, program, or project, as defined by the California Environmental Quality Act (Public Resources Code section 21065), that meets all of the following conditions:

C-3

(1) Will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh. The 2045 General Plan planning area includes lands within the unincorporated area of Contra Costa County. A portion of the planning

area is located within the Delta, and thus, the project would occur in part within the boundaries of the Delta.

(2) Will be carried out, approved, or funded by a State or a local public agency. The 2045 General Plan and Climate Action Plan and DEIR would be approved and carried out by the County, a local public agency.

(3) Is covered by one of the provisions of the Delta Plan. As described below, the project is covered by, and aligned with multiple Delta Plan regulatory policies.

C-3

(4) Will have a significant impact on achievement of one or both of the coequal goals or the implementation of government-sponsored flood control programs to reduce risks to people, property, and State interests in the Delta. The project may have a significant impact on the achievement of the coequal goal to protect, restore, and enhance the Delta ecosystem and the implementation of government sponsored flood control programs in the Delta.

The State or local agency approving, funding, or carrying out the project must file a Certification of Consistency with the Council prior to project implementation. (Wat. Code, § 85225; Cal. Code Regs., tit. 23, § 5001(k)(3).)

POTENTIALLY APPLICABLE DELTA PLAN POLICIES

The following section describes the Delta Plan regulatory policies that may apply to the project based on the information in the DEIR.

Governance Policy 1: Detailed Findings to Establish Consistency with the Delta Plan

Delta Plan Policy **G P1** (Cal. Code Regs., tit. 23, § 5002) specifies what must be addressed in a Certification of Consistency by a certifying agency for a project that is a covered action. The following is a subset of policy requirements that a project must fulfill to be considered consistent with the Delta Plan:

C-4

Mitigation Measures

Delta Plan Policy **G P1(b)(2)** (Cal. Code Regs., tit. 23, § 5002(b)(2)) requires covered actions not exempt from the California Environmental Quality Act (CEQA) to include all applicable feasible mitigation measures adopted and

incorporated into the Delta Plan as amended April 26, 2018 (unless the measures are within the exclusive jurisdiction of an agency other than the agency that files the Certification of Consistency), or substitute mitigation measures that the agency finds are equally or more effective. These mitigation measures are identified in Delta Plan Appendix O and are available at: https://deltacouncil.ca.gov/pdf/delta-plan/2018-appendix-o-mitigation-monitoring-and-reporting-program.pdf. C-4

The DEIR does not propose mitigation measures for the project. Rather, the DEIR considers that all potentially significant impacts are minimized to the greatest extent feasible through general plan policies and actions, and that no feasible mitigation is available. Council staff is available to engage in early consultation on this matter.

Best Available Science

Delta Plan Policy **G P1(b)(3)** (Cal. Code Regs., tit. 23, § 5002(b)(3)) requires actions subject to Delta Plan regulations to document the use of best available science as relevant to the purpose and nature of the project. The Delta Plan defines best available science as "the best scientific information and data for informing management and policy decisions." (Cal. Code Regs, tit. 23, § 5001(f)). Best available science is also required to be consistent with the guidelines and criteria in Appendix 1A of the Delta Plan (https://deltacouncil.ca.gov/pdf/delta-plan/2015-appendix-1a.pdf) and in the Delta Plan regulations (Cal. Code Regs., tit. 23, appen. 1a). C-5

This policy generally requires that the process used by the County to analyze project alternatives, impacts, and mitigation measures for the project be clearly documented in the DEIR and supporting record, and effectively communicated to foster improved understanding and informed decision-making, meeting the criteria in Appendix 1A.

Delta as Place Policy 1: Locate New Urban Development Wisely and Risk Reduction Policy 2: Require Flood Protection for Residential Development in Rural Areas

Certain Delta Plan regulatory policies make allowances for certain actions occurring within Contra Costa County's 2006 voter approved urban limit line (Cal. Code Regs., C-6

tit 23, § 5010(a)(2), § 5013(a)(2). Specifically, Delta Plan Policy **DP P1**, limits new residential, commercial, and industrial development to, in relevant part: 1) areas that city or county general plans, as of May 16, 2013, designate for residential, commercial, and industrial development in cities or their spheres of influence; and 2) areas within Contra Costa County's 2006 voter-approved urban limit line, except that no new residential, commercial, and industrial development may occur on Bethel Island unless it is consistent with the Contra Costa County general plan effective as of May 16, 2013 (Cal. Code Regs., tit. 23, § 5010 and Appendix 7). Delta Plan Policy **RR P2**, requires a minimum level of flood protection for residential development of five or more parcels but does not apply to areas within Contra Costa County's 2006 voter-approved urban limit line, except Bethel Island (Cal. Code Regs., tit. 23, § 5013).

C-6

The 2045 General Plan goals appear to align with provisions of **DP P1** and **RR P2** through Land Use Element goals, such as, Goal LU-6 "Effective coordination with other agencies to ensure consistent planning, service delivery, and community development", and Goal LU-10 "Rural, agricultural, and open space areas that provide scenic value, support Delta ecosystem health, and meet the needs of the agricultural industry". Under the Conservation, Open Space, and Working Lands Element sections, Goal COS-2 "A thriving, and resilient agricultural sector based on resource conservation and sustainability practices, Goal COS-5 "Protected and restored watercourses, riparian corridors, and wetland areas that improve habitat, water quality, wildlife diversity, stormwater flows, and scenic values", and Goal COS-9 "Protected, preserved, and enhanced scenic quality, recreational value, and natural resources of the San Francisco Bay/Sacramento San Joaquin Delta estuary system and shoreline" also align with Delta Plan policies **DP P1** and **DP P2**. Lastly, the Health and Safety Element Goal HS-6 "Resilient and thriving Bayshore and Delta communities that are safeguarded and adaptively managed for rising sea levels", would align with the achievement of **DP P1** and **RR P2**.

The DEIR provides the following statement (p. 5.11-20,21):

Delta Plan Policy DP P1 requires that any new residential, commercial, or industrial development must be limited to areas within the Urban Limit Line (ULL), and also specifies that no new residential, commercial, or industrial development may occur on Bethel Island, even though it is inside the ULL, unless it is consistent with the existing General Plan. Although the proposed General Plan would redistribute

C-7

some of the existing General Plan development capacity on Bethel Island by expanding commercial uses and reducing residential uses, the proposed General Plan does not allow a net increase in allowed development on the island. Therefore, the proposed General Plan is consistent with Policy DP P1.

DP P1 covers any new residential, commercial, and industrial development on Bethel Island that is inconsistent with the Contra Costa County general plan effective as of May 16, 2013. The County should include substantial evidence in the record, including this potential finding, in a future certification of consistency for Delta Plan Policy DP P1. C-7

The proposed 2045 General Plan includes additional actions which address the Delta Plan and related Council initiatives. Specifically, "Action HS-6.4 Coordinate with the BCDC, Delta Stewardship Council, and other involved agencies and stakeholders to create a joint-powers authority or public-private partnership to develop, fund, and implement measures that leverage the results of Adapting to Rising Tides, Bay Adapts, and other studies and programs", and Policy LU-P6.1 "Ensure that County projects and decisions on private development and land use activities within the Legal Delta are consistent with a; The Land Use and Resource Management Plan for the Primary Zone of the Delta adopted by the Delta Protection Commission, (b) The Delta Plan adopted by the Delta Stewardship Council".

The Council appreciates the County's effort to incorporate these and other provisions of the Delta Plan in the 2045 General Plan, notes that the County has continued to refer projects to the Council for review as described above, and thanks the County for its continued engagement in our Delta Adapts Adaptation Plan. We encourage the County to submit a certification of consistency to the Council using these and other goals, actions, and policies that would demonstrate how the 2045 General Plan is consistent with the Delta Plan. C-8

CLOSING COMMENTS

More information on covered actions, early consultation, and the certification process can be found on the Council website, https://coveredactions.deltacouncil.ca.gov. Council staff are available to discuss the issues outlined in this letter as the County proceeds in the next stages of its project

and approval processes. Please contact Pat Kelly at patricia.kelly@deltacouncil.ca.gov with any questions.

Sincerely,



Jeff Henderson
Deputy Executive Officer
Jeff.Henderson@deltacouncil.ca.gov

C. Response to Comments from Delta Stewardship Council, dated April 4, 2024.

C-1 The Delta Stewardship Council (Council) states that the County's General Plan and Climate Action Plan Update aims to determine the development needed to achieve the community's long-range vision for physical, economic, social, and environmental goals; comply with State and regional policies; and establish priorities for detailed programs. As an independent State agency established by the Sacramento-San Joaquin Delta Reform Act of 2009, the Council is responsible for achieving California's coequal goals of providing a more reliable water supply and protecting the Sacramento-San Joaquin River Delta ecosystem while preserving its unique cultural, recreational, natural resource, and agricultural values.

Contra Costa County appreciates the Council's comments that may assist the County in adequately analyzing and minimizing impacts regarding the Delta. Refer to responses to comments C-2 through C-8.

C-2 The Council is responsible for achieving California's coequal goals for the Delta by adopting and implementing the Delta Plan, which is a long-term management plan for the Delta and Suisun Marsh. The Council has specific authority over certain actions of State or local public agencies in the Delta. Any agency proposing a covered action must submit a written Certification of Consistency with detailed findings, ensuring it aligns with the Delta Plan. The Council must also review and provide advice to local and regional planning agencies regarding the consistency of local and regional planning documents with the Delta Plan. The Council's input includes but is not limited to, reviewing the consistency of planning documents with the ecosystem restoration needs of the Delta and reviewing whether the lands set aside for natural resource protection are sufficient to meet the Delta's ecosystem needs.

The County will submit Delta Plan consistency findings for the proposed project as required. Future projects must also comply with State regulations and the Delta Plan. The County will submit Delta Plan consistency findings for future covered actions as well. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary.

C-3 The Council states that the project, as described in the DEIR, appears to be a covered action, as defined by Water Code section 85057.5(a) of CEQA. The proposed project is considered a covered action since the proposed project includes lands within the Delta; would be approved and carried out by the County, which is a local public agency; is covered by, and aligned with, multiple Delta Plan regulatory policies; and may have a significant impact on the achievement of the coequal goal to protect, restore, and enhance the Delta ecosystem and the implementation of government-sponsored flood control programs in the Delta.

See response to Comment C-2.

C-4 The Council states that Delta Plan Policy G P1 outlines the requirements for a certifying agency to provide a Certification of Consistency for a covered action project. The Council also includes Delta Plan Policy G P1(b)(2) which mandates covered actions not exempt from CEQA to include all feasible mitigation measures incorporated into the Delta Plan as amended on April 26, 2018, or substitute measures deemed equally or more effective by the agency that files the Certification of Consistency. The Council states that the DEIR does not propose mitigation measures for the project, instead focusing on minimizing potentially significant impacts to the greatest extent feasible through general plan policies and actions, stating that no feasible mitigation is available.

Impact 5.11-2 of the DEIR concludes that the proposed project would not conflict with applicable plans adopted for the purpose of avoiding or mitigating an environmental effect, including a specific discussion of the Delta Plan. The proposed General Plan is the primary planning document for the County, aiming to ensure consistency with updated State laws and support land use plans, such as the Delta Plan, to mitigate environmental impacts. The DEIR determines that no mitigation measures are required for this impact since the proposed General Plan goals and policies would support the Delta Plan. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary.

C-5 The Council states that Delta Plan Policy G P1(b)(3) requires actions subject to Delta Plan regulations to use the best available science as relevant to the project's purpose and nature. This policy generally requires that the process used by the County to analyze project alternatives, impacts, and mitigation measures for the project be clearly documented in the DEIR and supporting record, and effectively communicated to foster improved understanding and informed decision-making.

The DEIR uses best available data to analyze the proposed project's alternatives, impacts, and mitigation measures. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary.

C-6 The Council outlines Delta Plan regulatory policies that allow certain actions within Contra Costa County's Urban Limit Line (ULL). Delta Plan Policy DP P1 limits new residential, commercial, and industrial development to, in relevant part: 1) areas that city or county general plans, as of May 16, 2013, designate for residential, commercial, and industrial development in cities or their spheres of influence; and 2) areas within Contra Costa County's 2006 voter-approved ULL, except that no new residential, commercial, and industrial development may occur on Bethel Island unless it is consistent with the Contra Costa County general plan effective as of May 16, 2013. Delta Plan Policy RR P2 requires a minimum level of flood protection for residential development of five or more parcels but does not apply to areas within the ULL, except Bethel Island. The Council states that the 2045 General Plan appears to align with provisions of Delta Plan Policies

DP P1 and RR P2 through Land Use Element, Conservation Open Space and Working Lands Element, and Health and Safety Element goals.

Contra Costa County appreciates the Council's comments. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary. See Master Response 1 for further explanation.

C-7 The Council quotes the DEIR discussion on page 5.11-20 regarding the proposed project and Delta Plan Policy DP P1, specifically as it relates to development on Bethel Island, and states that the County should include substantial evidence in the record, including this potential finding, in a future certification of consistency for Delta Plan Policy DP P1.

Impact 5.11-2, starting on page 5.11-18 of the DEIR, states that the proposed General Plan does not allow a net increase in allowed development on Bethel Island. The Delta Plan consistency findings the County submits to the Delta Stewardship Council will include a more detailed explanation of development potential on Bethel Island under the 2045 General Plan. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary.

C-8 The Council states that the proposed 2045 General Plan includes additional actions which address the Delta Plan and related Council initiatives such as General Plan Action HS-6.4 and Policy LU-P6.1. The Council appreciates the County's efforts to incorporate Delta Plan provisions into the 2045 General Plan, and thanks the County for referring future projects to the Council for review. The Council encourages the County to submit a certification of consistency using these goals, actions, and policies to demonstrate the 2045 General Plan's consistency with the Delta Plan. The Council's directs the County to their website which provides additional details on covered actions, early consultation, and the certification process.

Contra Costa County appreciates the Council's comments. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary. See Master Response 1 for further explanation.

2. Response to Comments

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LETTER D – Alameda County Water District (2 pages)

BOARD MEMBERS

AZIZ AKBARI
JAMES G. GUNTHER
JUDY C. HUANG
PAUL SETHY
JOHN H. WEED

ALAMEDA COUNTY WATER DISTRICT
43885 SOUTH GRIMMER BOULEVARD • FREMONT, CALIFORNIA 94538
(510) 668-4200 • www.acwd.org

MANAGEMENT

ED STEVENSON
General Manager
KURT ARENDS
Operations and Maintenance
GIRUM AWOKE
Engineering and Technology
LAURA J. HIDAS
Water Resources
JONATHAN WUNDERLICH
Finance and Administration

April 4, 2024

VIA ELECTRONIC MAIL
Attn: Will Nelson (AdvancePlanning@dcd.cccounty.us)
Contra Costa County Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

Dear Mr. Nelson:

Subject: Contra Costa County 2045 General Plan and Climate Action Plan Draft Environmental Impact Report

The Alameda County Water District (ACWD) wishes to thank you for the opportunity to comment on the Draft Environmental Impact Report (EIR) prepared for the Contra Costa County 2045 General Plan and Contra Costa County Climate Action Plan 2024 Updates (Draft EIR). ACWD appreciates that the County of Contra Costa (County) recognizes that the need for climate action throughout the region requires coordination amongst different jurisdictions and across sectors, such as ACWD. ACWD also appreciates that the County recognizes the importance of a low-carbon, sustainable, and resilient future especially as it relates to water supply and conservation. The District therefore supports the update and adoption of the 2024 Climate Action Plan and applauds the County's efforts to achieve carbon neutrality. D-1

ACWD staff has reviewed the Draft EIR and offer the following comments for your consideration:

1) Water Quality

   a) *Climate Action Plan 2024 Update, Chapter 6, Table 12, DR-1 and DR-2: Ensure sustainable and diverse water supplies; 2045 General Plan, Goal COS-7, Policies COS-P7.1, COS-P7.9, PFS-4.2, SC-P4.4:* ACWD is supportive of water reuse. However, ACWD notes that water reuse applied for outdoor irrigation that is not full advanced treatment may contribute per- and polyfluoroalkyl substances (PFAS) to the Alameda Creek watershed runoff. ACWD recommends that any expanded application of recycled water for irrigation use require appropriate D-2

measures to prevent impacts to runoff water quality. ACWD also recommends coordinating water reuse water quality with other interested parties in the Alameda Creek watershed, such as other water and wastewater utilities in Alameda County. D-2

The following ACWD contacts are provided so the County can coordinate with ACWD as needed in reviewing these comments and coordinating on future efforts:

- Thomas Niesar, Water Supply and Planning Manager, at (510) 668-6549, or by e-mail at thomas.niesar@acwd.com, for coordination regarding water supply planning. D-3

Again, thank you for the opportunity to comment on the Draft Environmental Impact Report prepared for the Contra Costa County 2045 General Plan and Contra Costa County Climate Action Plan 2024 Updates.

Sincerely,

for

Laura J. Hidas
Director of Water Resources

al/tn
cc: Thomas Niesar, ACWD

2. Response to Comments

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D. Response to Comments from Alameda County Water District, dated April 4, 2024.

D-1 The Alameda County Water District (ACWD) is thankful for the opportunity to comment on the DEIR for the Contra Costa County 2045 General Plan and Climate Action Plan 2024 Update. ACWD appreciates the County's recognition of the importance of a low-carbon, sustainable, and resilient future as it related to water supply and conservation. ACWD supports the 2024 Climate Action Plan and provides comments for the County to consider.

Contra Costa County appreciates ACWD's comments regarding water supply and conservation. As this comment does not describe any inadequacies of the DEIR, no changes to the DEIR are necessary. Refer to response to Comment D-2 to address ACWD's comments.

D-2 ACWD refers to Strategy DR-1 and DR-2 in the Climate Action Plan as well as Goal COS-7, Policy COS-P7.1, Policy COS-P7.9, Policy PFS-4.2, and Policy SC-P4.4 in the 2045 General Plan. ACWD notes that water reuse that does not include full advanced treatment for outdoor irrigation may contribute to per- and polyfluoroalkyl substances (PFAS) in Alameda Creek's watershed runoff. ACWD recommends that any expanded application of recycled water for irrigation use should require appropriate measures to prevent impacts to runoff and water quality. ACWD also recommends that water reuse and water quality efforts be coordinated with other interested parties in the Alameda Creek watershed, such as water and wastewater utilities.

The referenced General Plan policies and CAP strategies provide a general guide to water use, quality, and conservation throughout the unincorporated county. This comment does not describe any inadequacies of the DEIR, and therefore no changes to the DEIR are necessary. However, 2045 General Plan Policies COS-P7.1 and COS-7.9 and CAP Strategy DR-1 actions have been revised to support use of *treated* recycled water.

D-3 ACWD provides a contact to the County to coordinate on future efforts. ACWD thanks the County for the opportunity to provide comments on the DEIR for the proposed project.

See response to Comment D-1.

2. Response to Comments

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LETTER E – Contra Costa Building and Construction Trades Council (1 page)

Contra Costa Building and Construction Trades Council

2727 Alhambra Ave. Suite 5
Martinez, CA 94553
FAX (925) 372-7414

Bill Whitney, CEO
Phone (925) 925-228-0900

April 5, 2024

SENT VIA EMAIL:
Federal.glover@bos.cccounty.com; John.Gioia@bos.cccounty.us; Supervisorcarlson@bos.cccounty.us; diane.burgis@bos.cccounty.us; supervisorandersen@bos.cccounty.us; john.kopchik@dcd.cccounty.us; vanbuskirk1691@gmail.com

Re: General Plan/Climate Action Plan Extension Request

Dear Chair Glover and Board members, Chair Van Buskirk and Commissioners and Director Kopchik:

The Contra Costa Building and Construction Trades represents 35,000 skilled and trained working men and women. Approximately 65% of our members are men and women of color and Indigenous people. We spend tens of millions of dollars annually training the next generation craft men and women in our apprenticeship training facilities. We have created a non-profit organization called CTWI that fosters pre apprenticeship programs in four Bay Area counties. We are committed to a green future that grows well-paying green construction jobs and support a just transition that does not mean "just unemployment" for our members. E-1

We are concerned that the Contra Costa County updated 2024 Climate Action Plan (CAP), Draft 2045 General Plan, and the General Plan and Climate Action Plan Draft Environmental Impact Report (DEIR) do not adequately protect our jobs in the future. E-2

As a result, we respectfully request an additional 60-day extension to your comment period that ends Monday, April 8.

We apologize that we have not had the opportunity to submit our comments to date. If the additional time is granted, it will provide us with the necessary time to submit thoughtful and helpful comments that will lead to the future adoption of these documents. E-3

The Contra Costa Building and Construction Trades respects all the work that has gone into these documents to date and appreciates the work that County staff has done to reach out to the broader Contra Costa community to gain our insights.

Thank you for your consideration of the 60-day public comment extension.

Sincerely,

William A. Whitney

Bill Whitney
Contra Costa Building and
Construction Trades Council

E. Response to Comments from the Contra Costa Building and Trades Council, dated April 5, 2024.

E-1 The Contra Costa Building and Trades Council (Trades Council) mentions that their union represents 35,000 workers and approximately 65 percent of the workforce include people of color and Indigenous peoples. The Trades Council spends millions of dollars annually providing apprenticeship programs that train the next generation of crafts people specifically in four Bay Area counties. The Trades Council is committed to a green future that grows well with well-paying green construction jobs while ensuring a just transition that doesn't lead to unemployment for their workforce.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

E-2 The Trades Council expresses their concern that the updated Climate Action Plan and General Plan, as well as the General and Climate Action Plan DEIR, do not adequately protect the union members' jobs in the future.

The Trades Council does not provide evidence to support the assertion that the DEIR does not adequately protect jobs in the future. As this comment does not describe any inadequacies of the DEIR, no changes to the EIR are necessary. See Master Response 1 for further explanation.

E-3 The Trades Council requests an additional 60-day extension to the comment period that ends April 8, 2024. The Trades Council states they have not had the opportunity to submit thoughtful and helpful comments that will lead to the future adoption of the proposed plans. The Trades Council apologizes for the request and thanks the County for reaching out to community members as well as the work that been put into the documents.

The County conducted an extensive environmental review of the proposed project in compliance with CEQA, the State CEQA Guidelines, and the Contra Costa County CEQA Guidelines. The County accepted public comments on the Notice of Preparation from September 20 to October 20, 2023, and held a public scoping meeting on October 16, 2023. The DEIR was made available for 60 days of public review, from February 9 to April 8, 2024. The County fulfilled all noticing and scoping requirements under Section 15083 of the CEQA Guidelines and exceeded Section 15105 requirements pertaining to the minimum length of the public comment period on the DEIR. The County thus elected not to extend the public review comment period on the DEIR. However, the County did extend the public comment period on the 2045 General Plan and CAP for 14 days, to April 22, 2024, in response to this and other requests.

2. Response to Comments

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LETTER F – East Bay Leadership Council (1 page)

April 5, 2024

Director John Kopchik
Department of Conservation & Development, Contra Costa County
30 Muir Road, Martinez, CA 94553

Delivered by email

Subject: Comment Period Extension Request

Dear Director Kopchik:

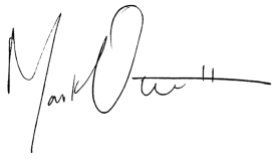
The East Bay Leadership Council is a nonprofit employer-led organization on a mission to strengthen the economy and improve the quality of life across Contra Costa and Alameda Counties. Over EBLC's more than 85-year history in the region, we have come to understand the importance of guiding documents like the General Plan and Climate Action Plan (CAP) that set the stage for equitable economic development for decades to come. F-1

Today we write to respectfully request that you extend, for an additional 60 days, the comment period for the Contra Costa County updated 2024 Climate Action Plan, Draft 2045 General Plan, and the General Plan and Climate Action Plan Draft Environmental Impact Report.

The additional time will be key in facilitating further input from employer stakeholders, discussions with County staff, and increased focus on the integration of equity and economic development in the proposed General Plan and CAP. F-2

The East Bay Leadership Council appreciates the work that County staff has done to hear from diverse community and employer leaders to date and stands ready to ensure that these additional 60 days are worth the time. We believe that the comments received during this time will be integral to Contra Costa County's efforts to draft and implement these foundational documents. F-3

Sincerely,



Mark Orcutt
President & CEO
East Bay Leadership Council

CC: Will Nelson, Principal Planner, Contra Costa County

F. Response to Comments from the East Bay Leadership Council, dated April 5, 2024.

F-1 The East Bay Leadership Council (EBLC) states that they are an employer led non-profit organization that seeks to strengthen the economy and improve the quality of life across Contra Costa and Alameda Counties. The Leadership Council has had a long presence in the region spanning 85 years and understands the importance of guiding documents like the 2045 General Plan and Climate Action Plan as the documents can influence factors such as equitable economic development for the coming decades.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

F-2 EBLC requests the County to extend the comment period for 60 days for the updated Climate Action Plan and 2045 General Plan, as well as the General and Climate Plan DEIR. The Leadership Council states that the additional time would help facilitate further input from employer stakeholders, discussions with County staff, and increased focus on the integration of equity and economic development in the proposed documents.

See response to Comment E-3.

F-3 EBLC states that they appreciate the work the County has done in hearing diverse community and employer leaders thus far and are ready to ensure that the additional 60 days are worth the time. The comments received during the extension would be integral to the County's efforts to draft and implement in the planned documents.

See response to Comment E-3.

2. Response to Comments

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LETTER G – California Department of Transportation, Aeronautics Division (2 pages)

California Department of Transportation

AERONAUTICS PROGRAM
DIVISION OF TRANSPORTATION PLANNING
P.O. BOX 942873, MS–40 | SACRAMENTO, CA 94273–0001
(916) 654-4959
www.dot.ca.gov

April 8, 2024

Will Nelson Electronically Sent <will.nelson@dcd.cccounty.us>
Principal Planner
Contra Costa County Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

Dear Mr. Nelson,

The California Department of Transportation, Caltrans Aeronautics has reviewed the Draft Environmental Impact Report for Contra Costa County 2045 General Plan and Contra Costa County Climate Action Plan 2024 Updates (aka Envision Contra Costa). One of the goals of the California Department of Transportation, Aeronautics Program, is to assist cities, counties, and Airport Land Use Commissions (ALUC) or their equivalent, to understand and comply with the State Aeronautics Act pursuant to the California Public Utilities Code (PUC), Section 21001 et seq. Caltrans encourages collaboration with our partners in the planning process and thanks you for including the Aeronautics Program in the review of the Draft EIR. G-1

Contra Costa County contains two public general aviation airports: Buchanan Field Airport and Bryon Airport. The Contra Costa County Airport Land Use Compatibility Plan (ALUCP) adopted by the Contra Costa County Airport Land Use Commission sets the compatibility criteria applicable to local agencies in the preparation or amendments of land use plans and ordinances. An ALUCP is crucial in minimizing noise nuisance and safety hazards around airports while promoting the orderly development of airports, as declared by the California Legislature. G-2

Per the California Public Utilities Code Section 21001 et seq. relating to the State Aeronautics Act, Section 21676(b) prior to the amendment of a general plan…within the planning boundary established by the airport land use commission pursuant to Section 21675, the local agency shall first refer the proposed action to the commission. If the commission determines that the proposed action is inconsistent with the commission's plan, the referring agency shall be notified. Any proposed development in the defined safety zones, therefore, must adhere to the safety criteria and restrictions defined in the Airport Land Use Compatibility Plan(s) adopted by the ALUC pursuant to the PUC, Section 21674. G-3

Caltrans Aeronautics acknowledges and commends Goal TR-7: Safe and viable general and commercial aviation activities in Contra Costa County and its subsequent policies which aim to ensure that development is compliant with airport land use requirements. G-4

If you have any questions or need additional information, please contact me by email at tiffany.martinez@dot.ca.gov.

Sincerely,

Tiffany Martinez

Tiffany Martinez
Aviation Planner
Caltrans Aeronautics Program

c: State Clearinghouse <state.clearinghouse@opr.ca.gov>

2. Response to Comments

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G. Response to Comments from the California Department of Transportation, Aeronautics Division, dated April 8, 2024.

G-1 The California Department of Transportation, Aeronautics Division (Caltrans Aeronautics) state that they have reviewed the DEIR. Caltrans states that one of the goals of the Caltrans Aeronautics programs is to assist cities, counties, and Airport Land Use Commissions or their equivalent, to understand and comply with the State Aeronautics Act pursuant to the California Public Utilities Code, Section 21001 et seq. Therefore, Caltrans encourages collaboration with partners in the planning process and thanks the County for including the Aeronautics Program in the review of the DEIR.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

G-2 Caltrans Aeronautics states that the county contains two public general aviation airports, Buchanan Field Airport and Byron Airport. Caltrans Aeronautics states that the Contra Costa Airport Land Use Compatibility Plan (ALUCP) sets the compatibility criteria applicable to local agencies in the preparation or amendments of land use plans or ordinances. Caltrans Aeronautics states that an ALUCP is crucial in minimizing noise nuisance and safety hazards around airports, while promoting the orderly development of airports, as declared by the California legislature.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

G-3 Caltrans Aeronautics states per the California Public Utilities Code Section 21001 et seq. relating to the State Aeronautics Act, Section 21676(b), before amending a general plan within the Airport Land Use Commission's (ALUC) planning boundary, the local agency must refer the proposed action to the commission. If the commission finds the action inconsistent, the agency must be notified. Any development in defined safety zones must adhere to safety criteria and restrictions in the ALUCP adopted by the ALUC under Section 21674 of the California Public Utilities Code.

Under Impact 5.9-3 in Section 5.9*, Hazards and Hazardous Materials*, the DEIR states that the ALUCP mandates that all potential developments within airport Safety Zones must adhere to its provisions; the County must also consider potential safety hazards or noise problems during environmental reviews, as per Section 21096 of the Public Resources Code; and the Federal Aviation Administration and Caltrans Division of Aeronautics also provide guidance on land use safety near airports. In addition, Impact 5.11-2 in Section 5.11, *Land Use and Planning*, states that the County will collaborate with agencies and jurisdictions to ensure that development near airports aligns with the ALUCP, and future development within airport influence areas will be reviewed by the ALUC for consistency.

2. Response to Comments

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. The Contra Costa County ALUC reviewed the draft General Plan at its meeting on July 18, 2024, and found it to be consistent with Contra Costa County's ALUCP.

G-4 Caltrans Aeronautics acknowledges and commends the General Plan Goal TR-7: Safe and viable general and commercial aviation activities in Contra Costa County and its subsequent policies which aim to ensure that developments are compliant with airport land use requirements.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

LETTER H – California Department of Transportation, District 4 Office of Community and Regional Planning (2 pages)

California Department of Transportation

DISTRICT 4
OFFICE OF REGIONAL AND COMMUNITY PLANNING
P.O. BOX 23660, MS–10D | OAKLAND, CA 94623-0660
www.dot.ca.gov

April 8, 2024

SCH #: 2023090467
GTS #: 04-CC-2023-00750
GTS ID: 30908
Co/Rt/Pm: CC/VAR/VAR

Will Nelson, Principal Planner
Contra Costa County
30 Muir Road
Martinez, CA 94553

Re: Contra Costa County 2045 General Plan and Contra Costa County Climate Action Plan 2024 — Draft Environmental Impact Report (DEIR)

Dear Will Nelson:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for this project. The Local Development Review (LDR) branch reviews land use projects and plans to ensure consistency with our mission and state planning priorities. H-1

The following comments are based on our review of the February 2024 DEIR. Please note this correspondence does not indicate an official position by Caltrans on this project and is for informational purpose only.

Project Understanding

The purpose of the General Plan update is to create a long-term vision for the County's physical development, to address challenges such as climate change and housing insecurity, and to enhance quality of life for Contra Costa County residents. The project also includes an update to the County's 2015 Climate Action Plan (CAP). The CAP is a separate document that supports the General Plan by establishing goals and strategies to reduce greenhouse gas emissions in unincorporated Contra Costa County, consistent with State targets. H-2

Travel Demand Analysis

The project's vehicle miles traveled (VMT) analysis and significance determination are undertaken in a manner consistent with the County's adopted VMT policy. Per the DEIR, this project is found to have significant and unavoidable VMT impact. Caltrans commends the Lead Agency for developing a Transportation Demand Management H-3

(TDM) program for development projects with significant VMT impacts. We encourage the Lead Agency to continue exploring potential VMT options and document the TDM program with annual monitoring reports to demonstrate effectiveness. H-3

Sea Level Rise

In the 2020 Caltrans District 4 Adaptation Priorities Report (*link*), Interstate (I)-680 within the project location is identified as a high-priority Caltrans asset vulnerable to sea level rise, storm surge, and climate change impacts, including increased precipitation. Caltrans would like to be included in discussions, to stay informed as Caltrans is interested in engaging in multi-agency collaboration early and often, to find multi-benefit solutions that protect vulnerable shorelines, communities, infrastructure, and the environment. Please contact Vishal Ream-Rao, Caltrans Bay Area Climate Change Planning Coordinator, with any questions at d4_climateresilience@dot.ca.gov. H-4

Equity

We will achieve equity when everyone has access to what they need to thrive no matter their race, socioeconomic status, identity, where they live, or how they travel. Caltrans is committed to advancing equity and livability in all communities. We look forward to collaborating with Contra Costa County to prioritize projects that are equitable and provide meaningful benefits to historically underserved communities. H-5

Thank you again for including Caltrans in the environmental review process. Should you have any questions regarding this letter, please contact Llisel Ayon, Associate Transportation Planner, via LDR-D4@dot.ca.gov. For future early coordination opportunities or project referrals, please contact LDR-D4@dot.ca.gov. H-6

Sincerely,

YUNSHENG LUO
Branch Chief, Local Development Review
Office of Regional and Community Planning

c: State Clearinghouse

2. Response to Comments

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H. Response to Comments from the California Department of Transportation, District 4 Office of Community and Regional Planning, dated April 8, 2024.

H-1 The California Department of Transportation, District 4 Office of Community and Regional Planning (Caltrans District 4) thanks County staff for including the agency in the environmental review process for the project. Caltrans District 4 states that the Local Development Review branch reviews land use projects and plans to ensure consistency with the agency's mission and State planning priorities. The agency mentions that the comments provided for the planning documents are for informational purposes only and that they are not an official position held by the agency.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

H-2 Caltrans District 4 states that the General Plan update aims to establish a long-term vision for Contra Costa County's physical development, tackle climate change and housing insecurity, and improve residents' quality of life. Caltrans District 4 notes that the County's 2015 Climate Action Plan outlines goals and strategies to reduce greenhouse gas emissions in unincorporated Contra Costa County, aligning with State targets.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

H-3 Caltrans District 4 states that the project's VMT analysis and significance determination are undertaken in a manner that is consistent with the County's adopted VMT policy. Per the DEIR, this project is found to have a significant and unavoidable VMT impact. Caltrans commends the County for developing a Transportation Demand Program (TDM) for projects with significant VMT impacts. Caltrans recommends continuing exploring potential VMT reduction options and documenting the TDM with annual monitoring reports to demonstrate effectiveness.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

H-4 Caltrans District 4 states that Interstate I-680, which is within the project's location, is identified as a high-priority Caltrans asset vulnerable to sea level rise, storm surge, and climate change impacts, including increased precipitation. Caltrans District 4 expresses interest in being included in discussions to stay informed, as the agency wants to engage in multi-agency collaboration early and often to find multi-benefit solutions that protect vulnerable shorelines, communities, infrastructure, and the environment.

2. Response to Comments

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation. The County will revise General Plan Action HS-A6.3 to explicitly identify Caltrans as an agency with whom to coordinate in developing a countywide sea-level rise adaption and resilience plan.

H-5 Caltrans District 4 states their commitment to advancing equity and livability in all communities. Caltrans District 4 looks forward to collaborating with the County to prioritize projects that are equitable and provide meaningful benefits to historically underserved communities.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

H-6 Caltrans District 4 thanks the County for including Caltrans in the environmental review process. Caltrans District 4 provides the contact information of their Associate Transportation Planner for any questions regarding the comment letter. Caltrans also provides the contact information for the District 4 Caltrans office for future early coordination opportunities or project referrals.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

LETTER I – City of Lafayette (1 page)

From:	Zittel, Nichole
To:	DCD Advance Planning
Subject:	City of Lafayette - Contra Costa County 2024 General Plan and Climate Action Plan Draft EIR Public Review and Comment
Date:	Monday, April 8, 2024 1:32:42 PM

Good Afternoon,

The City of Lafayette has reviewed the Contra Costa County 2024 General Plan and Climate Action Plan Draft Environmental Impact Report and has no comments. I-1

Best,

Nichole Zittel
She/her
Assistant Planner
City of Lafayette
(925) 299-3211
www.lovelafayette.org

I. Response to Comments from the City of Lafayette, dated April 8, 2024.

I-1 The City of Lafayette states that they have reviewed the Contra Costa County 2024 General Plan and Climate Action Plan Draft EIR and have no comments.

The County appreciates the City's review of the DEIR. This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

2. Response to Comments

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LETTER J – Communities for a Better Environment and Asian Pacific Environmental Network (8 pages)

April 8, 2024

Contra Costa County
Department of Conservation and Development
30 Muir Road, Martinez, CA 94553

RE: General Plan, Climate Action Plan, Environmental Impact Report

Comments submitted by email to: email@envisioncontracosta2040.org

Dear Chair Glover, Board of Supervisors, and Department of Conservation and Development:

We submit these comments primarily to describe the inherent risks in hydrogen and biomethane infrastructure development as part of the County's climate commitments, and outline other improvements. While our comments focus on these issues, we also uplift comments submitted by 350 Bay Area and others on ways that the General Plan, Climate Action Plan, and related Environmental Impact Report can and should be more protective of environmental justice communities. J-1 J-2

We are committed to working with the County as stewards of a long-awaited shift away from an extractive fossil-fuels based economy that will dramatically improve air quality for fenceline communities and reduce the harms of the climate crisis for the whole County. We should use this opportunity to grow a regenerative and collective economy that centers the needs of our fenceline communities throughout, supporting residents and workers along the way, in a just and equitable transition. As the County, state and country develop and implement policies that recognize the climate crisis and support a decarbonized grid, we are reminded that: "Transition is inevitable. Justice is not."[1] J-3

I. We support, if amended, the County's many community-rooted climate solutions.

The County proposes a number of laudable policies that advance a just and equitable transition. Other policies described in the General Plan and Climate Action Plan would benefit from additional safeguards to ensure that the policies are equitable and do not exacerbate existing environmental justice inequities. J-4

Building Decarbonization

This emphasis on equity is reflected in BE-2 where the Country describes its intent to develop programs to support residential electrification.[2] By prioritizing those with the least means to bring J-5

[1] "Just Transition," Movement Generation, https://movementgeneration.org/justtransition/.
[2] "Climate Action Plan," Contra Costa County, October 2023, https://envisioncontracosta2040.org/wp-content/uploads/2023/10/CoCoCounty-2024CAP-PublicDRAFT-10-10-23_Final.pdf, [hereinafter "Climate Action Plan"] at 77 ("Ensure County-led and supported retrofit programs incentivize and prioritize conversion of buildings built before 1980 and emphasize assistance to

decarbonization into their own homes, the County is helping avoid a possible catastrophe where only those who could not afford to get off the natural gas system are those who are left to pay for the maintenance, repair and crises of an aging infrastructure system. On this program and others, even where a community-based organization ("CBO") may lack technical expertise or physical capacity to implement electrification projects inside residents' homes, the County should still partner with CBOs who have trusting relationships in communities centered with these policies as a way to establish trust and promote participation through holding community meetings and demonstrations, relying then on additional organizations with capacity to effectuate the program.

J-5 (CONT'D)

We encourage the County to connect with the City of Los Angeles Climate Emergency Mobilization Office (CEMO) to understand the recommendations of the City of Los Angeles *Report on Equitable Building Decarbonization* and its underlying community engagement process.[3] Additionally, we encourage the County to incorporate policies to protect tenants as recommended in the report *Decarbonizing California Equitably: A Guide to Tenant Protections in Building Upgrades/Retrofits Throughout the State.*[4]

Carbon Sequestration

NI-4 describes the County's goal to use working lands for carbon sequestration strategies to achieve net carbon neutrality. Our organizations celebrate the County's approach to sequestration in that it relies on natural and working lands through trees and other green infrastructure, rather than the untested, risky technologies promoted by fossil fuel companies to otherwise store carbon via underground injection.[5] At the same time, we should provide explicit guidance on how to implement the important principle that the County itself writes: "Ideally, the community will reduce its own emissions as much as possible [by other methods], and then balance out the remainder [with carbon capture]."[6] This goal is also reflected in AB 1279 (Muratsuchi), which states "Prioritizing direct emission reductions will help California to meet both its air quality standards and net zero greenhouse gas emissions" given "the findings from numerous studies recognizing the benefits, risks, and uncertainties around the use of carbon dioxide removal technologies and carbon capture, utilization, and storage technologies."[7]

J-6

owners of properties that are home to very low-, low-, and moderate- income residents or located in Impacted Communities, as permitted by available funding.").

[3] Emma French, *Report on Equitable Building Decarbonization: Equity Focused Policy Recommendations for the City of Los Angeles*, Prepared for the Climate Emergency Mobilization Commission and the Climate Emergency Mobilization Office (CEMO), Sept. 15, 2022, https://static1.squarespace.com/static/6425c19e4d543f40fa406953/t/65a08499faadfe0e9652ec40/1705018528390/Report-on-Equitable-Building-Decarbonization-FINAL-September-15-2022.pdf.

[4] Strategic Actions for a Just Economy (SAJE), October 2023, https://www.saje.net/wp-content/uploads/2023/09/Decarbonizing-California-Equitably-Report-1.pdf.

[5] Climate Action Plan, at 100. *See also* "Healthy Lands, Healthy People: A Carbon Sequestration Feasibility Study," Contra Costa County, October 2023, contracosta.ca.gov/DocumentCenter/View/79768/Healthy-Lands-Healthy-People-Final-Report.

[6] Climate Action Plan, at 15.

[7] AB 1279 (2022). https://legiscan.com/CA/text/AB1279/id/2606946.

First, we must clarify that these reductions should be the result of policies and practices that support direct reductions in consumer demand as well as policies or permitting decisions that support direct limitations on emissions that result in declining emissions. In short, ensuring less or no emissions are generated in the first place. The County should be explicit to signal that industrial carbon capture and sequestration (CCS) technology, which is unproven at scale and encourages continued investment in non-carbon but still health-harming polluting emissions, is *not* considered such a reduction strategy. We should also make explicit that industrial carbon dioxide removal (CDR) should be a backstop rather than the primary driver of carbon neutrality in the County. The County should collaborate with the Air District and further prioritize strategies that also improve air quality in areas with the worst cumulative air pollution impacts.

J-6
CONT'D

The County's goals in NW-1 to increase composting of natural waste, similarly, move us in the right direction, but need to be more protective of impacted communities. While proper composting of natural waste is preferable to increased landfill reliance, the Plan is silent on mitigation measures that would protect the communities that surround natural waste composting facilities from increased onsite processing.[8] The County should develop policies that protect local air, water and soil quality and nearby residents from odor impacts in tandem with its natural waste composting goals. Additionally, as the County encourages more proper processing of organic waste, it needs to be careful to not encourage the creation of more organic waste, and instead proactively minimize waste. This is especially the case if the County intends to capture natural gas from recovered organic waste as to not create incentives to produce more underlying organic waste.[9] If that County does pursue that waste-to-gas implementation strategy, it should safeguard against fossil gas expansion alongside development of those waste-based technologies so that the resultant product is not a greenwashed fossil fuel blend product.

J-7

Renewable Energy

Finally, one of the most promising components of the Climate Action Plan are the County's plans to increase use and generation of electricity from renewable sources in BE-3. We are concerned, however, that while the 2030 goals suggest rapid progress in this decade, there is a large and unexplained drop off in a number of the 2045 projections, namely that there would be zero related greenhouse gas emission reductions for the 2030-2045 period.[10] Instead, we ask that the County only continue to increase and accelerate its renewable electricity sourcing efforts over this period. If the County sees this as infeasible, we ask that the County explain that projection and its underlying analysis in greater detail than the Plan does now.

J-8

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[8] Climate Action Plan, at 83.
[9] Climate Action Plan, at 98.
[10] Climate Action Plan, at 78.

II. Biomethane is a false solution that endangers public health both in its creation and in its use.

The County forecasts that biomethane will be blended in pipelines as a replacement to natural gas.[11] Instead, the County should develop and pursue strategies that do not rely on biomethane, which we call a false solution: though it may appear as an appropriate replacement for natural gas at first glance, biomethane poses too many public health risks to be included in the Climate Action Plan. J-9

Biomethane's most ample local supply is the megadairies of the Central Valley; the manure from cows at these dairy farms feed methane digesters that then yields biomethane, all the while increasing reliance on the heavily pollutive dairy industry, further endangering the low-income farmworker communities that surround these pastorally-cloaked industrial operations.[12] The Central Valley's poor air quality is made worse yet by methane digesters which emit particulate matter and ammonia, yielding the highest ammonia concentrations in the state.[13] Megadairies imperil the drinking water that farmworker communities rely on, elevating nitrate levels as a result of the manure seeping into groundwater, and the odor impacts are as awful as can be easily imagined.[14] Contra Costa County is home to four oil refineries and knows the deleterious environmental and public health effects of the state relying on the region to produce energy for everyone else; the County should not now shift that unjust - and unnecessary - burden to Tulare County and the rest of the San Joaquin Valley. J-10

Much of the evidence to support these warnings have been aggregated not only by environmental justice groups who have always opposed these false solutions, but now increasingly environmental groups and academics who originally supported the creation of the Low Carbon Fuel Standard like the Union of Concerned Scientists (UCS) and the Natural Resources Resources Defense Council (NRDC) have joined in the chorus of warnings.[15] But, given state policy inertia, distorted accounting related to the harms and benefits of biomethane production and use continues to favor this especially problematic source over other investments

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[11] Climate Action Plan, at 64, B-45.
[12] Tony Briscoe, "Why some people think California's cow manure methane plan stinks," *Los Angeles Times*, Dec. 5, 2023, https://www.latimes.com/environment/story/2023-12-05/californias-cow-manure-methane-plan-is-making-people-angry [hereinafter "Briscoe biomethane article"].
[13] Briscoe biomethane article; Michael Holly et. al., "Greenhouse gas and ammonia emissions from digested and separated dairy manure during storage and after land application," *Agriculture, Ecosystems & Environment* 239, Feb. 15, 2017, 410-419, https://www.sciencedirect.com/science/article/pii/S0167880917300701.
[14] Rebecca Spector, "The Dairy Digester Dilemma: A False Climate Solution," Center for Food Safety, Oct. 4, 2021, https://www.centerforfoodsafety.org/blog/6457/the-dairy-digester-dilemma-a-false-climate-solution.
[15] "Recommendations for Updates to the Low Carbon Fuel Standard," Natural Resources Defense Council, June 14, 2023, https://ww2.arb.ca.gov/form/public-comments/submissions/4036; Jeremy Martin, "Something Stinks: California Must End Manure Biomethane Accounting Gimmicks in its Low Carbon Fuel Standard," Union of Concerned Scientists, February 15, 2024, https://blog.ucsusa.org/jeremy-martin/something-stinks-california-must-end-manure-biomethane-accounting-gimmicks-in-its-low-carbon-fuel-standard/.

to be funded by the state's Low Carbon Fuel Standard.[16] The effects of perverse incentives created by runaway policies due for for corrections should not be taken as evidence that biomethane is a reliable, much less responsible, energy source for the future.

The California Energy Commission studied replacing in-home natural gas with biomethane and found that combustion of biomethane was just as toxic, if not more toxic, than natural gas, including on DNA damage and increasing cancer risks.[17] Even if biomethane is restricted to industrial clusters[18] (or even just to wastewater plants[19]), that merely, and unacceptably, directs the public health dangers towards industrial workers.

J-10
CONT'D

Taken together, the environmental injustices in the production of biomethane at megadairies, the shoddy calculations and unreliable financial incentives that have propped up this industry, and the end-use public health risks all lead us to urge the County to reject biomethane as a component of the Climate Action Plan. Since the current draft of the Climate Action Plan relies on biomethane to achieve some of its greenhouse gas emissions, the County needs to develop alternative methods to accomplish those same emissions. To that end, we believe that reducing vehicle miles traveled and increasing public transportation infrastructure is the most efficient strategy, reducing energy needs and greenhouse gas emissions as effectively as possible in the greatest emitting sector.

J-11

III. While just a minor component of the Climate Action Plan, the County should not rely on hydrogen as a future fuel source.

We are glad to see little reliance placed on hydrogen as a fuel source in the Climate Action Plan. The few references made are in the context of transportation and biomethane. The section above addresses the latter. On transportation, the County's own words in the Climate Action Plan point towards the strategy we encourage: "Gasoline and diesel-fueled vehicles in particular release more carbon dioxide into the atmosphere than vehicles that use electricity or hydrogen fuels, even when accounting for how the electricity or hydrogen is generated."[20] While this two-strategy approach mirrors state policy,[21] hydrogen production could easily entrench existing environmental inequities rather than promote a Just Transition.

J-12

[16] Kiki Velez, "CARB Must Reform LCFS Program to Meet Climate Goals," Natural Resource Defense Council, Aug. 23, 2023, https://www.nrdc.org/bio/kiki-velez/carb-must-reform-lcfs-program-meet-climate-goals-0; see e.g., Jeff St. John, "Critics question assumptions at core of Low Carbon Fuel Standard," Canary Media, Mar. 14, 2024, https://www.canarymedia.com/articles/transportation/critics-question-assumptions-at-core-of-california-low-carbon-fuel-program

[17] "Air Quality Implications of Using Biogas to Replace Natural Gas in California," California Energy Commission, May 2020, https://www.energy.ca.gov/sites/default/files/2021-05/CEC-500-2020-034.pdf.

[18] Climate Action Plan, at B-30.

[19] Climate Action Plan, at 83.

[20] Climate Action Plan, at 92.

[21] *See, e.g.,* Executive Order N-72-20, Sep. 23, 2020, https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf; "2022 Scoping Plan for Achieving Carbon Neutrality," California Air Resources Board, Dec. 2022, https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf [hereinafter "2022 CARB Scoping Plan"], at 189-192.

The 2022 CARB Scoping Plan projects a precipitous decline in in-state demand for gasoline and petroleum-based products by 2045.[22] It further muses that "existing refineries could be repurposed to produce [...] hydrogen."[23] That would be a calamitous environmental justice failure. As the County knows, "[t]he differences in criteria pollutant emissions between [...] processing of petroleum-based feedstocks and renewable feedstocks is small, as renewable fuels processing operates within the same range of operating parameters as petroleum-based production."[24] The County must commit to a future where oil refineries are decommissioned rather than one that prolongs reliance on the oil industry, defers environmental remediation of toxic sites, and endorses existing pollution burdens that disproportionately fall on low-income communities of color.

J-12 CONT'D

Hydrogen can be produced from processes other than existing refineries, of course, but there is no model we endorse. So-called "green" hydrogen, where renewable energy is the source of energy for electrolysis (a process by which hydrogen is extracted from water molecules) is a misnomer, willfully obscuring the inefficiency and loss of 50-80% of the energy inherent in producing hydrogen via electrolysis and then from combusting hydrogen to generate electricity again.[25] Instead, we encourage maximization of renewable energy sources that feed directly into the grid to meet consumers' needs, including in the transportation sector and accordingly encourage the County to pursue electric transportation options as it plans for the energy transition.

J-13

IV. Climate planning requires inclusion of local refineries and other large industrial facilities under County jurisdiction.

Notably missing from the Climate Action Plan are the largest sources of industrial sector greenhouse gas emissions in the state: oil refineries. These oil refineries also produce the very fuels that make the transportation sector the largest source of greenhouse gas emissions in the state. While addressing the cumulative and disproportionately harmful pollution burden that falls on refinery fenceline communities, planning for a community-and-worker-centered managed decline of greenhouse gas emissions from oil refineries will be necessary to meet county, state, and global climate goals.

J-14

The County has excluded from its greenhouse gas inventory - and from the rest of the Climate Action Plan - large industrial facilities, including oil refineries under a theory that "[t]hese

J-15

[22] 2022 CARB Scoping Plan, at 100-110.
[23] 2022 CARB Scoping Plan, at 191.
[24] "Rodeo Renewed Project Draft Revised Environmental Impact Report," Contra Costa County, Oct. 2023, https://www.contracosta.ca.gov/DocumentCenter/View/80824/Phillips-66-Rodeo-Renewed-Project-Draft-Revised-EIR-October-24-2023, at 16.
[25] Jeff St. John, "The problem with making green hydrogen to fuel power plants," *Canary Media*, Oct. 10, 2023, https://www.canarymedia.com/articles/hydrogen/the-problem-with-making-green-hydrogen-to-fuel-power-plants.

facilities are regulated by the State and BAAQMD, and the County does not have direct control over their operations."[26] First, while the State and Air District do regulate these facilities (and many if not all of the other contemplated regulated parties under the Climate Action Plan), so does the County; the County's own Industrial Safety Ordinance uniquely applies to two refineries and related facilities within its jurisdiction.[27] Second, the County's involvement as the lead agency for analysis and review under the California Environmental Quality Act ("CEQA") for two biofuel conversion projects at local refineries, with accompanying permit decisions, further evinces the County's role in regulating and controlling these facilities.[28] As the County wrote in the 2021 Draft Environmental Impact Report for the Martinez Refinery Renewable Fuels Project, "The Project also requires discretionary action by Contra Costa County (County), wherein the County has the authority to use its judgment in deciding whether or how to carry out or approve the Project. [...] As the public agency with primary land use authority over the proposed Project, the County is the 'lead agency' overseeing and administering the CEQA environmental review process."[29] The County should not seek to relinquish its broad discretionary authority over these facilities or advance a narrative that that regulation of them is solely in the purview of state agencies; the County has a responsibility here.

J-15
CONT'D

At the very least, the County should meet the bare examples of Richmond and Los Angeles and contextualize its own greenhouse gas emissions inventory and reduction plans with side-by-side comparisons of totals that include the emissions from the large industrial facilities, including oil refineries.[30] Both cities pass on specific emissions reduction goals for refineries, but do report the totals; Los Angeles also does offer that it will "[s]upport the implementation of refinery and heavy duty industry emissions reduction plans," including leak detection and repair initiatives and implementing control technologies.[31] The California Air Resources Board released 2022 emissions data late last year to support that will support this exercise.[32]

J-16

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[26] Climate Action Plan, at B-17.
[27] "Industrial Safety Ordinance," Contra Costa Health, https://www.cchealth.org/health-and-safety-information/hazmat-programs/industrial-safety-ordinance.
[28] "Phillips 66 Rodeo Renewed Project," Contra Costa County, last updated Jan. 5, 2024, https://www.contracosta.ca.gov/7945/Phillips-66-Rodeo-Renewed-Project; "Martinez Refinery Renewable Fuels Project," Contra Costa County,
[29] "Martinez Refinery Renewable Fuels Project Draft Environmental Impact Report," Contra Costa County, Oct. 2021, https://www.contracosta.ca.gov/DocumentCenter/View/72957/Martinez-Refinery-Renewable-Fuels-DEIR-Vol-1-Complete-DEIR, at 1-1.
[30] "Climate Action Plan," City of Richmond, October 2016, ci.richmond.ca.us/DocumentCenter/View/40636/CAP-combined?bidId=, at 27; "L.A.'s Green New Deal, Sustainability Plan 2019," City of Los Angeles, 2019, plan.lamayor.org/sites/default/files/pLAn_2019_final.pdf, [hereinafter "Los Angeles Climate Action Plan"] at 91 (noting that 2015 greenhouse gas inventory data included large industrial facilities, including petroleum refineries, and they are included in the City's industrial emission goals in the box at the top of the page).
[31] Los Angeles Climate Action Plan, at 91.
[32] "Annual Summary of GHG Mandatory Reporting," California Air Resources Board, Nov. 6, 2023, https://ww2.arb.ca.gov/sites/default/files/classic/cc/reporting/ghg-rep/reported-data/2022-ghg-emissions-2023-11-06.xlsx.

Thank you for the opportunity to comment on the Climate Action Plan. We look forward to supporting and celebrating the County's many successes as it plans for this energy transition, with justice at the heart of it. To that end, we are requesting that we set up a meeting with your team so that we can collaborate on language that reflects our suggestions. Please contact us with any questions via email at conniecho@apen4ej.org and kerry@cbecal.org.

J-17

Sincerely,

Connie Cho
Just Transition Policy Strategist
Asian Pacific Environmental Network

Emma Ishii
Local Policy Coordinator
Asian Pacific Environmental Network

Kerry Guerin
Attorney & Just Transition Fellow
Communities for a Better Environment

2. Response to Comments

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J. Response to Comments from Communities for a Better Environment and Asian Pacific Environmental Network, dated April 8, 2024.

J-1 Communities for a Better Environment and the Asian Pacific Environmental Network (CBE-APEN) states that they submit their comments primarily to highlight concerns regarding hydrogen and biomethane infrastructure development as part of the County's climate commitments, as well as other suggested improvements.

Contra Costa County appreciates CBE-APEN's comments and recommendations. Refer to responses in J-2 through J-4 for specific responses to each topic raised.

J-2 CBE-APEN states that although their comments focus on issues stated above, they want to highlight comments submitted by 350 Bay Area and others on ways the General Plan, Climate Action Plan, and EIR can be more protective of environmental justice communities.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-3 CBE-APEN states that they committed to working with the County "as stewards" of a transition away from a fossil-fuel-based economy, thereby improving air quality for fence line communities and reducing climate crisis harm. CBE-APEN aims to grow a regenerative economy that centers the needs of fence line communities, supporting residents and workers in a just and equitable transition.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-4 CBE-APEN recommends amending policies in the General Plan and Climate Action Plan to include additional safeguards so that the policies can be more equitable and not exacerbate existing environmental justice inequities.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-5 CBE-APEN highlights Climate Action Plan Strategy BE-2, which will help lower income individuals to decarbonize their homes. CBE-APEN acknowledges that although community-based organizations (CBOs) may lack expertise on the implementation of electrification projects in homes, the County should seek to partner with CBOs in order to establish trust and promote community engagement. CBE-APEN also encourages the County to collaborate with the City of Los Angeles Climate Emergency Mobilization Office to understand the City of Los Angeles *Report on Equitable Building Decarbonization* and its community engagement process. Additionally, the County is advised to implement tenant protection policies as outlined in the report *Decarbonizing California Equitably*.

The proposed CAP prioritizes working with community-based organizations in several actions in the Climate Equity goal. Namely:

- In partnership with community-based organizations, reverse community deterioration and blight and improve personal and property safety in neighborhoods throughout Contra Costa County. (CAP Strategy CE-1)
- In partnership with community-based organizations, secure funding to create a program to provide low-cost or free air conditioning and filtration, improved insulation, low-emitting materials, energy solar and storage systems, energy efficiency, and indoor ventilation in homes, emphasizing buildings that are home to Impacted Community members. (CAP Strategy CE-1, General Plan SC-A6.2)
- Partner with local schools, the community college district, community-based organizations, labor unions, Workforce Development Boards, and other appropriate groups to provide training for residents for family-sustaining jobs in sustainable industries. Prioritize training for people currently or recently working in polluting or extractive activities. (CAP Strategy CE-1; SC-P1.1)
- Work with schools, the Contra Costa County Library, business groups, and community-based organizations to educate and inform community members about climate change and related sustainability topics, and the County's climate goals and the actions the County is taking to achieve them. (CAP Strategy CE-2)
- Work with community groups to establish and maintain urban gardens, particularly on vacant lots and park land in Impacted Communities. (CAP Strategy CE-4; General Plan SC-P4.1)

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-6 CBE-APEN supports Climate Action Plan Strategy NI-4 to use working lands for carbon sequestration strategies to achieve net carbon neutrality. However, CBE-APEN suggests that the County provide explicit guidance on how to implement this important principle. CBE-APEN states that the reductions in emissions should be a result of policies and practices that directly reduce consumer demand and limit emissions. CBE-APEN states that the County be explicit that industrial carbon capture and sequestration technology is not considered a reduction strategy, as it still causes harmful polluting emissions. CBE-APEN states that the industrial carbon dioxide removal should be a backstop rather than the primary driver of carbon neutrality in the county. CBE-APEN states that the County should collaborate with the Air District and further prioritize strategies that also improve air quality in areas with the worst cumulative air pollution impacts.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-7 CBE-APEN states that Climate Action Plan Strategy NW-1 is a move in the right direction regarding the composting of natural waste, however notes that it is important to protect impacted communities. CBE-APEN states that the CAP is silent on mitigation measures that would protect the communities that surround natural waste composting facilities. Therefore, the County should develop policies that protect local air, water, soil quality and nearby residents from odor impacts in tandem with its natural waste composting goals. CBE-APEN also suggests that the County must be careful not to encourage the creation of more organic waste, and instead proactively minimize waste especially if the County intends to capture natural gas from recovered organic waste. CBE-APEN states that if that County does pursue waste-to-gas implementation strategy, it should safeguard against fossil gas expansion alongside development of those waste-based technologies so that the resultant product is not a greenwashed fossil fuel blend product.

As mentioned in Impact 5.9-1 in Section 5.9-1, *Hazards and Hazardous Materials*, the proposed CAP aims to reduce greenhouse gas emissions and adapt the county to changing climate conditions. Although the CAP may lead to the construction of physical improvements and infrastructure in the county to meet emissions targets, these developments are unlikely to involve the transportation or disposal of hazardous materials. In addition, all construction is subject to federal, State, and local regulations, and future developments are expected to meet emissions targets.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-8 CBE-APEN requests further clarification of the 2045 GHG emission reductions projection associated with Strategy BE-3 of the proposed CAP.

The CAP has been revised to clarify that due to California's Renewable Portfolio Standard, all electricity sold in the state will be carbon-free by 2045, eliminating emissions from electricity generation (and therefore, also eliminating emission reductions from decreases in electricity use) by that year. This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-9 CBE-APEN opposes biomethane and states that it endangers public health in its creation and use. CBE-APEN encourages the County to seek solutions and strategies that do not include biomethane. CBE-APEN states that it may appear to be a better alternative to natural gas, but it poses too many public health risks to be included in the CAP.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-10 CBE-APEN details that mega-dairies in the Central Valley produce biomethane, increasing reliance on the polluting dairy industry, endangering low-income communities, and causing poor air quality, drinking water, and odor. CBE-APEN states that environmental justice groups and academics warn against biomethane production and that the California Energy Commission found biomethane to be toxic, potentially more harmful than natural gas.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-11 CBE-APEN states that the County should reject biomethane as part of its CAP due to environmental injustices, financial incentives, and public health risks. Instead, alternative methods like reducing vehicle miles traveled and increasing public transportation infrastructure are suggested. The current draft of the CAP relies on biomethane for greenhouse gas emission reduction benefits, and the County should focus on reducing energy needs and emissions in the largest emitting sector.

The term "biomethane" is mentioned twice in the CAP: once in connection with CARB's Renewable Natural Gas strategy and once in the definition of low-carbon energy. The CAP has been revised to include more information about other initiatives the County is taking to promote mode shifts, such as the Active Transportation Plan and grants supporting the Building Healthy Communities program. This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-12 CBE-APEN states that while hydrogen is a minor component of the Climate Action Plan, it should not be relied on as a future fuel source. CBE-APEN is concerned that hydrogen production could entrench existing environmental inequities rather than promote a Just Transition. CBE-APEN recommends that the County commit to a future where oil refineries are decommissioned rather than one that prolongs reliance on the oil industry, defers environmental remediation of toxic sites, and endorses existing pollution burdens that disproportionately fall on low-income communities of color.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-13 CBE-APEN states their opposition to the production of hydrogen and acknowledges that it can be produced in an alternative matter that does not involve existing refineries. CBE-APEN notes the inefficiency of using hydrogen as a renewable energy. CBE-APEN encourages the maximization of renewable energy sources.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-14 CBE-APEN states oil refineries are missing from the CAP, and that climate planning should require including local refineries and other large industrial facilities under County jurisdiction. CBE-APEN states that planning for a worker- and community-centered managed decline of greenhouse gas emissions from oil refineries will be vital in meeting County, State, and global climate goals.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-15 CBE-APEN mentions that Contra Costa County has excluded large industrial facilities such as oil refineries from the CAP because these facilities are regulated by the State and the Bay Area Air Quality Management District (BAAQMD) and not the County. CBE-APEN mentions that although these industries are regulated by State and federal agencies, the County has two ordinances that apply to two refineries and related facilities in the County's jurisdiction. CBE-APEN states that the County's involvement as the lead agency for analysis and review under CEQA for the two biofuel conversion projects at local refineries, with accompanying permit decisions, further evidences the County's role in regulating and controlling these facilities. CBE-APEN states that the County should not seek to relinquish its broad discretionary authority over these facilities or advance a narrative that their regulation of them is solely in the purview of State agencies.

Emissions from stationary sources, wildfire, and direct access electricity are reported in the CAP for informational purposes but are not formally counted as part of the unincorporated county's GHG emissions.

Contra Costa County is home to large industrial facilities whose operations have generated significant GHG emissions and/or whose products create GHGs, such as gasoline for internal combustion engines. Most of those facilities were constructed before entitlements, such as land use permits, from the County were required. If these facilities apply for new land use permits, the County can impose new operational requirements in some circumstances. An example of this is applications the County received in 2020 from two refineries seeking to revamp their facilities to produce renewable fuels. There are several factors outside of the County's control that influence the operations and related emissions and energy use at these facilities. The County has therefore elected to exclude the direct emissions and energy use at these facilities from consideration of the County's GHG reduction goals for the following reasons:

- These facilities are regulated primarily through the Federal Energy Regulatory Commission and the California Energy Commission (CEC) and are subject to air quality and emissions standards set forth by the USEPA, CARB, and BAAQMD.

- The energy used at some of these facilities fluctuates from year to year, depending on the demand for resources and availability of other electricity-generating sources, such as hydropower or renewable resources. This makes it difficult to accurately forecast the energy use at these facilities.
- The County has limited jurisdictional authority to reduce GHG emissions from these sources because they are subject to cap-and-trade regulations set forth by CARB.
- The approach to excluding energy from sources that are outside of the County's jurisdictional control is consistent with the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions.
- The resultant jurisdictional inventory more accurately reflects the energy use from nonresidential customers in unincorporated Contra Costa County and allows the County to focus on actions that are within its control.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-16 CBE-APEN recommends that the County follow the examples of the City of Richmond and City of Los Angeles regarding greenhouse gas emissions inventory and reduction plans with side-by-side comparisons of totals that include the emissions from the large industrial facilities, including oil refineries.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

J-17 CBE-APEN thanks the County for the opportunity to comment on the Climate Action Plan and looks forward to supporting and celebrating the County's successes as it plans for its energy transition. CBE-APEN requests that the County meet with them to collaborate on language that reflects the group's suggestions, then provides contact information.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

LETTER K – Contra Costa Water District (4 pages)

CONTRA COSTA WATER DISTRICT

BOARD OF DIRECTORS
Ernesto A. Avila, P.E.
PRESIDENT
Antonio Martinez
VICE PRESIDENT
John A. Burgh
Connstance Holdaway
Patt Young

GENERAL MANAGER
Rachel Murphy, P.E.

April 8, 2024

SENT VIA EMAIL TO:
email@envisioncontracosta2040.org

Will Nelson
Principal Planner
Department of Conservation and Development
Contra Costa County
30 Muir Road
Martinez, CA 94553
will.nelson@dcd.cccounty.us

Re: Draft Contra Costa County 2045 General Plan Update and Climate Action Plan Draft Environmental Impact Report (aka Envision Contra Costa) (State Clearinghouse Number 2023090467)

Dear Mr. Nelson:

Thank you for the opportunity to review the proposed 2045 Contra Costa County General Plan and Climate Action Plan Draft Environmental Impact Report (EIR). Contra Costa Water District (CCWD) submits the following comments, which are intended to initiate a constructive program between Contra Costa County (County) and CCWD to facilitate adequate storm drain system planning and maintenance as it pertains to water facilities either owned or operated and maintained by CCWD within the jurisdiction of the County, and to ensure adequate and safe drinking water to new developments. K-1

Background

CCWD operates and maintains United States Bureau of Reclamation (Reclamation) owned water conveyance facilities and property, a significant portion of which traverses central and eastern Contra Costa County and terminates at the Martinez Reservoir.

The 48-mile Contra Costa Canal (Canal), which was constructed in the 1940s, is CCWD's backbone facility that conveys water from the Sacramento-San Joaquin Delta to eastern and central Contra Costa County. It originates at Rock Slough in the City of Oakley, passing through several cities and communities before terminating at the Martinez Reservoir in the City of Martinez. The water supply serves 550,000 people in the central and northeastern county area, including municipalities, industrial customers, businesses, and residences. The majority of the Canal is an open concrete-lined channel and is within both incorporated and unincorporated areas of Contra Costa County. K-2

CCWD also operates its Multipurpose Pipeline (MPP), a backbone treated water conveyance facility built in 2002, within the Canal right of way (ROW). The MPP is a pressurized underground 42-inch diameter welded steel pipeline that generally runs parallel to the open Canal from the Randall-Bold Water Treatment Plant in the City of Oakley to CCWD's Treated Water Service Area in the City of Concord. A significant portion of the MPP also traverses unincorporated Contra Costa County. K-2

Overview of Concerns

The Canal was constructed in the 1940s, prior to the extensive urban development that has taken place within the County since that time. This includes culverts and drainage areas that were originally constructed to convey flows occurring at the time across the Canal, but generally not designed to support additional runoff from future urban development. Nevertheless, these culverts and pathways have become hydraulically connected to urban development and are depended upon to properly drain these developments and prevent flooding. In addition to these smaller culverts and pathways, there are larger creeks and drainages within the County boundaries, also modified by urban development, that must pass through Canal ROW and MPP. K-3

CCWD is concerned that the drainage features within the Canal ROW, designed prior to these developments, do not have sufficient capacity for existing, let alone future, storm water runoff, and that more comprehensive analysis needs to be conducted by the County and developers to ensure that there are adequate storm water facilities to handle maximum flows that could occur during large storm events. Additional planned development has the potential to increase the risk of cumulative erosion or flooding that could impact the reliability and security of the regional water supply and integrity of CCWD's backbone Canal and MPP facilities.

Due to existing issues with the stormwater drainage system, development under the County's General Plan Update may cause potentially significant flooding or erosion impacts that must be mitigated through improvements to Canal facilities or maintenance agreements for existing facilities. Thus, CCWD offers comments to address our concerns and urges the County to consider these issues, consistent with its obligations under the General Plan law and CEQA. K-4

CCWD is also concerned about approval of developments in County unincorporated areas that do not have sufficient water supply or that encourage small / private groundwater systems in areas with known water quality impacts and health concerns. The County should encourage connections with permitted surface water supplies from larger established water agencies like CCWD. K-5

CCWD's Comments on Draft 2045 General Plan Update and Draft Climate Action Plan / EIR

<u>CCWD Comment 1:</u>

CCWD proposes the following policies be included in the Health and Safety Element of the 2045 General Plan: K-6

- HS-P5.9 - Require an encroachment permit from Contra Costa Water District (CCWD) for any new storm drain facility or anticipated runoff that will add load to existing facilities crossing or encroaching onto Contra Costa Canal rights-of-way.

- HS-P5.10 - Protect water quality by reducing non-point sources of pollution and the dumping of debris in and near creeks, storm drains, and the Canal. All drainage from new development should be either directed to an appropriate storm drain system that avoids CCWD facilities and Canal ROW, or obtain an encroachment permit from CCWD.

K-6

Please note that, as a condition of an encroachment permit, CCWD may seek maintenance agreements with the County for any drainage facilities located within the Canal right of way that support and benefit urban drainage within the County unincorporated areas.

K-7

Also, depending on the circumstances, CCWD may request that any new development that could impact the Canal ROW, CCWD facilities, or drainage facilities conduct a hydrologic study to demontrate sufficient capacity and erosion protection of downstream facilities to accommodate the development, and any improvements needed to protect the Canal be funded by the County or the developer.

K-8

CCWD Comment 2:

The 2045 General Plan should fully reflect the Water Service Implementation Measures that were included in Chapter 7 - Public Facilities/Services Element of the existing County General Plan (2005-2020). These measures should be carried forward to Goal PFS-4 in the 2045 General Plan because they provide needed detail to ensure a reliable water supply and protect public health.

> 7-i. Conditionally approve all tentative subdivision maps and other preliminary development plans on verification of adequate water supply for the project. Such condition shall be satisfied by verification, based on substantial evidence in the record, that capacity within the system to serve the specific development project exists or comparable demonstration of adequate wastewater treatment capacity. Where no tentative map or preliminary plan is required prior to development, approve no map or development permit without this standard being satisfied.
>
> 7-j. Identify, map, and monitor those areas where high levels of nitrates, arsenic, and/or manganese have been detected in groundwater supplies. Development should seek surface water supplies if any of these contaminants are known to be in groundwater supplies.
>
> 7-k. Discourage subdivisions or other permits which would allow the construction of rural residential units served by well water in areas of high nitrate concentrations, consistent with existing Health Department policy.
>
> 7-l. Discourage subdivisions or other permits which would allow the construction of rural residential units served by well water on lots of less than one acre, consistent with existing Health Department policy.

K-9

CCWD Comment 3:

The Health and Safety policies proposed in Comment 1, as well as the Public Facilities and Services policies proposed in Comment 2, should also be included and addressed within the Climate Action Plan Draft EIR. K-10

CCWD Comment 4:

CCWD suggests revisions to the description of CCWD included on Page 8-8 of the 2045 General Plan. Currently, the description reads:

- CCWD provides treated water to approximately 500,000 customers in the urbanized parts of central Contra Costa County that are not serviced by EBMUD, as well as some eastern parts of the county. CCWD's water is sourced from the Sacramento-San Joaquin Delta via the 48-mile Contra Costa Canal. CCWD also stores water at Los Vaqueros Reservoir in East County, southwest of Byron. K-11

CCWD recommends revising the first sentence as follows:

- **CCWD provides treated and untreated water to approximately 550,000 people in central and northeastern Contra Costa County, including municipalities, industrial customers, businesses, and residences.** CCWD's water is sourced from the Sacramento-San Joaquin Delta via the 48-mile Contra Costa Canal. CCWD also stores water at Los Vaqueros Reservoir in East County, southwest of Byron. **Los Vaqueros Water once released is delivered via the Contra Costa Canal.**

Conclusion

Thank you for considering CCWD's comments on the Draft 2045 General Plan and Climate Action Plan Draft EIR. We look forward to working with the County to find mutually beneficial solutions to protect the integrity of CCWD's water conveyance facilities, and to ensure adequate supplies to new developments while protecting public health. Should you have any questions about the comments raised in this letter, please do not hesitate to contact me at (925) 688-8312. K-12

Sincerely,

Mark Quady
Planning Manager

cc: Jeff Quimby – Assistant General Manager, Planning and Administration
Kimberly Lin – Director of Planning
Mark Seedall – Principal Environmental Planner

2. Response to Comments

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K. Response to Comments from Contra Costa Water District, dated April 8, 2024.

K-1 The Contra Costa Water District (CCWD) thanks the County for the opportunity to review the proposed EIR. CCWD states that the following comments are intended to initiate a constructive program between the County and CCWD to facilitate adequate storm drain system planning and maintenance by CCWD within the jurisdiction of the County, and to be able to ensure adequate and safe drinking water to new developments.

Contra Costa County appreciates CCWD's comments and recommendations that may assist the County. Refer to responses in K-2 through K-12 for specific responses to each topic raised.

K-2 CCWD operates and maintains United States Bureau of Reclamation owned water conveyance facilities and property. CCWD states that the Contra Costa Canal (Canal) is CCWD's main water conveyance facility. The canal is open concrete-lined and runs through incorporated and unincorporated Contra Costa County areas. The Multipurpose Pipeline MPP, a pressurized underground 42-inch diameter welded steel pipeline, also runs parallel to the Canal and traverses unincorporated Contra Costa County.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

K-3 CCWD states that the Canal was constructed in 1940s, prior to extensive urban development in Contra Costa County. Crossing the Canal right-of-way (ROW) are culverts and pathways that were designed to convey the runoff occurring at the time. These culverts and pathways throughout the county have now become hydraulically connected to urban development. CCWD is concerned that the drainage system has insufficient capacity to accommodate storm water runoff from existing and future development, and therefore future development would have the potential to increase erosion or flooding. CCWD suggests that a comprehensive analysis needs to be conducted by the County and developers to ensure that there are adequate storm water facilities to handle maximum flows that could occur during large storm events.

Impact 5.17-4 in DEIR Section 5.17-4, *Utilities and Service Systems*, states that the Contra Costa County Flood Control and Water Conservation District (FCD) uses detailed Flood Control Zone and Drainage Area maps to assess future development plans and assess the suitability of existing storm drainage infrastructure. The Flood Control Capital Improvement Plan (CIP) details the schedule and costs for new drainage projects and maintenance, funded by property taxes and development impact fees in each Flood Control Zone or Drainage Area. While the proposed project may increase impervious surfaces, leading to increased stormwater runoff and erosion, Contra Costa County has adopted the Flood Control Capital Improvement Plan (2021), Contra Costa Watersheds Stormwater Resource Plan (2019), and Contra Costa County Green Infrastructure Plan (2019) to address future development and expansion and improvement of the storm

drainage system, as needed. In addition, future development involving disturbance of one acre or more must comply with National Pollution Discharge Elimination System (NPDES) construction permit requirements, including preparation of a Storm Water Pollution Prevention Plan (SWPPP) with best management practices to limit sediment and non-stormwater discharges. Contra Costa County is under the jurisdiction of the San Francisco Bay RWQCB's MS4 permit. Under Provision C.3 of the MS4 Permit, the permittees (local jurisdictions) use their authority to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address stormwater runoff pollutant discharges and prevent increases in runoff flows. This goal is accomplished primarily through implementation of low impact development techniques. New projects also pay storm drainage impact fees, funding new storm drainage infrastructure within the county.

The requirements applicable to future development aim to prevent significant increases in stormwater runoff exceeding the capacity of the storm drain infrastructure, as already accounted for in the CIPs of the County and municipalities within the county and the FCD. Construction of new stormwater facilities, implementation of BMPs and on-site control measures, and preparation of required documents and review by the County will minimize potential impacts.

CCWD's comment letter does not identify specific locations along the Canal ROW, and within the County's jurisdiction, that it considers problematic. In response to the concern, the following policy has been added under Goal PFS-4 in the General Plan Public Facilities and Services Element:

> PFS-P4.8: Partner with water service providers to protect water conveyance infrastructure, such as aqueducts and canals, from encroachment and pollution.

K-4 CCWD is expressing concerns about the potential flooding or erosion impacts of the County's General Plan Update due to existing stormwater drainage system issues. They urge the County to address these concerns, in line with its obligations under General Plan law and CEQA.

See response to Comment K-3.

K-5 CCWD expresses concern about approval of developments in unincorporated county areas lacking sufficient water supply or encouraging small groundwater systems in areas with known water quality and health issues. CCWD suggests the County establish connections with permitted surface water supplies from larger water agencies like CCWD.

The proposed project does not approve developments in the unincorporated county that lack sufficient water supply or encourage small groundwater systems. Impact 5.10-2 of the DEIR states that Section 5.10.3.1, *Proposed General Plan Goals, Policies, and Actions,* contain goals, policies, and actions that require the County to consider impacts to water quality and groundwater supply when making decisions on development. Of these policies, Policy COS-P7.4 and Policy COS-P7.5 in the Conservation, Open Space, and Working Lands Element would reduce environmental impacts associated with the proposed project. Policy COS-P7.4 requires projects in areas without a water service provider to provide proof of adequate on-site groundwater during the development review process. Policy COS-P7.4 also requires compliance with the County's well regulations related to water quality and flow rate, require documentation that the proposed project will not have a significant cumulative impact on the aquifer or negatively affect development that already relies on the same groundwater supply. Policy COS-P7.5 prohibits new development that would create or significantly aggravate groundwater overdraft conditions, land subsidence, or other "undesirable results," as defined in Section 354.26 of the California Water Code. In addition, the General Plan includes policies in the Public Facilities and Services Element that address health risks associated with groundwater quality. In particular, Policy PFS-P4.3 supports the State Water Resources Control Board's efforts to eliminate small public water systems in new development, and Policy PFS-P4.5 requires new development to demonstrate the availability of a safe, sanitary, and environmentally sound water delivery system with adequate capacity. As indicated in Impact 5.10-2 of the DEIR, compliance with and implementation of these proposed General Plan goals, policies, and actions would serve to minimize potential adverse impacts on groundwater.

The County's long-established review procedures for new development include referring development applications to affected water service providers for review and comment. For projects within a water service provider's service area, connecting to that provider's system is standard practice once all requirements and regulations enforced by that provider are satisfied. However, County long-standing policy discourages extension of water and sewer services outside the Urban Limit Line (ULL). The County cannot encourage properties outside the ULL to connect to providers such as CCWD.

K-6 CCWD proposes adding new policies to the Health and Safety Element of the General Plan. The first new policy would require an encroachment permit from CCWD for any new storm drain facility or anticipated runoff that will add load to existing facilities crossing or encroaching onto Contra Costa Canal ROW. The second new policy would protect water quality by reducing non-point sources of pollution and the dumping of debris in and near creeks, storm drains, and the Canal. CCWD states that all drainage from new development should be either directed to an appropriate storm drain system that avoids CCWD facilities and the Canal ROW, or obtain an encroachment permit from CCWD.

Regarding the first policy suggestion, numerous culverts were constructed under the Canal to convey natural runoff otherwise blocked by fill placed for the Canal's construction. The County's standard "collect and convey" requirements apply to those older crossings. Developers routinely construct detention basins upstream of these old culverts to meter the runoff so as not to overwhelm them. In other instances, new culverts have been jacked and bored under the Canal to provide additional capacity. The recent Alves Lane crossing in Bay Point is an example of the latter, which required permits from CCWD and the Bureau of Reclamation.

Regarding the second policy suggestion, such water quality issues are already addressed by the County's Stormwater Management Ordinance in Division 1014 of the County Ordinance Code and the County's permitting requirements with the Regional Water Quality Control Board. Furthermore, County Ordinance Code Section 914-2.006 states, "Storm waters flowing from the subdivision in any form or manner shall not be permitted to flow into any water conveyance facility of the Contra Costa Canal, nor into any other water conveyance or impounding facility for domestic water consumption."

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

K-7 CCWD notes that as a condition of an encroachment permit, CCWD may seek maintenance agreements with the County for any drainage facilities located within the Canal ROW that support and benefit urban drainage within the county unincorporated areas.

This comment appears to describe an existing CCWD policy or practice. It does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

K-8 CCWD notes that it may request a hydrologic study for new developments affecting Canal's ROW, CCWD facilities, or drainage facilities to demonstrate sufficient capacity and erosion protection. The County or developer may fund any improvements needed to protect the Canal.

This comment appears to describe an existing CCWD policy or practice. It does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

K-9 CCWD states that the proposed General Plan should fully reflect the water implementation measures that were present in Chapter 7 of the existing County General Plan, and carry them forward to Goal PFS-4 in the proposed General Plan Update. CCWD lists Implementation Measures 7-i, 7-j, 7-k, and 7-l from the existing General Plan.

The intent of Implementation Measure 7-i is carried forward in the 2045 General Plan as Policy PFS-4.5, which requires new development to demonstrate the availability of a safe, sanitary, and environmentally sound water delivery system with adequate capacity.

Implementation Measure 7-j called for the County to identify, map, and monitor areas where high levels of nitrates, arsenic, or manganese have been detected in groundwater supplies, and seek surface water supplies for development in areas where any of these contaminates are known to exist in groundwater supplies.

The County has determined that Implementation Measure 7-j is no longer necessary. The County is unaware of any statute that requires the County to establish a plan to identify and monitor groundwater quality on private properties. A nitrate study conducted in East County (Brentwood/Oakley area) in the late 1980s identified two areas with elevated nitrate levels. Much of that area is now incorporated and developed, and municipal water is available. Furthermore, treatment options exist to improve water quality.

County Ordinance Code Chapter 414-4 – Water Supply requires that water for water systems meets bacteriological, chemical, and physical standards. Analysis of specific chemical constituents in individual wells may be required, and the County requires an analysis for nitrates in new domestic water wells. Per County regulations, if tests indicate contaminants in the water that pose a direct and immediate hazard to health, the water will not be approved for domestic use. Additionally, the County Building Official may withhold issuance of a building permit if they are advised by the County Health Officer that there is not a water source complying with the Ordinance Code.

Implementation Measure 7-k calls for the County to "discourage subdivisions or other permits" that would allow construction of rural residential units served by well water in areas of high nitrate concentrations, consistent with County Health Department policy.

The County has determined that Implementation Measure 7-k is no longer necessary. Per County Ordinance Code Section 414-4.241 – Subdivision Maps, pursuant to County Ordinance Code Title 9 – Subdivisions, a copy of any submitted tentative subdivision map must be forwarded to and filed with the County Health Officer for investigation of domestic water supply. The tentative map must show the source of the water supply, proposed provisions for sewage disposal, number of lots and their sizes, and contour lines at intervals of five feet or less. The standards for water wells as the approved water supply for domestic use are contained in the County Health Officer regulations and include requirement for the well water to comply with State standards.

Implementation Measure 7-l is addressed by Land Use Element Policy LU-P2.7, which requires a 5-acre minimum lot size for residential development where no public water or sewer service is available, and a 1-acre minimum lot size where one of these utilities is available, but not both.

2. Response to Comments

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

K-10 CCWD states that the policies proposed in Comment 1 and Comment 2 of their DEIR comment letter should also be included and addressed within the Climate Action Plan Draft EIR.

These comments are addressed above in responses to comments K-6, K-7, K-8, and K-9.

K-11 CCWD recommends revising the description of CCWD included on Page 8-8 of the proposed General Plan Update.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation. The proposed text changes have been incorporated, nearly verbatim, in the 2045 General Plan.

K-12 CCWD thanks the County for considering CCWD's comments on the General Plan and Climate Action Plan Draft EIR as well as looks forward to collaborating to ensure that CCWD's facilities are adequate to meet future demand. The Planning Manger provides their contact information.

Contra Costa County appreciates CCWD's comments and recommendations that may assist the County in adequately analyzing and minimizing impacts regarding water supply and water quality.

LETTER L – Committee for Industrial Safety (4 pages)

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April 8, 2024

Sent via email

Supervisor Federal D. Glover
Supervisor Ken Carlson
Supervisor Diane Burgis
Supervisor Candace Andersen
Supervisor John M. Gioia
Chair Kevin Van Buskirk
Director John Kopchik

Re: Comment Period Extension Request – Proposed Contra Costa County Climate Action Plan 2024 Update, Draft 2045 General Plan, and General Plan and Climate Action Plan Draft Environmental Impact Report (DEIR)

Dear Supervisors, Commissioner and Director:

The Committee for Industrial Safety (CIS) has engaged Holland & Knight LLP to advise the CIS in evaluating the Contra Costa County updated 2024 Climate Action Plan (CAP). The CIS is a nonprofit association, its purpose is to educate the public and advocate on matters of refinery safety and related regulatory policy and environmental protection. Contra Costa County is home to workers, communities and facilities associated with CIS and served by CIS educational and advocacy efforts. The climate related policies and measures to be implemented through the CAP will have significant impact on those workers, communities and facilities, on their public, environmental and economic health and vitality. L-1

We respectfully request that you extend, for an additional 60 days, the comment period for the 2024 CAP, Draft 2045 General Plan, and the General Plan and Climate Action Plan Draft Environmental Impact Report (DEIR). The County has stated that the 2024 CAP is intended to serve as a companion to the ". . . 2045 General Plan and to mitigated GHG emissions that result from implementation of the General Plan." CAP, p. ES-1. As such, the 2024 CAP is integral to implementation of the 2045 General Plan and is a fully enforceable commitment as a mitigation measure under the California Environmental Quality Act (CEQA). Implementation of the CAP is L-2

also a General Plan requirement (COS-P14.1). The CAP and CAP consistency with the Draft General Plan, the Draft General Plan, and the General Plan and Climate Action Plan DEIR, therefore, warrant thorough review, discussion and comment. L-2

Environmental justice and economic development are important to our Contra Costa communities, and important for successful implementation of the Draft 2045 General Plan and the Draft 2024 CAP. The 2045 General Plan aspires to ensure that L-3

> *Focused and ambitious actions are taken to reduce greenhouse gas emissions, improve community resilience, and adapt equitably to a changing climate.*

Furthermore, to address environmental justice and historical inequality of public and environmental health impacts, the Draft 2045 General Plan identifies that L-4

> *It is a priority of the County to protect Impacted Communities from additional harm and progressively improve the quality of life and health outcomes of residents.* GP, at p. 3-3.

Additional time is required to review and identify mechanisms to ensure that environmental justice and economic development principles and practices are fully integrated into implementation of the CAP and the General Plan and analyzed in the DEIR. For example, the Draft General Plan Environmental Justice and Economic Development Policies promote "renewable and sustainable industries that provide living-wage jobs" (Policy SC-P1.1) and "streamline . . . permitting process for new development, redevelopment, and rehabilitation that promotes community objectives in Impacted Communities" (Policy SC-P1.2) The Draft General Plan sets as a policy action, "paying special attention to developing new opportunities for Impacted Communities to realize economic, health, educational, and other benefits." Action SC-A1.1. Although the County says that the CAP is designed to help meet environmental justice objectives (p. ES-2), the true measure is with the implementation strategies. Stakeholders and commenters need additional time to review and evaluate whether the CAP includes implementation strategies that will promote job and revenue opportunities as well as climate change goals in environmental justice communities. L-5

The General Plan and CAP set clear priorities for waste and energy reduction, clean energy production and use, resilient communities, and climate equity; further review is needed to evaluate how the General Plan and CAP address and ensure economic equity and the protection of civil rights more broadly in environmental justice communities. L-6

Additionally, consistency between the General Plan and the CAP, and internal consistency within the General Plan, are important elements to a legally adequate General Plan. General Plans that are internally inconsistent are illegal, and courts have and may continue to impose the draconian remedy of halting all new development pending adoption of an internally consistent and legally adequate General Plan. *See, e.g., Save El Toro Assn. v. Days (1977) 74 Cal.Appl. 3d 64*. L-7

Finally, County activities include existing environmental justice and economic development initiatives designed to facilitate continuing dialogue with environmental justice communities, workers, and businesses, and pursue strategies to create thousands of new living-wage jobs, L-8

emphasize local workforce hiring, and protect and build the regional tax base. Current environmental justice and economic development activities identified by the Contra Costa County Department of Conservation & Development in November 2023 include,

- Northern Waterfront Economic Development Initiative,
- Just Transition Economic Revitalization Plan (JTERP),
- Bay Area Good Jobs Partnership for Equity (Community Economic Resilience Fund),
- Contra Costa Refinery Transition Partnership, and
- Refinery Community Benefits Agreements.

L-8

While the 2023 Interim CAP Progress Report identifies some implementation activity with the JTERP and the County's support of AB 844, it does not reflect any significant progress on addressing environmental justice and economic development. Reversing historic injustices, while retaining and attracting businesses, jobs, workers and industry, must be an integral part of implementation of the General Plan and the County's strategic climate action plans. To that end it is of utmost importance that the Draft 2045 General Plan and the updated 2024 CAP consistently integrate environmental justice and economic development practices and priorities in a manner that activates those General Plan priorities.

We request that you extend the comment period for the Draft 2045 General Plan, updated 2024 CAP, and DEIR, to allow for additional input of key stakeholders, discussions with County staff, and priority focus on the integration of equity and economic development in the proposed General Plan and CAP.

L-9

Sincerely yours,

HOLLAND & KNIGHT LLP



Letitia D. Moore

cc: William R. Nelson, Principal Planner

Addressees:

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2. Response to Comments

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L. Response to Comments from the Committee for Industrial Safety, dated April 8, 2024.

L-1 The Committee for Industrial Safety (CIS) states it has engaged with Holland & Knight LLP to advise CIS in evaluating the Contra Costa County updated 2024 CAP. CIS states it is as a nonprofit association that advocates on matters of refinery safety and related regulatory policy and environmental protection. CIS states that the environmental policies in the CAP will have significant impact on refinery workers, communities and facilities, and the environmental and economic health of the industry.

Refer to responses in L-2 through L-10 for specific responses to comments.

L-2 CIS requests an additional 60 days for the comment period on the 2024 CAP, Draft 2045 General Plan, and DEIR. CIS states that because the CAP serves as a way to mitigate the environmental effects of the General Plan Update, the documents warrant a thorough review, discussion, and comment.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation. Also see response to comment E-3. The County extended the public comment period for the Draft 2045 General Plan and Draft 2024 CAP from April 8 to April 22, 2024, but did not extend the public comment period for the DEIR.

L-3 CIS states that environmental justice and economic development are important to its Contra Costa communities and notes that the 2045 General Plan aspires to ensure reduced greenhouse gas emissions, improved community resilience, and equitable adaptation to a changing climate.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

L-4 CIS states that to address environmental justice and historical environmental inequality, the General Plan identifies that the County aims to protect impacted communities from additional harm and progressively improve health outcomes for residents.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

L-5 CIS states that the CAP and General Plan require further review and evaluation to ensure that environmental justice and economic development principles are fully integrated into their implementation and analyzed in the DEIR. Stakeholders and commenters need more time to evaluate CAP implementation strategies that promote job and revenue opportunities while addressing climate change goals in environmental justice communities.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation. Also see response to comment E-3. The County extended the public comment period for the Draft 2045 General Plan and Draft 2024 CAP from April 8 to April 22, 2024, but did not extend the public comment period for the DEIR.

L-6 CIS states that the General Plan and CAP prioritize waste and energy reduction, clean energy production, resilient communities, and climate equity. However, further review is needed to assess their impact on economic equity and civil rights protection in environmental justice communities.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation. Also see response to comment E-3. The County extended the public comment period for the Draft 2045 General Plan and Draft 2024 CAP from April 8 to April 22, 2024, but did not extend the public comment period for the DEIR.

L-7 CIS emphasizes the importance of consistency between the General Plan and the CAP, as well as internal consistency within the General Plan, as these are crucial elements for a legally adequate General Plan. Internally inconsistent General Plans are illegal.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

L-8 CIS states that Contra Costa County is implementing environmental justice and economic development initiatives and lists several. CIS highlights the need to address historical injustices while maintaining economic security as important to the 2045 General Plan and 2024 CAP.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

L-9 CIS requests an extension of the comment period for the Draft 2045 General Plan, 2024 CAP, and DEIR.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation. Also see response to comment E-3. The County extended the public comment period for the Draft 2045 General Plan and Draft 2024 CAP from April 8 to April 22, 2024, but did not extend the public comment period for the DEIR.

LETTER M – Delta Protection Commission (11 pages)

DELTA PROTECTION COMMISSION
Diane Burgis, Chair (Contra Costa County Board of Supervisors)
2101 Stone Blvd., Suite 200, West Sacramento, CA 95691
(916) 375-4800 | delta.ca.gov

April 8, 2024

William R. Nelson
Principal Planner, Contra Costa County
Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

Dear Mr. Nelson:

The Delta Protection Commission (Commission) is providing comments on the Draft EIR (EIR) for the Contra Costa County General Plan update in anticipation of our duty to make findings required by California Public Resources Code (PRC) Section 29763.5. Our review focuses on the impact analysis sections and conclusions that would materially affect our ability to endorse findings that the General Plan update is consistent with Section 29763.5, and our duty to minimize impacts in the area of our jurisdiction (the Delta Primary Zone) as a CEQA responsible agency. We first discuss the scope of our review and the necessary findings we must prepare before we can submit a staff report proposing that the General Plan is consistent for Delta Protection Commission (Commission) approval. We then provide specific comments.

M-1

Scope of Review and Required Findings

The Delta Protection Act requires the Commission to review General Plan updates for "local governments" as defined in the Delta Protection Act (PRC Section 29763.5). Because Contra Costa County is a "local government" within the meaning of the Act, your update requires these findings (PRC Section 29725). The findings required in Section 29763.5 are limited to the Primary Zone. In addition, we may rely upon your CEQA analysis

M-2

to support our approval of the General Plan, if we find it consistent with the Delta Protection Act under Section 29763.5. M-2

Specific Comments Regarding Impacts in the General Plan EIR

Comment 1: The Draft EIR Will Support Tiering Best if It Makes Clear How General Plan Policies Will be Enforceable.

The Draft EIR (DEIR) is a program EIR as described in your text:

"*This Draft EIR fulfills the requirements for a Program EIR … Once a Program EIR has been prepared, subsequent activities within the program must be evaluated to determine whether an additional CEQA document is necessary. However, if the Program EIR addresses the program's effects as specifically and comprehensively as possible, many subsequent activities may be within the Program EIR's scope, and additional environmental documents may not be required (CEQA Guidelines Section 15168[c]). When a lead agency relies on a Program EIR for a subsequent activity, it must incorporate feasible mitigation measures and alternatives from the Program EIR into the subsequent activities (CEQA Guidelines Section 15168[c][3]).*" (DEIR at 1-3 to 1-4). M-3

While the DEIR properly relies on General Plan policies to explain why some impacts are reduced or avoided, this approach would be reinforced if more actions were included that specifically stipulate that relevant policies or goals will be translated into Zoning Code amendments as provided for in Cal. Government Code Section 65860. This section allows cities and counties to amend their ordinances to enforce land use policies related to their general planning duties under Cal. Government Code Section 65850. This would document how the General Plan policies, goals, and actions will be enforced.

Section 1.2.2 would also better support findings of consistency with Section 29763.5 if it provided, in the text, or an appendix, a short summary of all the kinds of discretionary actions that would be tiered projects, with a citation to the relevant County ordinance or code requiring a discretionary approval. By discretionary actions we do not mean specific projects as this cannot be known at this time; we mean the kinds of approvals that would be tiered from the General Plan EIR and subject to review for consistency with the General Plan and/or zoning code. This would allow us to show how future actions would be reviewed for consistency with the General Plan and zoning code as relevant. This would then show how consistency with the Delta Protection Act would be ensured via review of future projects. M-4

Comment 2: Buildout Projections for the Horizon Year Comments

As a global issue it is hard to determine if there is consistency between impacts in different chapters and what the potential impact of the General Plan would be without a visual depiction of the full buildout that may occur for the horizon-year projection described in page 3-24. We would appreciate a figure for our use that shows the projected buildout assumption as a graphic depicting all land that would be developed based on the methodologies used in Section 3.7. M-5

Comment 3: *Impact 5.1-2: Development under the proposed project would alter visual appearance in the county but would not substantially degrade its existing visual character or quality [Threshold AE-3]* May Benefit from Additional Substantiation or Mitigation

This impact statement concludes the impact would be less than significant before mitigation (DEIR at 5.1-15). This conclusion is at odds with Figure 5.2-4 which shows farmland conversion in the Delta Primary Zone and other areas. In addition, Impact 5.2-1 concludes that up to 13,816 acres of farmland could be converted (total, not just in the Delta Primary Zone).

Based on conversations with your agency we understand that some or all of the agricultural land conversion shown in the Primary Zone on Figure 5.2-4 may be, in fact, under the jurisdiction of special districts or other entities and may be attributed to projects that are under way. If the adoption of the General Plan will not itself contribute to these conversions, that should be clarified in the Final Environmental Impact Report (FEIR) so that it is clear that the impact conclusion in Impact 5.1-2 is sound, and that these conversions are not attributable to your project. M-6

The current document as it exists in the DEIR, suggests that you will cause agricultural land conversion in the Delta Primary Zone. Agricultural land is the primary constituent of the visual landscape in the Primary Zone and conversion of that land is a visual impact. If these conversions are effects of the project, it undermines the credibility of your impact conclusion. The text of the impact thus needs to better substantiate the impact conclusion. Note that a leading desk book states "*an EIR must set forth the bases for its findings on a project's impacts; a bare conclusion without explanation of its factual and analytical basis is not sufficient analysis of an environmental impact*" (Kostka and Zischke 2023, Section 13.27, citing Laurel Heights Improvement Association v. Regents of University of California, 1988, 47 Cal. 3d. 376, 404).

Comment 4: *Impact 5.1-3: The proposed project would not generate substantial light and glare [Threshold AE-4],* Requires Better Substantiation

M-7

Please provide a citation to the relevant County Code with the CalGreen building standards to support this impact. This impact states that these standards will be enforced but a search of the County Code we found online does not contain the sections 74-8.002 to 74-8.006 that correspond to this material in the "CODE COMPARATIVE TABLE AND DISPOSITION LIST." The online version may be out of date; please clarify. This statement regarding CalGreen building standards supports the overall conclusion that the General Plan will not generate substantial light or glare. This conclusion needs to support the conclusion that the project will not adversely affect aesthetic resources in the Delta Primary Zone which we must also confirm for our findings. The relatively dark, rural character of the Delta Primary Zone is an integral aspect of the feeling of the landscape. M-7

Comment 5: *Impact 5.2-1: The proposed project could convert approximately 13,816 acres of Important Farmland to nonagricultural use, [Threshold AG-1]* Requires Additional Explanation, Mitigation, and Possibly Policy Controls

This impact includes farmland conversion in the Delta Primary Zone near Discovery Bay, near Knightsen, and on Jersey Island, in the Delta Primary Zone (see Figure 5.2-4 and 5.11-1).

The text of the DEIR for this impact, in its current form, will not support our required findings under PRC Section 29763 subsections (a) "*The general plan, and any development approved or proposed that is consistent with the general plan, are consistent with the resource management plan*", and (h) "*The general plan, and any development approved or proposed that is consistent with the general plan, will not adversely impact agricultural lands. . .*" M-8

The text in the DEIR states: "*Agricultural conservation easements are a possible mitigation measure under CEQA. Programs that establish agricultural conservation easements and in-lieu fees for mitigation banking are most effective when determined concurrent with project approval. However, the effectiveness and extent to which future projects would opt-in to agricultural conservation easements as mitigation measures cannot be determined in this analysis; therefore, this impact would remain significant and unavoidable*."

We have concerns regarding this language and your need to support CEQA findings for significant and unavoidable impacts required in PRC Section 21081, which require a showing that:

- Mitigation has been adopted to reduce the impact (PRC Section 21081(a)(1), or

- That mitigation is the responsibility of another entity or agency (PRC Section 21081(a)(2), or
- Such mitigation is infeasible (PRC Section 21081(a)(3)).

M-8

There is a feasible mechanism for the County to avoid this farmland conversion: a policy against farmland conversion in the Primary Zone. If the agricultural conversion in the Delta Primary Zone show on Figure 5.2-4 is, in fact, an effect of the General Plan policies and buildout, the County cannot rely on the second and third prongs of PRC Section 21081 (i.e. that the mitigation that could reduce the impact is the responsibility of another entity or agency, or that such mitigation is infeasible). See PRC Section 21002, which states that public agencies shall not approve projects if there is feasible mitigation that would reduce significant effects.

M-9

Communications with the County suggest these farmland conversions are under the jurisdiction of special districts and may already be underway. The impact language for agricultural and conversion is problematic and highlights the need to clarify this issue. Please work with us to resolve this issue and update the impact text for the FEIR accordingly.

Comment 6: ***Impact 5.2-5: The proposed project could potentially result in other agricultural impacts not related to the above, such as diminishing available water quality and supply for agricultural uses. [Threshold AG-5]*** **Would Benefit from Better Substantiation.**

This impact states that "*future development under the proposed General Plan would increase water demands, as further described in Section 5.17, Utilities and Service Systems, which would diminish the available water supply for agricultural uses. Such development would occur throughout the county, which spreads the impact over a large geographic area*" (EIR at 5.2-24).

M-10

It is clear that the General Plan itself does not approve a "*project*" subject to a water supply analysis as required in Cal. Water Code Section 10912 (which requires strong proof of adequate water availability). Nonetheless more analysis is required. The assertion that the distribution of the development would occur "over a large geographic area" as support for its insignificant water demand would benefit from additional support.

The EIR projects 23,200 housing units and 65,600 residents in the county for the horizon-year project at page 3-25. Assuming a water usage of 48 gallons per person per day, this results in a total additional consumption, assuming full buildout, of 3,160 acre-feet of water per year. While water consumption varies by agricultural land use type and is

becoming more efficient over time, using 1.6 acre-feet per acre per year as a rough metric, this is equivalent to water that could support roughly 1,975 acres of irrigated farmland. While not all of this water would be diverted from Delta sources, the multiple demands on Delta water supplies and connected groundwater basins as well as the general water scarcity in the state suggest more facts are needed to substantiate this conclusion. This is especially important because the water consumed by residential buildout would not be available for other uses, including agricultural uses. M-10

Please provide stronger support for this assertion showing how the water consumption is accounted for, at least at a program level of analysis, by briefly summarizing relevant water supply planning for utilities serving unincorporated areas of the County. In the alternative or in addition to these revisions, please clarify the status and seniority of water rights held by water districts serving the Delta Primary Zone in Contra Costa County. Communications with the County suggest that these rights may be "pre-1914 rights," i.e. very senior rights that are likely to be stable over time and relatively immune to curtailment to fulfill other water needs. If these facts are correct, please provide them in the FEIR. M-11

In the FEIR, please also provide a citation to and summary of the requirement that future developments above relevant thresholds must satisfy the requirements of Cal. Water Code Section 10910 in the impact analysis. See Section 10910 for the general requirement and Section 10912 for the definition of "*projects*" subject to the requirement. This information will better support the conclusion of less than significant, and in turn support our ability to rely on your impact analysis and also make our findings. M-12

Comment 7: *Impact 5.4-1: Implementation of the proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plan, policies, or regulations or by the CDFW or USFWS [Threshold B-1]* is Not Consistent with the Facts Provided in Other Impact Analysis Sections

The biological resources chapter provides a summary of a robust set of policies designed to avoid impacts on natural resources. However, the significant and unavoidable impact for agricultural and conversion in Impact 5.2-1 contradicts this impact conclusion (5.4-1). M-13

Agricultural land also typically provides foraging habitat for raptors and dispersal habitat for other species. Table 5.4-3 indicates Swainson's hawk and other raptors are present in Contra Costa County. Swainson's hawk is a state-listed species.

CDFW must make the determination for a "*threatened*" listing based on facts demonstrating the presence of one or more of the factors provided in California Code of

Regulations Title 14, Section 670.1(i)(1)(A), including "*present or threatened modification or destruction of* [a species'] *habitat*." The primary threat to Swainson's hawk is loss of suitable foraging habitat, including suitable agricultural foraging habitat (CDFW 2016:3).

The impact conclusion of less than significant for Impact 5.4-1 is not consistent with the impact conclusions of significant and unavoidable for Impact 5.2-1 because the magnitude of farmland loss in the Delta Primary Zone suggests, absent other facts, that you are contributing to the factors that have caused the of threatened status of certain raptor species per the CDFW listing criteria and analysis. This reinforces the need to clarify the cause of and jurisdiction over the agricultural land conversion you depict in Figure 5.2-4. Please revise the relevant agricultural impact language text and Impact 5.4-1, to show that this conversion is not an effect of the General Plan itself, if true. M-13

Comment 8: Please Provide Mapping of Pacific Flyway Habitat in the Delta Primary Zone to Support Our Review and Ensure Impacts Are Minimized by Policy of Mitigation Measure

Please include in the EIR some mapping or analysis of Pacific Flyway habitat. We need this impact analysis for our consistency review process.

PRC Section 29726 states:

- *"Pacific Flyway" means the identified migratory bird flight path, including feeding and nesting habitat, as described in the Central Valley Habitat Joint Venture component of the North American Waterfowl Management Plan (NAWMP-1986).*

M-14

PRC Section 29763.5 requires us to show that:

- *"The general plan, and any development approved or proposed that is consistent with the general plan, will not result in the degradation or reduction of Pacific Flyway habitat."*

If the existing mapping is not sufficiently granular to allow us to show it is being avoided by comparison with your Urban Limit Line and buildout assumptions, please work with us to adopt policy language for protection of Pacific Flyway habitat and mitigation, as need be, in the Delta Primary Zone.

Comment 9: ***Impact 5.4-4: Implementation of the proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede*** M-15

***the use of native wildlife nursery sites. [Threshold B-4]* Would Benefit from Additional Policy Language to Support the Impact Analysis**

We support the overall policy approach of avoiding impacts on wildlife movement corridors in the General Plan EIR. The proposed Mitigation Measure BIO-1 states the County will "Encourage development plans that maximize wildlife movement," which is not adequately specific. We support this mitigation measure but feel it could go further. The County could also adopt a general plan policy that new roads will assess the potential to impact wildlife movement and incorporate crossing opportunities as relevant. This will reduce impacts on wildlife movement in the Delta Primary Zone and other locations. M-15

The Federal Highway Administration (FHWA) reports that "*roads are a serious obstacle to maintaining population connectivity and a threat to the long-term survival of some regionally important wildlife populations*" (FHWA 2011:1). This is an especially important issue in light of climate change, which will change the location of suitable habitats and require opportunities for populations to shift accordingly (Costanza et al. 2020). These facts suggest a policy framework for mitigating the effect of any new roadway development would be beneficial from a conservation perspective. M-16

Comment 10: *Impact 5.5-1: Implementation of the proposed project could cause a substantial adverse change in the significance of a historic a historical resource pursuant to CEQA Guidelines, Section 15064.5. [Threshold C-1] and Impact 5.5-2: Implementation of the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines, Section 15064.5. [Threshold C-2]* Are Not Consistent

The cultural resources policies in the draft General Plan are mostly a robust and sound approach to managing cultural resources impacts. We want to offer minor clarifications regarding the language in the chapter and suggestions regarding the impact conclusions and mitigation approach. M-17

The impact analysis for Impact 5.5-1 concludes impacts on "*historical resources*" are potentially significant and unavoidable. Under California law, a "*historical resource*" is "*any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California*" (Cal. Public Resources Code Section 5020.1). The eligibility criteria for the California Register of Historical Resources includes but is not limited to resources that have information important in prehistory (i.e. archaeological resources, Cal. Public

Resources Code Section 5024.1(c)(4)) – thus "*historical resources*" include archaeological resources.

Impact 5.5-2 then concludes that impacts on archaeological resources are less than significant (EIR at 5.5-15), based on mitigation consisting of a record search and retention of an on-call archaeologist.

It is unclear why impacts on historical resources, which include archaeological resources by definition, are significant and unavoidable but impacts on archaeological resources are less than significant. In addition, the mitigation measure for impacts on archaeological resources could be stronger. It would be prudent, especially in the Delta Primary Zone, to require future projects to conduct an assessment for buried archaeological sites that may not be detected in a records search. Infrastructure and development projects can inadvertently damage archaeological sites and buried human remains despite a complete and robust environmental review process. Levee repairs along the Feather River, for example discovered 230 plus burials associated with extensive cultural deposits, only in the construction phase (CapRadio, 2015). M-17

See Meyer and Rosenthal (2007) for an example of an assessment for archaeological sensitivity including the presence of buried sites. Please clarify the inconsistency between these two impacts and also work with us to ensure that mitigation and/or policy controls to minimize cultural resource impacts for any discretionary projects in the Delta Primary Zone are provided in your General Plan and/or EIR. This would also reinforce the significance analysis for Impact 5.5-3, which concludes that impacts on buried human remains would be less than significant. M-18

In addition, mitigation for potential impacts on archaeological resources (Mitigation Measure CUL-1) should consist of a survey, recording, and evaluation of resources found in the survey, and implementation of discovery protocols if resources are inadvertently found in construction, at a minimum. M-19

Comment 11: ***Impact 5.11-2: Project implementation would not conflict with applicable plans adopted for the purpose of avoiding or mitigating an environmental effect [Threshold LU-2]*** **Should Be Supported by Additional Analysis**

The agricultural land conversion identified in the EIR as a significant and unavoidable impact occurs largely in the Delta Primary Zone. The setting and impact analysis for Impact 5.11-2 do not meaningfully summarize how consistency with the Delta Protection Act and Land Use and Resource Management Plan will be achieved. This gap diminishes the credibility of the impact conclusion for this impact (less than significant). We encourage M-20

you to work with us to prepare in revised text or in an appendix, an analysis of how consistency will be achieved to better support this impact statement. M-20

Comment 12: Text Summarizing the Land Use and Resource Management Plan Should be Updated

The EIR provides a cursory statement regarding the Land Use and Resource Management Plan on page 5.11-12. It fails to mention the standards the County must meet for approval of their General Plan under PRC Section 29763.5. It also provides no meaningful summary of the content of the Land Use and Resource Management Plan. Please work with us to obtain proposed text revisions to better support this section. M-21

If you have questions regarding our comments, please direct them to Mike Aviña, Senior Environmental Planner, at Mike.Avina@Delta.ca.gov, or (530)750-6727.

Sincerely,



Bruce Blodgett, Executive Director
Delta Protection Commission

References Cited

California Department of Fish & Wildlife (CDFW). *Five Year Status Review for Swainson's Hawk (Buteo swainsoni)*. 2016. Sacramento, California.

Capitol Public Radio (CapRadio). *Indian Burial Sites Put Flood Control Agency Between Conflicting State and Federal Orders*. 2015. Sacramento, California. Available: https://www.capradio.org/articles/2015/04/07/indian-burial-sites-put-flood-control-agency-between-conflicting-state-and-federal-orders/

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Meyer, J. and J. Rosenthal. *Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4. 2007*. Far Western Anthropological Research Group, Davis, California.

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M. Response to Comments from the Delta Protection Commission, dated April 8, 2024.

M-1 The Delta Protection Commission (DPC) states that it is providing comments on the EIR for the Contra Costa General Plan Update. DPC's review focuses on impact analysis sections and conclusions that could affect the Commission's ability to endorse findings that the General Plan update is consistent with Public Resource Code (PRC) Section 29763.5 and the duty of CEQA to minimize impacts in the Delta Primary Zone (Primary Zone). The scope of the review and necessary findings are discussed before submitting a staff report for DPC approval.

Contra Costa County appreciates DPC comments and recommendations that may assist the County in adequately analyzing and minimizing impacts regarding the Primary Zone. Refer to responses in comments M-2 through M-21.

M-2 DPC states that the Delta Protection Act requires the Commission to review General Plan updates for "local governments" as defined in the Delta Protection Act (PRC Section 29763.5). Since Contra Costa County is considered a "local government," the General Plan Update requires findings as stipulated in PRC Section 29763.5 for the Primary Zone. DPC states that they may rely upon the CEQA analysis to support approval of the General Plan.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation. DEIR Section 5.11, *Land Use and Planning*, acknowledges the requirement for Contra Costa County's General Plan to be consistent with the Land Use and Resources Management Plan for the Primary Zone of the Delta (LURMP).

M-3 DPC quotes the DEIR regarding how the DEIR fulfills the requirements for a Program EIR. DPC highlights that while the DEIR properly relies on General Plan policies to explain why some impacts are reduced or avoided, they believe that the approach would be reinforced if more actions were included specifically stipulating that relevant policies or goals will be translated into Zoning Code amendments as provided for in Government Code Section 65860. This would document how the General Plan policies, goals, and actions will be enforced.

Government Code Section 65860 requires the zoning ordinance of a county or city to align with the adopted general plan of the county or city. The goals, policies, and actions in the General Plan, as cited in the DEIR, need not be translated into the Zoning Code to be enforceable; rather, they need to be compatible. DPC does not provide evidence suggesting that the proposed General Plan policies and actions cited in the DEIR would not be enforced. Nonetheless, as part of its ongoing Zoning Code update, the County will be creating stronger linkages between the General Plan and zoning by adopting new findings for land use entitlements (subdivisions, use permits, etc.) that explicitly require projects to be consistent with the General Plan.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

M-4 DPC states Section 1.2.2 of the DEIR could enhance consistency with PRC Section 29763.5 by providing a brief summary of the kinds of discretionary actions that would be tiered projects, citing the relevant County ordinance or code requiring a discretionary approval. DPC states that this list of discretionary actions would not need to include specific projects, but rather approvals tiering from the General Plan EIR and subject to review for consistency with the General Plan and Zoning Code. DPC states that this would demonstrate how future actions would be reviewed for consistency with the General Plan and Zoning Code, thereby ensuring consistency with the Delta Protection Act through review of future projects.

Specific discretionary actions to be reviewed by the County are described in DEIR Section 3.9, *Intended Uses of the EIR and Proposed Project*. See Section 3.2, *DEIR Revisions in Response to Written Comments*, in this FEIR in regard to discretionary approvals.

M-5 DPC states that it is difficult to determine if there is consistency between impacts in different chapters and what the potential impact of the General Plan would be without a visual depiction of the full buildout that may occur for the horizon-year projection described in DEIR page 3-24. DPC requests a figure that shows the projected buildout assumption as a graphic depicting all land that would be developed based on the methodologies used in Section 3.7.

Table 3-2, *2045 Horizon-Year Growth Projections*, in Chapter 3, *Project Description*, of the DEIR shows the proposed General Plan's development projections, including approved and pending development projects, through 2045. Figure 3-3, *Proposed General Plan Land Use Map*, also in Chapter 3, shows the proposed General Plan land use map, which determines where future development is allowed. Section 3.7, *Development Projections*, describes how future development was projected for residential and non-residential land use designations. Individual environmental chapters in the DEIR use the assumptions and buildout numbers presented in Chapter 3.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

M-6 DPC disagrees with the less-than-significant determination for Impact 5.1-2 since Figure 5.2-4 shows significant farmland conversion in the Primary Zone and other areas. DPC states that based on conversations with the County, they understand that some or all of the agricultural land conversion shown in the Primary Zone on Figure 5.2-4 may be, in fact, under the jurisdiction of special districts or other entities and may be attributed to projects that are under way. If adoption of the General Plan will not itself contribute to these conversions, DPC suggests that should be clarified in the FEIR so it is clear that the impact conclusion in Impact 5.1-2 is sound, and that these conversions are not attributable

to the County's project. DPC states that the existing DEIR document indicates that agricultural land conversion in the Primary Zone is planned, which could potentially undermine the credibility of the project's impact conclusion, as agricultural land is the primary component of the visual landscape in the area.

The conclusion for Impact 5.1-2 is sound because the 2045 General Plan does not allow for significant farmland conversion in the Primary Zone or other areas. See response to Comment M-8 for further explanation.

M-7 DPC asks that the County provide a citation to the relevant County Ordinance Code with the CalGreen building standards to support the conclusion for Impact 5.1-3. DPC states that Sections 74-8.002 to 74-8.006 are not in the online version of the County Code. DPC suggests that the online version may be out of date and suggests that the County clarify. DPC states that the statement regarding CalGreen building standards supports the overall conclusion that the General Plan will not generate substantial light or glare. However, DPC states that the DEIR needs to support the conclusion that the project will not adversely affect aesthetic resources in the Primary Zone, which is a dark, rural area that is integral to the landscape's feeling.

County Ordinance Code Section 74-2.002(a) states that the County Building Code includes the 2022 California Green Building Standards Code (California Code of Regulations, Title 24, Part 11). Section 5.1, *Aesthetics*, beginning on page 5.1-1 of the DEIR, explains that the County regularly adopts each new iteration of the California Building Code, including the CALGreen standards. Impact 5.1-3 states that new development is required to comply with the lighting standards contained in Chapter 76-4, *Modifications*, of the County Ordinance Code, which requires that lighting fixtures be installed, controlled, or directed so that the light will not glare or be blinding to pedestrians or vehicular traffic, or adjoining property. Any development proposed in the Primary Zone must comply with the County Ordinance Code, and by extension, the CALGreen standards.

M-8 DPC states that Impact 5.2-1 requires additional explanation, mitigation, and possibly policy controls. DPC states that text of the DEIR for Impact 5.2-1 will not support their required findings under PRC Section 29763. DPC is concerned over the DEIR text explaining the significant and unavoidable impact finding, noting that CEQA requires demonstrating that mitigation that has been adopted to reduce the impact (PRC Section 21081(a)(1)), mitigation is the responsibility of another entity or agency (PRC Section 21081(a)(2)), or such mitigation is infeasible (PRC Section 21081(a)(3)).

DPC acknowledges in Comment M-6 that potential agricultural land conversion in the Primary Zone may be overstated. As stated in Impact 5.2-1 of the DEIR, the proposed General Plan could result in conversion of 13,816 acres to nonagricultural uses in the EIR Study Area; however, this analysis is conservative and does not consider site-specific and

other factors that could affect the potential conversion of agricultural land. The acreages of the land with nonagricultural designations that overlie Important Farmland are shown in Table 5.2-3, Nonagricultural General Plan Designations that Intersect with Important Farmland, on page 5.2-19 of the DEIR. Development of land outside the ULL is restricted to non-urban uses by the County's ULL, which would help to prevent conversion of the majority (75 percent) of the total potential 13,816 acres. Additionally, the FMMP data used in this analysis may not accurately represent current conditions on the land. For example, the proposed General Plan land use designation of Water is only applied to areas that are inundated by water (based on County staff knowledge of sites and satellite imagery); therefore, the 22.5 acres of land identified as an area of potential agricultural conversion are inundated and not suitable for farmland.

The analysis may also overstate the proposed General Plan's influence on potential agricultural land conversion. Some areas identified in Table 5.2-3 are already designated for urban use, so the proposed General Plan would not change the potential for conversion from what is currently allowed. Furthermore, as shown in Table 5.2-3, 13,391.6 out of 13,815.6 acres (96.9 percent) of potential conversion identified by this analysis is designated as Parks and Recreation or Public and Semi-Public; these areas are owned by public agencies such as the Department of Water Resources, East Bay Regional Park District, the East Contra Costa Habitat Conservancy, and Ironhouse Sanitary District. While it is likely that these lands will be preserved for non-urban uses, the County cannot state this with certainty, as these are independent agencies and in most cases the County has no jurisdiction over their use of their land. See Figure 2-1, *Agricultural Conversions and Delta Primary Zone*, in this FEIR, which depicts how nearly all areas identified as a potential agricultural land conversion within the Primary Zone are owned by other public agencies. Lands include Jersey Island owned by Ironhouse Sanitary District; Rock Slough Resort (formerly Lindquist Landing Mariana) owned by PSW Legacy Industries, LCC; Knightsen Wetland Restoration Project owned by East Bay Regional Park District and East Contra Costa Habitat Conservancy; and Delta Access owned by East Bay Regional Park District.

As explained on page 5.2-20 of the DEIR, the criterion for mitigation under CEQA is feasible mitigation that lessens a project's impacts. The DEIR considered potential mitigation measures for this impact, such as agricultural conservation easements and in-lieu fees for mitigation banking, which are most effective when determined concurrent with project approval. The DEIR found that the effectiveness and extent to which future projects would opt-in to agricultural conservation easements as mitigation could not be determined in the analysis, and that the impact would remain significant and unavoidable.

M-9 DPC suggests the County adopt a policy against farmland conversion in the Primary Zone. DPC states that if the agricultural conversion in the Primary Zone shown on Figure 5.2-4 is an effect of the General Plan policies and buildout, the County cannot rely on the second and third prongs of PRC Section 21081. DPC states that public agencies shall not approve projects if there is feasible mitigation that would reduce significant effects. DPC

understands that some farmland conversions are under special districts' jurisdiction and may be underway. However, DPC believes that the impact language for agricultural land conversion is problematic and requires clarification. DPC requests that the County work with DPC to resolve this issue and update the impact text for the FEIR.

See response to Comment M-8 for a detailed discussion of potential farmland conversion. To address the DPC's concerns, the County has added the following new policy and revised Policy COS-P2.4 in the Conservation, Open Space, and Working Lands Element of the 2045 General Plan:

> New Policy COS-P2.4: Consult with the Delta Protection Commission to identify mitigation strategies as relevant, if a change in land use that converts agriculture would significantly affect the sustainability of the Delta agricultural economy.
>
> Revised Policy COS-P2.4 to read as follows (will be renumbered in the Final General Plan): Require new projects adjacent to agriculture to establish buffers on their properties as necessary to minimize conflicts and protect agriculture. Determine appropriate buffers in consultation with the County Agricultural Commissioner.

M-10 DPC states that although the General Plan does not approve a project subject to a water supply analysis, as required by Cal. Water Code Section 10912, more analysis is needed. DPC states that the development's distribution over a large geographic area would benefit from additional support related to conclusions about insignificant water demand. DPC provides their own calculations for water demand.

DEIR Sections 5.10, *Hydrology and Water Quality*, and 5.17, *Utilities and Service Systems*, address impacts to groundwater and municipal water supplies, respectively. Impact 5.17-3 provides a breakdown of the net increase in water demand with the proposed General Plan's land uses and water demand factors. The DEIR was circulated to all municipal water service providers and irrigation districts serving the unincorporated county. No comments were received indicating that the level of development analyzed in the DEIR would cause significant impacts to groundwater or municipal water supplies, and no additional analysis was requested.

M-11 DPC requests stronger support for the assertion that water consumption is accounted for at a program level by summarizing water supply planning for utilities serving unincorporated areas of the county. DPC requests clarification on the status and seniority of water rights held by water districts in Contra Costa County's Primary Zone. DPC reports that the rights in question may be "pre-1914 rights," which are considered very senior and stable over time. If these facts are correct, they should be included in the FEIR.

See response to Comment M-10 in regard to water consumption. See Section 3.2, *DEIR Revisions in Response to Written Comments*, in this FEIR in regard to water rights.

M-12 DPC states that the FEIR should include a citation and summary of the requirement that future developments above relevant thresholds must meet Cal. Water Code Section 10910 in the impact analysis. DPC notes that this information will support the conclusion of less than significant and enable DPC to rely on the impact analysis when making their findings.

See Section 3.2, *DEIR Revisions in Response to Written Comments*, in the FEIR in regard to Impacts 5.10-2 and 5.17-3 of the DEIR.

M-13 DPC states that agricultural land provides foraging habitat for raptors and dispersal habitat for other species. DPC states that the less-than-significant determination in Impact 5.4-1 contradicts the significant and unavoidable determination for Impact 5.2-1 since the farmland loss in the Primary Zone contributes to the threatened status of certain raptor species. DPC emphasizes the need to clarify the cause of and jurisdiction over the agricultural land conversion depicted in Figure 5.2-4 and requests revision of the relevant agriculture impact text and Impact 5.4-1 to demonstrate that the agricultural conversion is not an effect of the General Plan.

Impact 5.2-1 analyzes whether the proposed project would convert Important Farmland while Impact 5.4-1 analyzes whether the proposed project would impact any species identified as sensitive or special-status in local or regional plans, policies, or regulations by the California Department of Fish and Wildlife or United States Fish and Wildlife Service. As mentioned in Impact 5.4-1, there are a number of federal and State regulations in place to protect biological resources, including special-status species and their habitat, within the EIR Study Area. Impact 5.4-1 notes that the goals, policies, and actions in the proposed General Plan, in combination with existing policies and regulations under the Federal Endangered Species Act, Migratory Bird Treaty Act, California Endangered Species Act, California Fish and Game Code, Clean Water Act, and California Native Plant Protection Act, as well as consistency with the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan, would ensure that the potential impacts of the proposed General Plan on special-status species would be less than significant. Future projects that would modify any habitat, including Important Farmland, must comply with the proposed policies in the General Plan as well as State and federal regulations that protect sensitive species. No changes to the DEIR are necessary.

Response to Comment M-8 explains the conservative analysis resulting in the significant and unavoidable determination for Impact 5.2-1. While agricultural land inside and outside the Primary Zone could be converted through actions of other public agencies, the 2045 General Plan protects agricultural land and would not result in significant conversion. Thus, the 2045 General Plan would not significantly impact foraging habitat for raptors or dispersal habitat for other species through agricultural land conversion.

M-14 DPC suggests the County provide mapping of the Pacific Flyway Habitat in the Primary Zone to support their review. DPC highlights PRC Section 29726 and PRC Section 29763.5. DPC recommends that if existing mapping isn't granular enough to demonstrate avoidance based on Urban Limit Line and buildout assumptions, then the County should collaborate with DPC on policy language for Pacific Flyway habitat protection and mitigation in the Primary Zone.

The U.S. Fish and Wildlife Service maps the entire western United States in the Pacific Flyway.[1] PRC Section 29726 refers to the Central Valley Joint Venture, which has prepared a *2020 Implementation Plan*.[2] The focus of the Implementation Plan is on the habitat types listed in Table ES.1 on page Executive Summary iv of the Plan and their role in supporting the species discussed elsewhere in the Plan. Contra Costa County is in the Yolo-Delta Planning Region, which is also listed in Table ES.1. Figure 4.1.9 on page 37 of the Plan shows the Delta Basin, a subregion of the Yolo-Delta Planning Region, which extends into Contra Costa County, and encompasses all of the Primary Zone area within the county. The habitat areas shown within Contra Costa County and the Primary Zone in this figure include small patches on Jersey Island and Webb Tract. Both areas are owned by other public agencies, as described in the responses to comment M-8 and shown in Figure 2-1, *Agricultural Conversions and Delta Primary Zone*, in this FEIR. As described in response to Comment M-8, the County generally lacks jurisdiction over the use of this land.

As described in Impact 5.4-1, future projects that would modify any habitat for any species identified in a local or regional plan would need to comply with the proposed policies in the General Plan as well as any local, regional, state, or federal regulations that protect the species. County and DPC staff have worked together to formulate the following new policy to be included in the Conservation, Open Space, and Working Lands Element of the 2045 General Plan under Goal COS-4:

> Policy COS-P4.6: Require projects that impact Pacific Flyway habitat in the Delta Primary Zone to incorporate mitigation ensuring no net loss of habitat function, including temporal loss. Impacts to Pacific Flyway habitat will be determined based on best available information at the time of environmental review.

No changes to the DEIR are necessary.

[1] U.S. Fish & Wildlife Service, Migratory Bird Program Administrative Flyways State and Province Map, https://www.fws.gov/media/migratorybirdprogramadministrativeflywaysstateandprovincemapjpg, November 24, 2021.

[2] Central Valley Joint Venture, Central Valley Joint Venture 2020 Implementation Plan, https://www.centralvalleyjointventure.org/assets/pdf/CVJV_2020_Implementation_Plan.pdf, 2020

M-15 DPC states that Impact 5.4-4 would benefit from additional policy language to support the impact analysis. DPC supports the policy of avoiding impacts on wildlife movement corridors; however, DPC states that Mitigation Measure BIO-1, which encourages development plans to maximize wildlife movement, is not specific enough and should go further. DPC suggests the County adopt a general plan policy that new roads will assess the potential wildlife movement impacts and incorporate crossing opportunities, thereby reducing impacts on wildlife movement in the Primary Zone and other locations.

New roadways will be constructed either as stand-alone public projects or components of private development projects. In either case, they will require independent environmental analysis under CEQA to evaluate physical impacts, such as impacts to biological resources. There is no need for an additional mitigation measure as the impacts of new roadways will be mitigated through their project-specific approval processes Impact 5.4-4 lists policies and actions from the 2045 General Plan that would help to mitigate potential impacts associated with the movement of native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. These policies and actions, combined with Mitigation Measure BIO-1, are found to mitigate impacts to a less-than-significant level, and no further mitigation needs to be considered. Therefore, no changes to the DEIR are necessary. Nonetheless, the County will include the following new action in the Conservation, Open Space, and Working Lands Element of the 2045 General Plan:

> Action COS-A4.3: Work with conservation agencies to identify appropriate locations and methods for incorporating wildlife crossings into future road projects.

M-16 DPC states that roads pose a significant threat to population connectivity and the long-term survival of regionally important wildlife populations, particularly in light of climate change. DPC suggests that a policy framework to mitigate the impact of new roadway development would be beneficial from a conservation perspective, as it would allow for the shift of suitable habitats and population movements.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation. See also response to Comment M-15.

M-17 DPC states that Impact 5.5-1 and 5.5-2 are not consistent. DPC summarizes how Impact 5.5-1 concludes that impacts on historical resources are potentially significant and unavoidable, noting that the eligibility criteria for the California Register of Historical Resources include archaeological resources under the historical resource definition. DPC also summarizes how Impact 5.5-2 determined a less-than-significant-impact on archaeological resources, based on mitigation measures such as a records search and retention of an on-call archaeologist. DPC asks why impacts on historical resources, which

include archaeological resources by definition, are significant and unavoidable but impacts on archaeological resources are less than significant?

DPC is correct that archaeological resources can meet the definition of historical resources under PRC Section 5020.1; however, the definition of "historical resources" under California Code of Regulations (CCR) Section 15064.5(a) applies to resources that do not meet the definition of archaeological sites or resources. The impacts to historic resources identified in Impact 5.5-1 address the potential for reuse or modification of historic structures to materially impair the significance of the resource, as well as the potential for placement of new buildings adjacent to a historic resource that could result in adverse changes to the resource's access, visibility, and visual context. These impacts are relevant to resources that cannot be preserved in place or excavated in order to avoid significant and adverse impacts. CCR Section 21083.2 outlines the procedures that shall be followed in the event that a project will cause damage to a unique archaeological resource. Compliance with these procedures, proposed General Plan Policies COS-P10.6 and COS-P10.7, and Mitigation Measures CUL-1, TCR-1, and TCR-2 ensure that future project activities would not disturb, damage, or degrade potential unique archaeological resources or archaeological sites considered historic resources. Note that Mitigation Measure CUL-1 has been modified as shown in Section 3.2, *DEIR Revisions in Response to Written Comments*, of this FEIR.

M-18 DPC states mitigation measures for impacts on archaeological resources should be strengthened, particularly in the Primary Zone, by requiring future projects to assess buried archaeological sites that may not be detected in records searches. DPC further states that infrastructure and development projects can inadvertently damage archaeological sites and buried human remains, as seen in levee repairs along the Feather River. DPC requests clarification on the inconsistency between Impacts 5.5-1 and 5.5-2 and that the County work with DPC to ensure mitigation and policy controls to minimize cultural resource impacts for discretionary projects in the Primary Zone are included in the General Plan and/or EIR, as well as reinforce the significance analysis for Impact 5.5-3, which relates to impacts on buried human remains.

See Section 3.2, *DEIR Revisions in Response to Written Comments*, in this FEIR in regard to edits to mitigation measure CUL-1. DPC has provided these edits to the mitigation measure and no recirculation is required. See response to Comment M-17 regarding the relationship between Impacts 5.5-1 and 5.5-2.

The DEIR finds that impacts to buried human remains are less than significant in Impact 5.5-3 based on proposed General Plan policy guidance, in combination with existing federal and State regulations in place to protect human remains. DPC provides no evidence contradicting this impact finding.

M-19 DPC states that mitigation for archaeological resources (Mitigation Measure CUL-1) should consist of a survey, recording, and evaluation of resources found in the survey, and implementation of discovery protocols if resources are inadvertently found in construction, at a minimum.

See Section 3.2, *DEIR Revisions in Response to Written Comments,* in this FEIR in regard to edits to mitigation measure CUL-1. DPC has provided these edits to the mitigation measure and no recirculation is required.

M-20 DPC states Impact 5.11-2 should be supported by additional analysis. DPC states that the EIR determines a significant agricultural land conversion in the Primary Zone, but the impact analysis for Impact 5.11-2 lacks a comprehensive summary of how consistency with the Delta Protection Act and LURMP will be achieved. DPC asserts that this gap diminishes the credibility of the impact conclusion and urges collaboration to prepare revised text or an appendix to better support the impact statement.

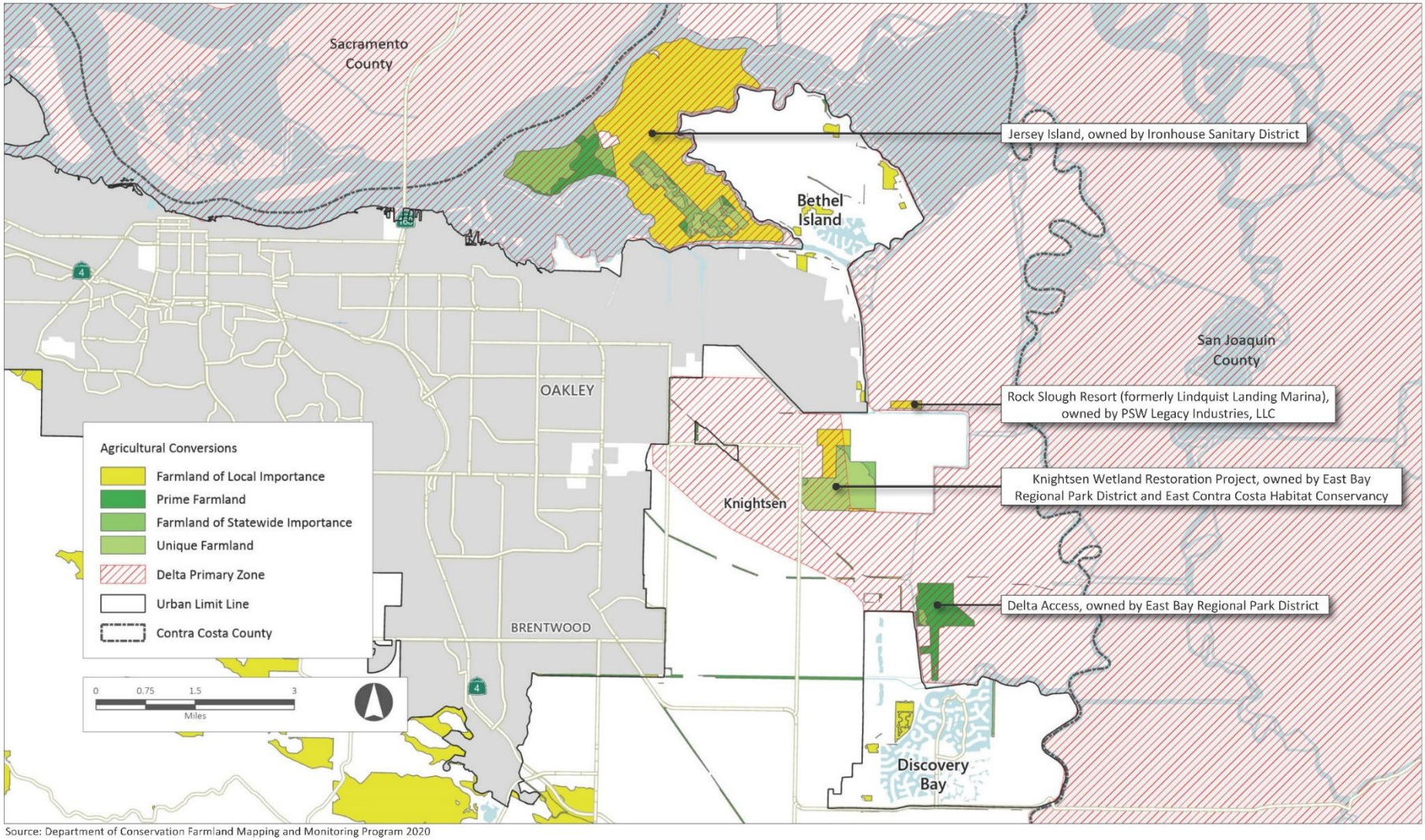
See responses to Comments M-8, M-13, and M-21. No changes to the DEIR are necessary.

M-21 DPC suggests that the text summarizing the LURMP should be updated. DPC states that the EIR provides a cursory statement regarding the LURMP on page 5.11-12, but fails to mention the standards the County must meet for approval of their General Plan under PRC Section 29763.5 and lacks a meaningful summary of the content of the LURMP. DPC encourages the County to work with them to obtain the proposed text revisions to better support this section.

See Section 3.2, *DEIR Revisions in Response to Written Comments*, of this FEIR in regard to the LURMP. The County will also add text to Policy LU-P6.1 in the Land Use Element of the 2045 General Plan so that it reads:

> Ensure that County projects and decisions on private development and land use activities within the Legal Delta are consistent with the following plans:
>
> (a) Land Use and Resource Management Plan for the Primary Zone of the Delta adopted by the Delta Protection Commission.
>
> (b) Delta Plan adopted by the Delta Stewardship Council.
>
> In addition, screen proposed General Plan amendments affecting the Primary Zone for consistency with Public Resources Code Section 29763.5, including a specific analysis of consistency with each subsection thereof.

Figure 2-1 Agricultural Conversions in the Delta Primary Zone



Source: Department of Conservation Farmland Mapping and Monitoring Program 2020

2. Response to Comments

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2. Response to Comments

LETTER 1 – Jan Callaghan (1 page)

Contra Costa County Zoning Administrator Meeting

ENVISION CONTRA COSTA (County File #GP18-0001)

March 18, 2024

Jan Callihan:

I live in Rodeo next to Phillips 66 and New star and all the other refineries. And the one thing I saw that was missing that I hope you will address better in the Environmental 2040 is odors.

There are going to be severe odor changes because of the hydrogen plant and the fats and stuff. And odors really need to be addressed because they're still going to be working with stuff that's going to be very smelly along with what they're putting out in the air and using equipment to run and store. And plus, with all the rails and the trains, there will be a lot of difference.

1-1

I also want to point out, I don't know exactly how many train cars and rails that they address in it. You've got all the technical from the experts, but I am worried about the Hercules four overcross where the trains come over. I see them and there will be over 40 black tanker cars crossing over the trellis, which to me seems to be in bad shape I think before the county addresses any more rails, they should have an inspection of the trellises that go over an important where highway for people leaving Hercules to get on to Interstate 80 under a trellis through there where the old Clay's property would be.

1-2

So those are my comments. Please address odor, the rail overpasses, and what impacts they have on communities because it's increasing severely. We will try to get written comments in, but everything's happening with Easter and ending and lots going on. So thank you for letting me speak.

1-3

1 Response to Comments from Jan Callaghan, dated March 18, 2024.

1-1 The commenter, who lives near the Phillips 66 Refinery and NuStar facility (both in Rodeo), expressed concern about the proposed project not addressing odors. The commenter noted that the hydrogen plants will cause severe odor changes. The commenter also expressed concern about potential impacts from trains serving the facilities.

The proposed 2045 General Plan would allow some industrial land uses in the county. Impact 5.3-6 in Section 5.3, *Air Quality*, includes a discussion on operational odors from industrial land uses. Page 5.3-68 of the DEIR acknowledges that industrial land uses can generate objectionable odors. Therefore, future environmental review could be required for industrial projects listed in BAAQMD's CEQA Guidelines Table 4 Project Screening Trigger Levels for Potential Odor Sources to ensure that sensitive land uses, including residences, are not exposed to nuisance odors. In addition to the BAAQMD criteria that will apply to all industrial projects, the General Plan includes Action HS-A1.3 that requires the County to consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to include an Industrial-Sensitive Receptor Interface Overlay Zone applied to areas where residential land uses and other sensitive receptors interface or directly abut heavy industrial land uses. In the overlay zone, industrial uses would be required to reduce pollution and employ strategies to mitigate air quality, noise, vibration, odor, light, visual, and safety impacts on nearby sensitive receptors. Additionally, new sensitive receptors within the overlay zone would be required to install enhanced ventilation systems and implement other strategies, paid for by neighboring sources of pollution to the extent possible, to protect residents from health and quality of life impacts.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

1-2 The commenter is concerned about the safety of the Hercules railroad overcrossing and asserts that the County should inspect existing rail facilities before rail traffic is allowed to increase.

The County does not have jurisdiction to inspect railroad bridges, which are owned and maintained by private rail companies. The Railroad Operations and Safety Branch of the California Public Utilities Commission, as well as the Federal Railroad Administration have responsibility for overseeing rail safety. The County shared this comment with the City of Hercules.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

2. Response to Comments

1-3 The commenter states that the County should address odors, the rail overpass, and what impacts they have on communities as they are already severely affected.

See response to Comments 1-1 and 1-2.

LETTER N – Committee for Industrial Safety (7 pages)

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April 22, 2024

Sent via email

Supervisor Federal D. Glover
Supervisor Ken Carlson
Supervisor Diane Burgis
Supervisor Candace Andersen
Supervisor John M. Gioia
Chair Kevin Van Buskirk
Director John Kopchik

Re: Comments on Contra Costa County 2024 Climate Action Plan, 2045 General Plan, and General Plan and Draft Environmental Impact Report

Dear Supervisors, Commissioner and Director:

On behalf of the Committee for Industrial Safety (CIS), we respectfully submit this comment letter to ensure that Contra Costa County adopts an internally consistent and legally sufficient Contra Costa County 2045 General Plan and updated 2024 Climate Action Plan (CAP), as required by California Government Code Section 65300.5, and fully complies with the California Environmental Quality Act (CEQA), Public Resources Code § 21000 et seq., and the CEQA Guidelines, California Code of Regulations, title 14, § 15000 et seq. (CEQA Guidelines) with respect to the County's environmental impact report (EIR) for the 2045 General Plan and 2024 CAP. CIS is a nonprofit association, its purpose is to educate the public and advocate on matters of refinery safety and related regulatory policy and environmental protection. Contra Costa County is home to workers, communities and facilities associated with CIS and served by CIS educational and advocacy efforts. N-1

Oil and gas manufacturing companies are the largest private employers and one of the highest paying industries in Contra Costa County. Contra Costa Conservation & Development Largest Employers (*accessed April 20, 2024*); California Employment Development Department Major N-2

Employers in Contra Costa County (*accessed April 20, 2024*); Data USA Contra Costa County (*accessed April 20, 2024*). The 2045 General Plan and 2024 CAP propose to shut down the largest private employers, eliminating those higher paying jobs, and the EIR neither identifies nor analyzes any potential impacts from this substantial change in the workforce, tax base, manufacturing, and transport of goods in the County. Implementation of the climate action policies and measures in the 2045 General Plan and 2024 CAP will have significant impacts on workers, communities and multiple industries in Contra Costa County, on their public, environmental and economic health and vitality, but no attempt is made in the EIR to describe, evaluate or address such impacts. Many of those impacts will fall on communities already disadvantaged by the uneven distribution of economic, educational and social resources.

N-2

N-3

General Plan and CAP Not Consistent

The 2024 CAP is integral to administration of the 2045 General Plan, its implementation is a General Plan requirement, and the 2024 CAP is fully enforceable under CEQA. Consistency between the General Plan and the CAP, and internal consistency within the General Plan, are therefore important elements to a legally adequate General Plan. General Plans that are internally inconsistent are illegal, and courts have and may continue to impose the draconian remedy of halting all new development pending adoption of an internally consistent and legally adequate General Plan. *See, e.g., Save El Toro Assn. v. Days (1977) 74 Cal.Appl. 3d 64*. Failure to address inconsistencies between the 2045 General Plan and the 2024 CAP invites challenges, puts future development at risk, and unnecessarily wastes public resources.

N-4

Given the cultural, ethnic, social and economic diversity of the communities in Contra Costa County, promotion of environmental justice and economic development are significant policy imperatives for Contra Costa County residents and businesses. The 2045 General Plan consistently prioritizes efforts to address environmental justice issues in General Plan goals, policies and actions. Within the Stronger Communities Element of the General Plan, the Environmental Justice section states that the County's intent is to reduce the disadvantages and burdens on these overburdened and vulnerable communities. The 2024 CAP however does not align with the General Plan environmental justice priorities and fails to implement key General Plan environmental justice priorities.

N-5

The 2045 General Plan and 2024 CAP identify communities in and around North Richmond, San Pablo, Montara Bay/Rollingwood, Rodeo, Crockett, Vine Hill/Mountain View, Pacheco, Clyde, and Bay Point as "Impacted Communities." General Plan, Figure SC-1. As you know, Impacted Communities are "unincorporated communities in Contra Costa County that are disproportionately burdened by pollution or face disproportionate social or health vulnerabilities." General Plan, p. 3-3. These communities are burdened by proximity to heavy industry, a range of pollution sources, and a sustained lack of public and private infrastructure and community services investments. Residents of these communities also benefit from "the jobs, tax benefits, and local energy production" provided by the "high concentration of refineries and other large industrial facilities" in their communities. However, these same communities, residents and businesses, may also be particularly vulnerable to the impacts of climate change. Accordingly, the General Plan sets "a priority of the County to protect Impacted Communities

N-6

from additional harm and progressively improve the quality of life and health outcomes of residents." General Plan, p. 3-3.

N-6

The 2045 General Plan, in support of the equitable distribution of social and economic resources to reduce disproportionate burdens on Impacted Communities, calls for

- Partnerships between residents, workers, business/industry, environmental and environmental justice advocates, institutions and governments to support industry transitions that will provide living-wage jobs;
- Streamline permitting process for new development and redevelopment that promotes community objectives in Impacted Communities;
- Development of neighborhood-serving retail and service uses, cultural and community events, and public infrastructure; and
- Negotiation of community benefit agreements (CBAs) to address the expressed needs of Impacted Communities. See, General Plan Goal SC-1 and Policies SC-P1.1, SC-P1.2, SC-P1.3, SC-P1.4, SC-P1.5, and SC-P1.6.

N-7

The 2045 General Plan emphasizes enhanced opportunities for high-quality jobs and workforce development in Impacted Communities. The General Plan specifically sets as a goal "Access to and expansion of high-quality job training, job opportunities, and economic resources so that residents in Impacted Communities can acquire safe jobs, earn a living wage to support their families, and build shared prosperity." Goal SC-8. For Impacted Communities, the General plan similarly emphasizes reducing barriers to and improving healthcare, increasing quality affordable housing, and providing enhanced fresh, healthy and affordable food opportunities, in those communities.

With respect to climate change impacts, the 2045 General Plan specifically prioritizes protection of Impacted Communities.

> **General Plan Policy HS-P4.4:** Prioritize efforts to protect Impacted Communities and other vulnerable populations from the impacts of climate change, including through improving community capacity and meaningfully involving community members in decision making.

In contrast to the 2045 General Plan, the 2024 CAP Strategy and Implementation Actions do not prioritize efforts to protect Impacted Communities. For example, although a "high concentration of refineries and other large industrial facilities" are located in Impacted Communities, unlike the General Plan, the 2024 CAP Strategy CE-5 does not prioritize access to high-quality jobs, economic resources, and a living wage for Impacted Communities. The proposed climate action strategies advocate phasing out the largest private employers and associated higher paying jobs and tax benefits, located primarily in Impacted Communities, but does not correspondingly prioritize economic development and job creation in those Impacted Communities. The 2024 CAP does not promote

N-8

- Industry transitions that will provide living-wage jobs in Impacted Communities;

- Streamline permitting process for new development and redevelopment that promotes community objectives in Impacted Communities;
- Development of land uses and public infrastructure in Impacted Communities; or
- Community benefit agreements (CBAs) to address the needs of Impacted Communities.

N-8

The 2024 CAP does little or nothing to further the County's environmental justice objectives, particularly in the context of economic sustainability, wealth creation or workforce development.

Additional inconsistencies are visible between strategies to (i) "Provide access to affordable, clean, safe, and healthy housing and jobs," [CAP Strategy CE-1] (ii) implementing actions to phase out existing industries that provide high-paying jobs and tax benefits (employers characterized as "heavily polluting and extractive industries") [CAP Strategy CE-5 Action], and (iii) "measures to achieve near-zero emissions for large commercial or industrial projects" [General Plan Policy HS-P1.8]. Policies and implementing actions in the 2045 General Plan Health and Safety element identify regulatory agencies and initiatives working to control and reduce emissions and exposures from heavy industrial facilities in Impacted Communities. General Plan and CAP goals and policies also identify job security as a priority for the County. Conversely, the 2024 CAP also seeks to phase out those same highly regulated and controlled, jobs producing industrial facilities.

N-9

We note that the County has otherwise promoted environmental justice and economic development initiatives designed to facilitate continuing dialogue with environmental justice communities, workers, and businesses, and advance strategies to create thousands of new living-wage jobs, emphasize local workforce hiring, and protect and build the regional tax base. Such environmental justice and economic development activities identified by the Contra Costa County Department of Conservation & Development in November 2023 included,

- Northern Waterfront Economic Development Initiative,
- Just Transition Economic Revitalization Plan (JTERP),
- Bay Area Good Jobs Partnership for Equity (Community Economic Resilience Fund),
- Contra Costa Refinery Transition Partnership, and
- Refinery Community Benefits Agreements.

N-10

While the 2023 Interim CAP Progress Report identifies some implementation activity with the JTERP and the County's support of AB 844, it does not reflect any significant progress on addressing environmental justice and economic development. Reversing historic injustices, while retaining and attracting businesses, jobs, workers and industry, must be an integral part of implementation of the General Plan and the County's strategic climate action plans. Nevertheless, the 2045 General Plan, 2024 CAP and EIR also fail to address the adverse impact on past and current efforts in the County directed at environmental justice issues and economic development in Impacted Communities.

N-11

Finally, our review of the 2024 CAP indicates that the climate action strategies are also inconsistent with the County's Housing Element, which prioritizes preserving existing affordable housing and increasing the supply of housing, particularly affordable housing, in the County.

N-12

Climate change strategies that reduce tax benefits from jobs producing industry and reduce opportunities for high-paying jobs, as well as increase costs on existing and new housing, are inconsistent with the goals of the Housing Element. Increasing and improving housing opportunities requires stable incomes, a stable tax base, and reliable economic and jobs growth. The County must revise the 2024 CAP to better align with the 2045 General Plan environmental justice and housing goals. N-12

EIR Fails to Comply with CEQA

The Project addressed by the Draft EIR is the implementation of the proposed 2045 General Plan and 2024 CAP. The EIR is "the heart of CEQA." and provides an "environmental 'alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return." *Laurel Heights Improvement Ass'n v. Regents of the Univ. of Cal.* (1998) 47 Cal.3rd 376, 392 (*Laurel Heights*). An EIR is intended to demonstrate that the lead agency "has, in fact, analyzed and considered the ecological implications of its action." *Id*. The EIR, however fails to fully and accurately inform the public and decision makers of environmental consequences associated with the CAP and the General Plan, and ways to mitigate those consequences, and thus fails to achieve CEQA's fundamental purpose. To comply with the law, the County must revise the EIR to cure the CEQA errors identified below, and it must recirculate the revised draft so that the public and decision makers have a fair opportunity to assess the full scope of the environmental impact of the General Plan and CAP climate action strategies. N-13

The 2045 General Plan and 2024 CAP propose to shut down the oil and gas industry, eliminating the County's largest private employers, and the associated higher paying jobs, tax benefits, and goods and services provided locally by those local employers (goods and services that serve the County, region and the State). The EIR fails to identify and analyze any potential impact to the production, export and import of goods and products in the County, or the adverse impact on jobs, income and revenue for public services in the County, particularly for Impacted Communities. In addition to jobs displacement and loss of revenue and locally produced goods, our communities will also be subject to increased traffic, air quality and hazard impacts from the need to import from outside the region and the state those goods and services that are currently produced locally. None of these or other potential adverse impacts are evaluated in the EIR. N-14

Climate action strategies under the 2024 CAP also include incentivizing new buildings to be low-carbon or carbon neutral, retrofitting existing buildings and facilities to reduce energy use, and increasing the amount of electricity used and generated from renewable sources in Contra Costa County. Physical changes will be required by these energy strategies. The EIR fails to adequately evaluate the environmental impact of these climate action strategies. Implementation of the 2045 General Plan and 2024 CAP will result in relocation or construction of new or expanded energy facilities to transition to increased use of sources of renewable energy generated in the County. N-15

Additionally, substantial increase in County sources of renewable energy will be needed to accommodate transition to all electric new residential buildings, hotels, offices and retail. CAP Strategy B-1. Nevertheless, the EIR determines that the General Plan and N-16

CAP would not result in new or expanded energy facilities that would cause significant environmental effects. N-16

The EIR erroneously concludes that the CAP does not propose land use changes and would not directly result in relocation or construction of new or expanded energy facilities, and that any new or expanded facilities resulting from the proposed General Plan 'would undergo its own review to mitigate potentially significant environmental effects." EIR, p. 5.6-34. Consequently, the EIR does not identify energy transition impacts for the CAP, nor does it evaluate any air quality, traffic, hazards, employment, water supply, or wastewater impacts of the transition to and creation of new energy facilities. Furthermore, the EIR fails to quantify the number, size and scope of renewable energy facilities that would result from General Plan and CAP policies/strategies, and fails to evaluate the potential environmental impacts or provide program-based mitigation measures. Potential impacts from development of new renewable energy facilities in the County include heat island impacts for solar panels, wildlife impacts related to migrating birds and solar and wind facilities, water supply impacts from cleaning solar panel, and construction and other impacts related to development of a varied range of local energy storage, transmission and generation facilities. N-17 N-18 N-19

The 2045 General Plan, 2024 CAP and EIR advocate the shutdown of the County's largest private employers, without analysis or discussion of the viability of that proposal, and without identifying or evaluating any potential adverse impacts. The EIR fails to analyze the adverse impacts such proposed climate action strategies will have on jobs, population, housing, revenue, public services, traffic, air quality, and the economy. As such, the 2045 General Plan, 2024 CAP and EIR are fundamentally flawed and promote flawed projections that leave our workers, communities and businesses facing potentially disastrous circumstances without analysis or realistic options or alternatives. N-20

Sincerely yours,

HOLLAND & KNIGHT LLP



Letitia D. Moore

cc: William R. Nelson, Principal Planner

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N. Response to Comments from the Committee for Industrial Safety, dated April 22, 2024.

N-1 The Committee for Industrial Safety (CIS) submits comments to ensure that Contra Costa County adopts an internally consistent and legally sufficient General Plan Climate Action Plan (CAP) and complies with CEQA. CIS also mentions that they are a nonprofit association with the purpose of educating the public and advocating on matters of refinery safety and related regulatory policy and environmental protection.

Contra Costa County appreciates CIS comments and recommendations that may assist the County. See also responses in L-2 through L-10.

N-2 CIS states that oil and gas manufacturing companies are one of the largest and high paying industries in Contra Costa County, expresses concern that the 2045 General Plan and 2024 CAP would shut down oil and gas manufacturing, and that the EIR does not identify or analyze how this would affect the tax base, workforce, manufacturing, and the transport of goods in the county.

The comment does not identify any specific environmental impacts that the EIR fails to analyze and does not provide any evidence in support of its assertions. As described in CEQA Guidelines Section 15064(f)(5), substantial evidence includes "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts," and "argument, speculation, [or] unsubstantiated opinion or narrative…does not constitute substantial evidence." Lead agencies are required to make impact determinations based on substantial evidence in the record. Under CEQA Guidelines Section 15204(c), "Reviewers should explain the basis for their comments, and should submit data or references offering facts, reasonable assumptions based on facts, or expert opinion supported by facts in support of the comments. Pursuant to Section 15064, an effect shall not be considered significant in the absence of substantial evidence."

The County notes that neither the 2045 General Plan nor 2024 CAP propose to prohibit refinery uses or shut down oil and gas manufacturing. The General Plan on page 3-3 states, "Contra Costa County is home to a high concentration of refineries and other large industrial facilities. While these industries contribute to pollution and contamination in Impacted Communities, they also provide jobs, tax revenue, community investments, and local energy production."

N-3 CIS states that implementation of the climate action policies and measures in the 2045 General Plan and 2024 CAP will have significant impacts on workers, communities, and multiple industries in Contra Costa County, including environmental and economic health impacts, and the EIR makes no attempt to evaluate these impacts.

The comment does not identify any specific environmental impacts that the EIR fails to analyze and does not provide any evidence in support of its assertions. As described in CEQA Guidelines Section 15064(f)(5), substantial evidence includes "facts, reasonable

assumptions predicated upon facts, and expert opinion supported by facts," and "argument, speculation, [or] unsubstantiated opinion or narrative…does not constitute substantial evidence." Lead agencies are required to make impact determinations based on substantial evidence in the record. Under CEQA Guidelines Section 15204(c), "Reviewers should explain the basis for their comments, and should submit data or references offering facts, reasonable assumptions based on facts, or expert opinion supported by facts in support of the comments. Pursuant to Section 15064, an effect shall not be considered significant in the absence of substantial evidence."

See responses to Comments N-11 and N-13 through N-19, which address individual statements about the DEIR's compliance with CEQA.

N-4 CIS states that the General Plan and CAP are not consistent with each other and emphasizes that consistency within the General Plan is important to the document being legally adequate. This comment does not cite any specific instances of inconsistency between the General Plan and the CAP.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

N-5 CIS notes that the 2045 General Plan aims to address environmental justice issues to reduce the disadvantages in overburdened communities. The comment states, however, that the 2024 CAP does not align with the environmental justice priorities highlighted in the 2045 General Plan.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

N-6 CIS states that the 2045 General Plan and 2024 CAP identify several communities in Contra Costa County as "Impacted Communities." CIS also quotes language in the Stronger Communities Element of the 2045 General Plan related to industry and its positive and negative impacts upon Impacted Communities.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation. See also the response to Comment N-2. Some of the Stronger Communities Element text the comment references has been revised.

N-7 CIS describes several goals and policies of the 2045 General Plan that emphasize economic development and quality of life improvements intended to assist Impacted Communities, as well prioritization of efforts to protect Impacted Communities from climate change impacts.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

N-8 CIS states that unlike the 2045 General Plan, the CAP does not prioritize efforts to protect Impacted Communities; for example, CAP strategy CE-5 does not prioritize access to high-quality jobs, and economic stability in Impacted Communities. CIS states that the proposed climate action strategies advocate phasing out the largest private employers that provides economic benefits to Impacted Communities, but does not correspondingly prioritize economic development and job creation in those Impacted Communities.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

N-9 CIS states that the 2024 CAP does little or nothing to further the County's environmental justice objectives and cites CAP strategies that are asserted to be inconsistent with 2045 General Plan policies.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

N-10 CIS notes that County has promoted environmental justice and economic development initiatives and lists several specific activities.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

N-11 CIS states that the County's 2023 Interim CAP Progress Report does not reflect any significant progress on addressing environmental justice and economic development. CIS also asserts that the 2045 General Plan, 2024 CAP, and DEIR also "fail to address the adverse impact on past and current efforts in the county directed at environmental justice issues and economic development in Impacted Communities."

The DEIR analyzes the potential environmental impacts of the proposed project, which includes the 2045 General Plan and 2024 CAP. The DEIR is not intended to address the environmental impacts of other past and current County initiatives. Moreover, CEQA is generally concerned with physical environmental impacts of a particular project, and according to CEQA Guidelines Section 15064(e), "[e]conomic and social changes resulting from a project shall not be treated as significant effects on the environment" unless they result in a physical change that would have "a significant effect on the environment." The comment does not identify any specific potential physical changes that would result from environmental justice or economic development initiatives affecting Impacted Communities. This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

N-12 CIS states that their review of the 2024 CAP indicates that the climate action strategies are also inconsistent with the County's Housing Element and the 2045 General Plan's environmental justice goals.

This comment does not describe any inadequacies of the DEIR, and therefore no changes to the EIR are necessary. See Master Response 1 for further explanation.

N-13 CIS asserts that the DEIR fails to fully and accurately inform the public and decision-makers of the environmental consequences of the 2024 CAP and 2045 General Plan and ways to mitigate those consequences, and that the DEIR must be revised and recirculated.

The commenter speculates on potential economic and social effects of the proposed project. CEQA Guidelines Section 15131 specifically precludes considering social or economic effects as significant. The physical impacts of development consistent with the 2045 General Plan are evaluated throughout the DEIR. The comment does not identify any specific environmental impacts that the EIR fails to analyze and does not provide any evidence in support of its assertions. As described in CEQA Guidelines Section 15064(f)(5), substantial evidence includes "facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts," and "argument, speculation, [or] unsubstantiated opinion or narrative…does not constitute substantial evidence." Lead agencies are required to make impact determinations based on substantial evidence in the record. Under CEQA Guidelines Section 15204(c), "Reviewers should explain the basis for their comments, and should submit data or references offering facts, reasonable assumptions based on facts, or expert opinion supported by facts in support of the comments. Pursuant to Section 15064, an effect shall not be considered significant in the absence of substantial evidence."

N-14 CIS states that the 2045 General Plan and 2024 CAP propose to shut down the oil and gas industry and that the DEIR fails to identify and analyze potential impact to the production, export and import of goods and products in the county, or the economic impacts on Impacted Communities. The comment states that this could lead to increased traffic, air quality, and hazard impacts due to the need to import goods and services from outside the region, and that these impacts as well as others are not examined in the EIR.

The comment's assertion that the 2045 General Plan and 2024 CAP propose to shut down the oil and gas industry is inaccurate. As noted in response to Comment N-2, neither the 2045 General Plan nor 2024 CAP proposes to shut down oil and gas manufacturing, nor would it be within the County's power to do so. Through the 2045 General Plan and 2024 CAP the County contemplates a future in which reliance on fossil fuels has diminished in response to federal and State mandates, technological advances, and market forces, all of which are beyond the County's control. Since shutting down oil and gas manufacturing is not part of the proposed project, the DEIR is not required to consider the potential environmental effects of this change. The comment does not provide facts or evidence

to support the claim that increased traffic, air quality, and hazard impacts would occur as a result of the proposed project. As explained in response to Comment N-3, the County as lead agency must base its analysis and impact findings on substantial evidence in the record.

N-15 CIS states that CAP strategies such as incentivizing new buildings to be low-carbon and retrofitting existing buildings to be more energy efficient and run on renewable energy will require physical changes. The comment states that the EIR fails to adequately address potential environmental impacts from relocation or construction of new or expanded energy facilities to transition to increased use of renewable energy generated in the county.

The comment does not identify specific physical environmental impacts of concern. However, each individual impact discussion in each of the chapters of the DEIR considers the potential environmental impacts of implementing the CAP. For example, Section 5.4, *Biological Resources*, Impact 5.4-1, on page 5.4-9, acknowledges that "projects that would implement the proposed CAP strategies and actions could result in the construction of physical improvements and infrastructure in the county that is designed to help meet the emissions targets in the CAP, which could potentially impact special-status species." The analysis goes on to describe the specific local, State, and federal regulations that would reduce potential environmental impacts to special-status species to a less-than-significant level. The commenter speculates on potential projects that are beyond the ability of the County to predict, and may not be subject to County land use regulations. Section 15145 of the CEQA Guidelines states "If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact." Further, as a Program EIR, the focus is on procedures and policies in place to address future projects that are currently unknown. Because the comment speculates about future projects, does not identify which environmental impacts are inadequately addressed, and does not provide facts or evidence to support the statement, a more detailed response is not possible or required.

N-16 CIS notes that substantial increase in county sources of renewable energy will be needed to accommodate transition to all electric new residential buildings, hotels, offices, and retail. CIS states that the EIR incorrectly determines that the General Plan and CAP would not result in new or expanded energy facilities that would cause significant environmental effects.

Section 15378(a) of the CEQA Guidelines defines a project as "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a *reasonably foreseeable* indirect physical change in the environment" (emphasis added). The CAP could potentially encourage construction of new renewable energy facilities, such as solar arrays in new commercial parking lots, as called for in CAP Strategy BE-3. However, the specific type, location, size, and features of these facilities cannot be

reasonably foreseen at this time, nor are any specific renewable energy projects called for in the CAP. The County notes that it has already planned for development of renewable energy facilities by adopting General Plan policies and zoning ordinances regulating wind and solar energy production. Those actions were subject to review under CEQA and resulted in regulations designed to reduce potential environmental impacts associated with renewable energy projects. Any renewable energy projects encouraged by the CAP would be subject to these *existing* County regulations.

It is also important to note that, regardless of the proposed project, new residential and commercial construction is required to meet specific State-level requirements for Zero Net Energy (ZNE), as explained in Section 5.6, *Energy*, beginning on page 5.6-3 of the DEIR. Moreover, as explained on page 5.6-4 of the DEIR, Senate Bill 100 established an overall State policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Therefore, potential future new or expanded energy facilities are likely to be constructed to serve future development in Contra Costa County even without the proposed project, and the future construction of an individual renewable energy facility will not be directly attributable only to the proposed General Plan or CAP.

The 2045 General Plan is a long-range land use planning document and growth is anticipated to occur over the next 20 years. Table 5.6-4 on page 5.6-26 of the EIR shows that over the planning period the service population usage of energy for the county will be reduced because of the 2045 General Plan policies and adherence to energy conservation regulations. Similarly, Table 5.6-5 on page 5.6-27 of the EIR shows a reduction in natural gas and propane usage per service population over the same planning period. Finally, the discussion of Impact 5.6-3 on page 5.6-33 of the EIR outlines the process for approval of new or expanded energy facilities by the State and concludes that energy providers work with the State to prepare the facilities, and that each new facility undergoes its own environmental analysis with the State as the lead agency. The CAP demonstrates that the proposed 2045 General Plan is consistent with State goals regarding energy efficiency and renewable energy, including a decreased reliance upon non-renewable sources over time.

The comment does not provide any evidence in support of its assertions. See Comment N-13 for a discussion of the commenter's obligation to provide supporting evidence.

N-17 CIS states that the EIR erroneously concludes that the CAP does not propose land use changes and would not result in relocation or construction of new or expanded energy facilities, and that any new or expanded facilities resulting from the proposed General Plan would require their own review to mitigate potentially significant impacts.

The CAP supports implementation of the General Plan, but it is not a land use planning document. Land use policy and land use changes are under the purview of the General Plan. As stated on Page 5.6-31 of the DEIR, the proposed CAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not compel any land use changes that could lead to indirect growth or changes in building density or intensity. Regarding whether other components of the CAP could potentially result in relocation or construction of new or expanded energy facilities, see response to Comment N-16.

N-18 CIS states that the EIR does not identify energy transition impacts for the CAP, nor does it evaluate any air quality, traffic, hazards, employment, water supply, or wastewater impacts of the transition to and creation of new energy facilities.

See responses to Comments N-15 and N-16.

N-19 CIS states the EIR fails to quantify the number, size, and scope of renewable energy facilities that would result from General Plan and CAP policies and strategies, evaluate potential environmental impacts, or provide proper mitigation. CIS summarizes potential impacts from development of new renewable energy facilities such as heat island impacts, wildlife impacts related to migrating birds and solar and wind facilities, water supply impacts from cleaning solar panels, and construction and other impacts related to development of a varied range of local energy storage, transmission, and generation facilities.

See response to Comments N-15 and N-16. The CAP does not propose construction of any individual renewable energy facility. The specific type, location, size, and features of these facilities cannot be reasonably foreseen at this time and therefore the environmental impacts of these projects are not analyzed in the DEIR. Individual renewable energy facilities will require project-level environmental review at the time they are proposed.

N-20 CIS reiterates the comment that the General Plan, CAP, and DEIR advocate the shutdown of the county's largest private employers, without analyzing or evaluating any potential adverse impacts or alternatives.

See response to Comment N-2. The commentor fails to "submit data or references offering facts, reasonable assumptions based on facts, or expert opinion supported by facts in support of the comments" as called for under CEQA Guidelines Section 15204(c). As explained in response to Comment N-3, the County as lead agency must base its analysis and impact findings on substantial evidence in the record. In the absence of substantial evidence, no changes to the DEIR are necessary. As explained in response to Comment N-14, the comment's assertion that the 2045 General Plan and 2024 CAP propose to shut down the oil and gas industry is inaccurate.

2. Response to Comments

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3. Revisions to the DEIR

3.1 INTRODUCTION

This section contains revisions to the DEIR based upon (1) additional or revised information required to prepare a response to a specific comment; (2) applicable updated information that was not available at the time of DEIR publication; and/or (3) typographical errors. This section also includes revisions to Mitigation Measure CUL-1 to fully respond to DPC concerns as well as provide additional clarification to mitigation requirements included in the DEIR. The revisions to this mitigation measure do not alter any impact significance conclusions as disclosed in the DEIR. Changes made to the DEIR are identified here in ~~strikeout text~~ to indicate deletions and in underlined text to indicate additions.

3.2 DEIR REVISIONS IN RESPONSE TO WRITTEN COMMENTS

The following text has been revised in response to comments received on the DEIR.

Page 3-30, Chapter 3, *Project Description*, under Heading "Intended Use of the EIR and Proposed Project." The following revisions are made in response to Comment M-4, from the Delta Protection Commission.

This EIR is a program-level EIR intended to review potential environmental impacts associated with adoption and implementation of the proposed General Plan and CAP, and determine corresponding mitigation measures, as necessary. This EIR does not identify or evaluate the impacts of specific, individual developments that may be allowed under the proposed General Plan. Future projects may require separate project-level environmental review, as required by CEQA, to secure the necessary discretionary development permits. Subsequent environmental review may be tiered off this EIR pursuant to CEQA Guidelines Section 15162. Subsequent projects will be reviewed by the County for consistency with the General Plan, CAP, and this EIR. Projects successive to this EIR include, but are not limited to, the following:

- Approval and funding of major public projects and capital improvements.
- Issuance of permits and other approvals necessary for implementation of the proposed General Plan and CAP
- Future General Plan amendments
- Future specific plan and planned unit development approvals
- Property rezoning consistent with the proposed General Plan
- Development ~~plan~~ approvals such as tentative subdivision maps, variances, conditional use permits, development plans, and other land use ~~permits~~ entitlements
- Permit issuances and other approvals necessary for public and private development projects
- Development agreement processes and approvals

3. Revisions to the DEIR

Page 5.5-15 and 5.5-19, Section 5.5, *Cultural Resources and Tribal Cultural Resources*, under Heading "Mitigation Measures" (also repeated on pages 1-14 to 1-15 in Section 1, *Executive Summary*, Table 1-1, "*Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation*"). The following revisions are made in response to Comment M-19, from the Delta Protection Commission.

Mitigation Measures

CUL-1 Prior to initiation of construction activities for discretionary projects that are not exempt from CEQA and would involve ground-disturbing activities on previously undisturbed sites or alteration of potentially significant built environment resources, or as otherwise directed by the County, the project applicant shall be required to retain a~~n~~ cultural resources consultant with staff ~~archaeologist~~ that meets the Secretary of the Interior's Professionally Qualified Standards to conduct a cultural records search and complete the following steps as relevant. ~~If the records search identifies sensitivity for archaeological resources, the archaeologist shall be retained on an on-call basis. The project applicant shall defer to the recommendations of the consulting archaeologist, in consultation with culturally affiliated tribes and their designated monitors, regarding the evaluation and treatment of any cultural resources discovered on the project site.~~

The cultural resources consultant shall:

- Conduct a records search with the California Historical Resources Information System.
- If the record search shows a pedestrian survey has been conducted within the last 10 years and the survey results were negative, the project applicant shall provide those results to the County for summary in environmental analysis.
- If no survey has been performed, or if cultural resources are present, the project applicant shall direct the cultural resources consultant to:
    - Conduct a pedestrian survey (if none has been completed).
    - Update the records for known resources.
    - Record new built environment and archaeological resources.
    - Determine if the resources have been previously evaluated for the California Register of Historical Resources.
    - If the resources were previously determined ineligible for listing, the cultural resources consultant shall describe those results for use in the County's environmental analysis.
    - If the resources have not been evaluated, the cultural resources consultant shall evaluate the resources for listing on the California Register of Historical Resources, and local registers.
    - If the resources were previously determined eligible or are proposed to be register-eligible, the cultural resources consultant shall determine if the project would result in a "substantial adverse change in the resource" as defined in CEQA Guidelines Section 15064.5(b)(1).

- If a substantial adverse change would occur, the cultural resources consultant shall support the County in identifying feasible mitigation approaches.

Page 5.10-4, Section 5.10, *Hydrology and Water Quality*, under Heading "State Water Control Board." The following revisions are made in response to Comment M-11, from the Delta Protection Commission.

State Water Resources Control Board

In California, the SWRCB has broad authority over water quality control issues for the State. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the State by the federal government under the CWA. It also regulates public drinking water systems, NPDES wastewater discharges, water quality monitoring, water recycling programs, landfill disposal, water rights, and drought restrictions. As stated previously, western Contra Costa County is within the jurisdiction of the San Francisco Bay RWQCB (Region 2) and eastern Contra Costa County is within the jurisdiction of the Central Valley RWQCB (Region 5). Each RWQCB regulates surface water and groundwater quality in the watersheds within their jurisdiction.

The SWRCB provides an interactive map which displays the Appropriative water rights and Statements of Water Diversion and Use water rights for islands/areas in the Legal Delta, which includes the Delta Primary and Secondary Zones. This map is available here: https://www.waterboards.ca.gov/water_issues/programs/delta_watermaster/delta_map/.

Page 5.10-51, Section 5.10, *Hydrology and Water Quality*, Impact 5.10-2. The following revisions are made in response to Comment M-12 from the Delta Protection Commission.

Additionally, future development pursuant to the proposed General Plan would be required to implement the water-efficient requirements specified in the CALGreen and California Plumbing Codes and the MWELO requirements for water efficient landscaping. As specified in California Water Code Section 10910, future ~~Future~~ projects subject to CEQA that also meet the criteria under California Water Code Section 10912 would be required to prepare a Water Supply Assessment (WSA) that demonstrates that project water demands would not exceed water supplies. In addition, residential, commercial, and industrial water usage can be expected to decrease in the future as a result of the implementation of water conservation practices.

Page 5.17-35, Section 5.17, *Utilities and Service Systems*, Impact 5.17-3. The following revisions are made in response to Comment M-12 from the Delta Protection Commission.

Additionally, future development pursuant to the proposed General Plan would be required to implement the water-efficient requirements specified in the CALGreen and California Plumbing Codes and the MWELO requirements for water-efficient landscaping. As specified in California Water Code Section 10910, future ~~Future~~ projects subject to CEQA that also meet the criteria under California Water Code Section 10912 would be required to prepare a WSA that demonstrates that project water demands would not exceed water supplies.

3. Revisions to the DEIR

In addition, residential, commercial, and industrial water usage can be expected to decrease in the future as a result of the implementation of water conservation practices. In the case of a water shortage, each water purveyor would implement their Water Shortage Contingency Plan, as described in the 2020 UWMPs. Also, the proposed General Plan policies and actions presented in Section 5.17.2.3 would further reduce future water demands.

Page 5.11-2, Section 5.11, *Land Use and Planning*, under the heading "Land Use and Resource Management Plan for the Primary Zone of the Delta". The following revisions are made in response to Comment M-21 from the Delta Protection Commission.

Land Use and Resource Management Plan for the Primary Zone of the Delta

The Delta Protection Act of 1992 established the Delta Protection Commission to manage the conservation and enhancement of the Delta's natural resources, sustain agriculture, and meet recreational demands. The Act defines a Primary Zone as the principal jurisdiction, while the Secondary Zone is outside the Primary Zone and within the Legal Delta (see Figure 5.11-1). The Primary Zone of the Delta includes approximately 500,000 acres of waterways, levees, and farmed lands extending over portions of five counties: Solano, Yolo, Sacramento, San Joaquin, and Contra Costa.

The Delta Protection Commission must prepare and adopt a Land Use and Resource Management Plan (LURMP) for the Primary Zone, meeting specific goals. The goals of the LURMP are to "protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment, including but not limited to agriculture, wildlife habitat, and recreational activities; assure orderly, balanced conservation and development of Delta land resources and improve flood protection by structural and nonstructural means to ensure an increased level of public health and safety." The LURMP is divided into three sections: planning program and objectives, individual elements, and implementation program.

The ~~Land Use and Resource Management Plan~~ LURMP guides local land use decisions related to agriculture, flood protection, Delta communities, natural resources, recreation, and utilities and infrastructure. General plans and projects within the Primary Zone in the five Delta counties listed above must be consistent with the ~~Land Use and Resource Management Plan~~ LURMP and are subject to review by the Commission (DPC 2010). Contra Costa County's 2045 General Plan must satisfy the findings enumerated in Public Resource Code Section 29763.5 to allow the Commission to determine that it is consistent with the LURMP. The findings include ensuring the General Plan aligns with the LURMP, will not cause wetland or riparian loss, will not result in water quality degradation, will not increase nonpoint source pollution, will not result in Pacific Flyway habitat degradation, will not reduce public access, will not increase flood hazard, will not adversely impact agricultural lands, will not cause levee integrity impairment, will not adversely impact navigation, and will not result in any increased requirements or restrictions upon agricultural practices in the Primary Zone.

3.3 DEIR REVISIONS IN RESPONSE TO PROJECT CHANGES

The Draft 2045 General Plan and CAP were available for public review from October 17, 2023, to April 22, 2024. After reviewing the comments received, County staff identified changes to the Draft General Plan and CAP to respond to public comments, as well as to reflect new information that had become available since the drafts were published and to clarify the content. The changes to the Draft General Plan and CAP are presented in Appendix A, *Staff-Recommended Changes to the Proposed Project*, to this FEIR.

At its meeting on September 10, 2024, the Contra Costa County Board of Supervisors directed County staff to prepare the final versions of the General Plan and CAP for adoption, with the changes recommended in Appendix A included. The Board of Supervisors also directed staff to include the following additional changes in the final version of the General Plan and CAP:

- Minor edits throughout the Community Profiles in the General Plan, including to expand the Alhambra Valley, Reliez Valley, and Briones Community Profile to include Franklin Canyon.
- Develop a comprehensive funding strategy for the CAP.
- Incentivize and increase public-private partnerships for the CAP.

As shown in Appendix A, the changes to the proposed General Plan include changes to the Proposed General Plan Land Use Map, which is provided as Figure 3-3 on page 3-13 of the DEIR. The map changes address various anomalies and inconsistencies, reflect significant changes in ownership or use since the previous version (such as East Bay Regional Park District land acquisitions and recording of conservation easements), and further support the proposed General Plan's policy goals, such as environmental protection and promotion of infill development. The updated version of DEIR Figure 3-3 is provided as Figure 3-1 of this FEIR, with changes listed in Table 3-1 of this FEIR.

3. Revisions to the DEIR

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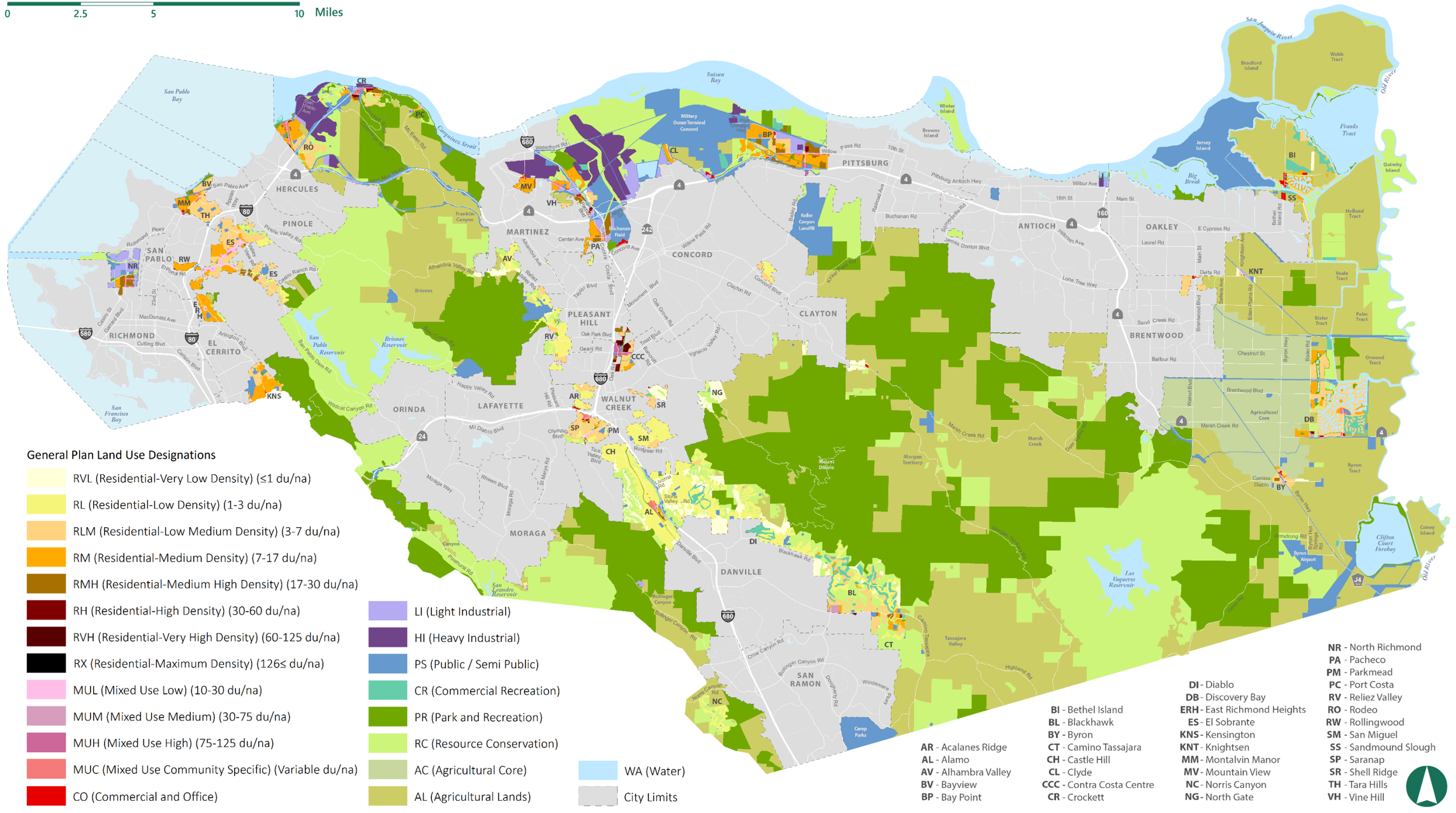
Figure 3-1 Proposed General Plan Land Use Map



3. Revisions to the DEIR

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Table 3-1 Changes to DEIR Figure 3-3, Proposed General Plan Land Use Map

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Acalanes Ridge	175141001	RL	RLM	0.37
Acalanes Ridge	175141002	RL	RLM	0.37
Acalanes Ridge	175141003	RL	RLM	0.37
Acalanes Ridge	175141004	RL	RLM	0.36
Acalanes Ridge	175141005	RL	RLM	0.42
Acalanes Ridge	175143003	RL	RLM	0.41
Acalanes Ridge	175143004	RL	RLM	0.44
Acalanes Ridge	175143031	RL	RLM	0.31
Acalanes Ridge	175143032	RL	RLM	0.54
Acalanes Ridge	175150008	RL	RLM	0.44
Acalanes Ridge	175150009	RL	RLM	0.64
Acalanes Ridge	175150010	RL	RLM	0.57
Acalanes Ridge	175150015	RL	RLM	0.41
Acalanes Ridge	175150016	RL	RLM	0.45
Acalanes Ridge	175150017	RL	RLM	0.39
Acalanes Ridge	175150018	RL	RLM	0.39
Acalanes Ridge	175150019	RL	RLM	0.43
Acalanes Ridge	175150020	RL	RLM	0.35
Acalanes Ridge	175150030	RL	RLM	0.41
Acalanes Ridge	175150031	RL	RLM	0.33
Acalanes Ridge	175150032	RL	RLM	0.34
Acalanes Ridge	175150033	RL	RLM	0.60
Acalanes Ridge	175150046	RL	RLM	0.67
Acalanes Ridge	175150047	RL	RLM	0.71
Acalanes Ridge	175150048	RL	RLM	0.32
Acalanes Ridge	175150049	RL	RLM	0.30
Acalanes Ridge	175150050	RL	RLM	0.35
Acalanes Ridge	175150051	RL	RLM	0.50
Acalanes Ridge	175150053	RL	RLM	0.46
Acalanes Ridge	175150054	RL	RLM	0.43
Acalanes Ridge	175150057	RL	RLM	0.56
Acalanes Ridge	175150058	RL	RLM	0.95
Acalanes Ridge	175150059	RL	RLM	0.58
Acalanes Ridge	175150061	RL	RLM	0.56
Acalanes Ridge	175150063	RL	RLM	0.36
Acalanes Ridge	175150064	RL	RLM	0.48

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Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Acalanes Ridge	175260010	RL	RLM	0.35
Acalanes Ridge	175260011	RL	RLM	0.38
Acalanes Ridge	175260012	RL	RLM	0.75
Acalanes Ridge	175260013	RL	RLM	0.42
Acalanes Ridge	175260014	RL	RLM	0.43
Acalanes Ridge	175260015	RL	RLM	0.44
Acalanes Ridge	175260028	RL	RLM	0.43
Acalanes Ridge	175260029	RL	RLM	0.44
Acalanes Ridge	175260030	RL	RLM	0.36
Acalanes Ridge	175260032	RL	RLM	0.36
Acalanes Ridge	175260033	RL	RLM	0.52
Acalanes Ridge	175260034	RL	RLM	0.45
Acalanes Ridge	175260035	RL	RLM	0.39
Acalanes Ridge	175260036	RL	RLM	0.65
Acalanes Ridge	177181013	RL	RLM	0.41
Acalanes Ridge	177181017	RL	RLM	0.46
Alamo	187190008	RL	PS	0.21
Alamo	197030025	RVL	RL	1.50
Alamo	197050025	RVL	RL	7.64
Alamo	197050026	RVL	RL	2.50
Alamo	192240017	RM	RVL	1.02
Alamo	192240025	RM	RVL	0.58
Alamo	197060028	RC	PR	0.33
Alamo	197050004	PR	RC	4.25
Alamo	192060027	RC	RL	0.04
Alamo	192272011	RC	RL	1.04
Alamo	192272012	RC	RL	0.88
Alamo	192272013	RC	RL	1.02
Alamo	192272014	RC	RL	0.80
Alamo	188382014	RC	RVL	0.21
Alamo	197170015	RL	PR	0.12
Alamo	197170015	RVL	PR	0.28
Alamo	197380036	RVL	PR	0.52
Alamo	192030014	RL	RC	0.06
Alamo	192060027	RL	RC	0.13
Alamo	192272011	RL	RC	0.56
Alamo	192272012	RL	RC	0.34
Alamo	192272013	RL	RC	0.45

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Alamo	192272014	RL	RC	0.29
Alamo	192240017	RM	RC	0.14
Alamo	192240025	RM	RC	0.94
Alamo	188381009	RVL	RC	0.41
Alamo	188381010	RVL	RC	0.25
Alamo	188381011	RVL	RC	0.17
Alamo	188381012	RVL	RC	0.23
Alamo	188381015	RVL	RC	0.14
Alamo	188381019	RVL	RC	0.19
Alamo	188381020	RVL	RC	0.23
Alamo	188382009	RVL	RC	0.51
Alamo	188382010	RVL	RC	0.28
Alamo	188382011	RVL	RC	0.35
Alamo	188382012	RVL	RC	0.61
Alamo	188382014	RVL	RC	0.07
Alamo	188382015	RVL	RC	0.21
Alamo	188391008	RVL	RC	0.14
Alamo	188391009	RVL	RC	0.41
Alamo	188391010	RVL	RC	0.23
Alamo	188391013	RVL	RC	0.20
Alamo	188391014	RVL	RC	0.14
Alamo	188391015	RVL	RC	0.18
Alamo	188391016	RVL	RC	0.19
Alamo	188392009	RVL	RC	0.17
Alamo	188392010	RVL	RC	0.25
Alamo	188392011	RVL	RC	0.24
Alamo	188392014	RVL	RC	0.36
Alamo	188392015	RVL	RC	0.32
Alamo	188392016	RVL	RC	0.62
Alamo	188392018	RVL	RC	0.39
Alamo	188392019	RVL	RC	0.34
Alamo	188401003	RVL	RC	0.08
Alamo	188401004	RVL	RC	0.17
Alamo	188401005	RVL	RC	0.25
Alamo	188402005	RVL	RC	0.13
Alamo	188402006	RVL	RC	0.19
Alamo	188402007	RVL	RC	0.10
Alamo	188402008	RVL	RC	0.14

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Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Alamo	188403008	RVL	RC	0.22
Alamo	188403009	RVL	RC	0.21
Alamo	188403010	RVL	RC	0.30
Alamo	188403011	RVL	RC	0.22
Alamo	188403012	RVL	RC	0.36
Alamo	188403013	RVL	RC	0.43
Alamo	188412001	RVL	RC	0.36
Alamo	188412002	RVL	RC	0.30
Alamo	188412003	RVL	RC	0.30
Alamo	188412004	RVL	RC	0.24
Alamo	188412007	RVL	RC	0.31
Alamo	188412008	RVL	RC	0.20
Alamo	188412009	RVL	RC	0.22
Alamo	188412010	RVL	RC	0.21
Alamo	188412014	RVL	RC	0.27
Alamo	188412015	RVL	RC	0.13
Alamo	192250002	RVL	RC	1.89
Alamo	192260028	RVL	RC	0.80
Alamo	192350003	RVL	RC	1.34
Alamo	192350004	RVL	RC	0.94
Bay Point	093021005	RM	MUC	0.16
Bay Point	093021006	RM	MUC	0.09
Bay Point	093036002	RM	MUC	0.15
Bay Point	093036003	RM	MUC	0.12
Bay Point	093036004	RM	MUC	0.12
Bay Point	093050006	RM	MUC	0.26
Bay Point	095083013	RMH	MUC	0.16
Bay Point	095083014	RMH	MUC	0.04
Bay Point	095083021	RMH	MUC	0.28
Bay Point	095083022	RMH	MUC	0.24
Bay Point	098040027	CO	MUL	0.76
Bay Point	098040028	CO	MUL	3.06
Bay Point	093091004	RH	MUM	0.46
Bay Point	093091005	RH	MUM	0.23
Bay Point	093091006	RH	MUM	0.22
Bay Point	093091007	RH	MUM	0.23
Bay Point	093091008	RH	MUM	0.22
Bay Point	093091009	RH	MUM	0.23

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Bay Point	093091010	RH	MUM	0.23
Bay Point	093091013	RH	MUM	0.23
Bay Point	093091022	RH	MUM	0.19
Bay Point	093091023	RH	MUM	0.12
Bay Point	093170055	RH	MUM	0.41
Bay Point	093170056	RH	MUM	0.50
Bay Point	093170056	RLM	MUM	0.06
Bay Point	093170057	RH	MUM	1.45
Bay Point	093170057	RLM	MUM	0.10
Bay Point	093113041	RM	PS	0.60
Bay Point	093160001	RLM	RM	0.21
Bay Point	098481030	RC	PR	1.34
Bay Point	098421016	RLM	PR	0.30
Bay Point	098421016	RM	PR	0.07
Bay Point	098520035	RM	RC	0.10
Bay Point	098520036	RM	RC	0.11
Bay Point	098520037	RM	RC	0.11
Bay Point	098520038	RM	RC	0.11
Bay Point	098520039	RM	RC	0.12
Bay Point	098520040	RM	RC	0.12
Bay Point	098520041	RM	RC	0.14
Bay Point	098520042	RM	RC	0.10
Bethel Island	028010003	RC	AL	1.27
Bethel Island	028010004	RC	AL	3.01
Bethel Island	028020001	RC	AL	4.26
Bethel Island	028030002	RC	AL	1.11
Bethel Island	028030004	RC	AL	41.16
Bethel Island	028040012	RC	AL	1.76
Bethel Island	028040013	RC	AL	4.54
Bethel Island	028040014	RC	AL	27.04
Bethel Island	028060014	RC	AL	3.00
Bethel Island	028060015	RC	AL	7.76
Bethel Island	028060021	RC	AL	1.15
Bethel Island	028070004	RC	AL	1.73
Bethel Island	028070005	RC	AL	2.61
Bethel Island	028070006	RC	AL	3.00
Bethel Island	029010016	RC	AL	5.77
Bethel Island	029010017	RC	AL	0.34

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Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Bethel Island	029010018	RC	AL	2.31
Bethel Island	029010019	RC	AL	1.50
Bethel Island	029040010	RC	AL	4.92
Bethel Island	029040011	RC	AL	1.47
Bethel Island	029040012	RC	AL	14.86
Bethel Island	029050014	RC	AL	2.12
Bethel Island	029050056	RC	AL	6.38
Bethel Island	029060022	RC	AL	1.65
Bethel Island	030120001	RC	AL	1.95
Bethel Island	030130006	RC	AL	1.33
Bethel Island	030130009	RC	AL	0.40
Bethel Island	030130010	RC	AL	0.45
Bethel Island	030130011	RC	AL	0.91
Bethel Island	030130012	RC	AL	0.70
Bethel Island	030140004	RC	AL	1.38
Bethel Island	030150004	RC	AL	10.68
Bethel Island	030150005	RC	AL	3.75
Bethel Island	030150009	RC	AL	2.41
Bethel Island	030150010	RC	AL	3.00
Bethel Island	030160003	RC	AL	0.28
Bethel Island	030160011	RC	AL	0.09
Bethel Island	030160012	RC	AL	0.21
Bethel Island	030160013	RC	AL	0.03
Bethel Island	030160014	RC	AL	0.61
Bethel Island	030160015	RC	AL	1.44
Bethel Island	030160016	RC	AL	0.49
Bethel Island	030160017	RC	AL	0.33
Bethel Island	030160018	RC	AL	0.25
Bethel Island	030160019	RC	AL	0.30
Bethel Island	030160020	RC	AL	0.42
Bethel Island	030160022	RC	AL	0.97
Bethel Island	030160024	RC	AL	0.10
Bethel Island	030160025	RC	AL	3.44
Bethel Island	030160027	RC	AL	0.65
Bethel Island	030160031	RC	AL	0.14
Bethel Island	030160032	RC	AL	0.15
Bethel Island	030160035	RC	AL	5.36
Bethel Island	030160XXX	RC	AL	0.07

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Bethel Island	031010019	RC	PR	1.06
Bethel Island	031021017	RC	PR	2.41
Bethel Island	030120008	CR	RM	0.57
Bethel Island	031010026	CR	RM	0.00
Bethel Island	031270001	CR	RM	0.02
Bethel Island	031270031	CR	RM	0.04
Bethel Island	029050001	CO	AL	0.49
Bethel Island	029050006	CO	AL	2.33
Bethel Island	029050012	CO	AL	3.15
Bethel Island	029050013	CO	AL	4.66
Bethel Island	029050014	CO	AL	3.83
Bethel Island	029050037	CO	AL	3.58
Bethel Island	029050041	CO	AL	1.34
Bethel Island	029050042	CO	AL	1.37
Bethel Island	029050046	CO	AL	1.10
Bethel Island	029050050	CO	AL	1.13
Bethel Island	029050054	CO	AL	3.41
Bethel Island	029050055	CO	AL	7.80
Bethel Island	029050057	CO	AL	9.36
Bethel Island	030160027	RM	AL	0.32
Bethel Island	030160035	RLM	AL	0.09
Blackhawk	203040024	PR	RC	7.65
Bollinger Canyon	208240054	AL	RC	141.41
Bollinger Canyon North	258100001	RC	AL	76.06
Bollinger Canyon North	258110002	AL	RC	139.91
Bollinger Canyon North	258110003	AL	RC	106.11
Buchanan	125010023	CR	PR	49.30
Byron	002140025	RLM	CO	0.15
Byron	002140027	RLM	CO	0.15
Byron	002102016	RLM	MUL	0.01
Byron	003110003	RLM	RM	1.12
Byron	003110005	RLM	RM	0.48
Byron	003110016	RLM	RM	0.50
Camino Tassajara	206030058	PR	CR	9.02
Camino Tassajara	206030087	PR	CR	1.92
Camino Tassajara	206800068	RLM	PR	0.23
Crockett	354091011	HI	RM	0.15
Crockett	354221001	RLM	RM	0.15

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Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Crockett	354221012	RLM	RM	0.01
Crockett	354221026	RLM	RM	0.20
Crockett	354221027	RLM	RM	0.26
Crockett	354221028	RLM	RM	0.19
Crockett	354221032	RLM	RM	0.34
Crockett	354232006	RLM	RM	0.14
Crockett	354053009	RLM	RMH	0.17
Crockett	354053010	RLM	RMH	0.15
Crockett	354053026	RLM	RMH	0.18
Crockett	354214015	RLM	RMH	0.17
Discovery Bay	011230047	PS	RLM	0.10
Discovery Bay	011460053	PS	RLM	0.19
Discovery Bay	011510091	PS	RLM	0.20
Discovery Bay	008491046	RC	PR	0.07
Discovery Bay	008492017	RC	PR	1.90
Discovery Bay	008501053	RC	PR	0.16
Discovery Bay	008550045	RC	PR	0.11
Discovery Bay	008550046	RC	PR	0.42
Discovery Bay	008550047	RC	PR	0.00
Discovery Bay	011241028	RC	PR	2.44
Discovery Bay	011510090	RC	PR	0.38
Discovery Bay	011520055	RC	PR	0.69
Discovery Bay	011540048	RC	PR	0.34
Discovery Bay	011550093	RC	PR	0.69
Discovery Bay	011550094	RC	PR	0.35
Discovery Bay	011570049	RC	PR	1.07
Discovery Bay	011670046	RC	PR	1.04
Discovery Bay	011670047	RC	PR	0.95
Discovery Bay	011680062	RC	PR	0.47
Discovery Bay	011680063	RC	PR	0.63
Discovery Bay	011690051	RC	PR	1.32
Discovery Bay	011690052	RC	PR	0.66
Discovery Bay	011690053	RC	PR	0.32
Discovery Bay	011220013	PR	RC	0.79
Discovery Bay	011220014	PR	RC	0.03
Discovery Bay	011230053	RC	WA	6.53
Discovery Bay	011570048	RC	RLM	0.01
Discovery Bay	008210024	RC	RLM	0.33

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Discovery Bay	008230037	RC	RLM	0.06
Discovery Bay	008230038	RC	RLM	0.53
Discovery Bay	011230047	RC	RLM	0.05
Discovery Bay	011241005	RC	RLM	0.25
Discovery Bay	011490073	RC	RLM	0.39
Discovery Bay	011490074	RC	RLM	2.59
Discovery Bay	011490075	RC	RLM	0.08
Discovery Bay	011500098	RC	RLM	0.43
Discovery Bay	011510089	RC	RLM	1.17
Discovery Bay	011510090	RC	RLM	1.03
Discovery Bay	011550094	RC	RLM	0.03
Discovery Bay	011570052	RC	RLM	0.24
Discovery Bay	011230024	RC	RM	0.22
Discovery Bay	011230025	RC	RM	0.39
Discovery Bay	011241016	RC	RM	1.42
Discovery Bay	011241017	RC	RM	0.48
Discovery Bay	011241018	RC	RM	1.06
Discovery Bay	011241019	RC	RM	0.28
Discovery Bay	011560084	RC	RM	0.79
Discovery Bay	011570053	RC	RM	0.38
Discovery Bay	011570054	RC	RM	0.32
Discovery Bay	011630093	RC	RM	0.10
Discovery Bay	011630094	RC	RM	1.07
Discovery Bay	011630095	RC	RM	0.02
Discovery Bay	011630096	RC	RM	0.11
Discovery Bay	004010011	RC	PS	4.08
Discovery Bay	011230034	RC	PS	0.40
Discovery Bay	011230045	RC	PS	0.24
Discovery Bay	011230046	RC	PS	0.11
Discovery Bay	011241005	RC	PS	1.89
Discovery Bay	011241023	RC	PS	3.12
Discovery Bay	011241028	RC	PS	1.12
Discovery Bay	011270006	RC	PS	36.33
Discovery Bay	011510090	RC	PS	1.02
Discovery Bay	011550094	RC	PS	0.24
Discovery Bay	011241028	PR	PS	0.36
Discovery Bay	011510091	PS	PR	0.11
Discovery Bay	011220013	RLM	RC	0.59

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Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
East Clayton	075200021	RVL	AL	4.90
East Clayton	078010016	RVL	AL	0.20
East Clayton	078220009	RC	RVL	0.01
East Clayton	078220013	RC	RVL	0.19
East Clayton	078260022	RC	RVL	0.55
El Sobrante	425091010	RM	MUL	0.36
El Sobrante	420010001	RC	MUL	0.01
El Sobrante	420010002	RC	MUL	0.11
El Sobrante	420010005	RC	MUL	0.11
El Sobrante	420010006	RC	MUL	0.01
El Sobrante	420010016	RC	MUL	0.01
El Sobrante	420010022	RC	MUL	0.06
El Sobrante	420193010	RC	MUL	0.11
El Sobrante	420193011	RC	MUL	0.10
El Sobrante	420193012	RC	MUL	0.15
El Sobrante	425160003	RC	MUL	0.06
El Sobrante	425160006	RC	MUL	0.03
El Sobrante	425160007	RC	MUL	0.27
El Sobrante	425160011	RC	MUL	0.05
El Sobrante	425160014	RC	MUL	0.19
El Sobrante	425160017	RC	MUL	0.01
El Sobrante	425160018	RC	MUL	0.04
El Sobrante	425160019	RC	MUL	0.16
El Sobrante	425160022	RC	MUL	0.00
El Sobrante	425160023	RC	MUL	0.24
El Sobrante	425160024	RC	MUL	0.06
El Sobrante	425160025	RC	MUL	0.05
El Sobrante	431030004	RC	MUL	0.06
El Sobrante	431030012	RC	MUL	0.02
El Sobrante	431050001	RC	RL	0.18
El Sobrante	431050002	RC	RL	0.13
El Sobrante	431050007	RC	RL	0.09
El Sobrante	425122011	RC	RLM	0.02
El Sobrante	425122012	RC	RLM	0.04
El Sobrante	425123001	RC	RLM	0.08
El Sobrante	425123002	RC	RLM	0.01
El Sobrante	425130029	RC	RLM	0.01
El Sobrante	425130030	RC	RLM	0.04

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
El Sobrante	425141007	RC	RLM	0.01
El Sobrante	425142018	RC	RLM	0.01
El Sobrante	425150007	RC	RLM	0.02
El Sobrante	425150012	RC	RLM	0.09
El Sobrante	425150026	RC	RLM	0.01
El Sobrante	425150036	RC	RLM	0.22
El Sobrante	425150044	RC	RLM	0.04
El Sobrante	425150045	RC	RLM	0.03
El Sobrante	425150050	RC	RLM	0.15
El Sobrante	425150051	RC	RLM	0.02
El Sobrante	425150052	RC	RLM	0.02
El Sobrante	425150053	RC	RLM	0.05
El Sobrante	431060004	RC	RLM	0.27
El Sobrante	431060012	RC	RLM	0.06
El Sobrante	420010006	MUL	RC	0.04
El Sobrante	420010007	MUL	RC	0.06
El Sobrante	420010008	MUL	RC	0.07
El Sobrante	420010009	MUL	RC	0.05
El Sobrante	420010015	MUL	RC	0.04
El Sobrante	420010023	MUL	RC	0.04
El Sobrante	420010024	MUL	RC	0.04
El Sobrante	420010025	MUL	RC	0.04
El Sobrante	420021002	MUL	RC	0.15
El Sobrante	420021022	MUL	RC	0.12
El Sobrante	420021029	MUL	RC	0.20
El Sobrante	420021047	MUL	RC	0.09
El Sobrante	420021048	MUL	RC	0.05
El Sobrante	420021049	MUL	RC	0.07
El Sobrante	425150012	RLM	RC	0.29
El Sobrante	425150030	RLM	RC	0.10
El Sobrante	433020043	RLM	RC	0.01
El Sobrante	433020067	RLM	RC	0.04
Franklin Canyon	362060011	AL	PR	168.26
Franklin Canyon	362060012	AL	PR	129.74
Franklin Canyon	362060019	AL	PR	237.40
Holland Tract	023060005	RC	AL	12.00
Holland Tract	023070011	RC	AL	9.69
Holland Tract	023070012	RC	AL	9.96

3. Revisions to the DEIR

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Holland Tract	023070020	RC	AL	21.62
Holland Tract	023060005	AL	RC	0.07
Kensington	571050023	CO	RM	0.14
Kensington	572014007	RM	RLM	0.29
Kensington	572014016	RM	RLM	0.24
Kensington	570222013	RLM	RM	0.18
Kensington	570222014	RLM	RM	0.19
Kensington	570231001	RLM	RM	0.19
Kensington	570231002	RLM	RM	0.19
Kensington	570231003	RLM	RM	0.19
Kensington	570231004	RLM	RM	0.20
Kensington	570231005	RLM	RM	0.19
Kensington	570231006	RLM	RM	0.18
Kensington	570231007	RLM	RM	0.18
Kensington	570231008	RLM	RM	0.17
Kensington	570231009	RLM	RM	0.15
Kensington	570231010	RLM	RM	0.14
Kensington	570231011	RLM	RM	0.15
Kensington	570231012	RLM	RM	0.15
Kensington	570231013	RLM	RM	0.14
Kensington	570231014	RLM	RM	0.13
Kensington	570251006	RLM	RM	0.14
Kensington	570251007	RLM	RM	0.10
Kensington	570251008	RLM	RM	0.10
Kensington	570251009	RLM	RM	0.12
Kensington	570251011	RLM	RM	0.13
Kensington	570251012	RLM	RM	0.14
Kensington	570251015	RLM	RM	0.13
Kensington	570251016	RLM	RM	0.13
Kensington	570251017	RLM	RM	0.12
Kensington	570251018	RLM	RM	0.11
Kensington	570252021	RLM	RM	0.32
Kensington	570252022	RLM	RM	0.25
Kensington	570252023	RLM	RM	0.16
Kensington	570252024	RLM	RM	0.17
Kensington	570252025	RLM	RM	0.15
Kensington	570252026	RLM	RM	0.14
Kensington	570252027	RLM	RM	0.13

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Kensington	570253013	RLM	RM	0.14
Kensington	570253014	RLM	RM	0.14
Kensington	570253015	RLM	RM	0.15
Kensington	570253016	RLM	RM	0.14
Kensington	570253017	RLM	RM	0.16
Kensington	570253018	RLM	RM	0.15
Kensington	570253019	RLM	RM	0.14
Kensington	570253020	RLM	RM	0.20
Kensington	572012012	RLM	RM	0.14
Kensington	572090001	RLM	RM	0.17
Kensington	572090002	RLM	RM	0.14
Kensington	572040011	PR	PS	2.02
Kirker Pass	091040002	AL	to City	115.24
Kirker Pass	092010002	AL	to City	4.67
Kirker Pass	092010006	AL	to City	62.10
Kirker Pass	092020002	AL	to City	52.52
Kirker Pass	092020003	AL	to City	158.52
Kirker Pass	092030012	AL	to City	9.83
Kirker Pass	092040008	AL	to City	161.95
Kirker Pass	092050002	AL	to City	53.17
Martinez/Pleasant Hill	154690001	RC	RVL	0.10
Martinez/Pleasant Hill	154690001	RVL	RC	0.43
Montalvin Manor	403020011	PR	PS	1.87
Mount Diablo	078110005	PR	RC	177.62
Mountain View	375022007	CO	RM	0.05
North Concord	099220007	LI	CO	0.05
North Concord	159130028	RC	HI	8.72
North Concord	159260013	RC	HI	1.25
North Concord	159270006	RC	HI	98.07
North Concord	159280010	RC	HI	76.07
North Concord	159280011	RC	HI	10.17
North Concord	159110XXX	RC	HI	1.68
North Concord	159120007	RC	LI	0.12
North Concord	159120016	RC	LI	7.33
North Concord	159120031	RC	LI	12.97
North Concord	159120036	RC	LI	124.26
North Concord	159120037	RC	LI	62.83
North Concord	159010005	HI	RC	12.49

3. Revisions to the DEIR

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
North Concord	159020001	HI	RC	2.86
North Concord	159120001	HI	RC	0.12
North Concord	159120009	HI	RC	0.13
North Concord	159120016	HI	RC	13.97
North Concord	159120018	HI	RC	3.95
North Concord	159120019	HI	RC	0.58
North Concord	159130017	HI	RC	0.37
North Concord	159270006	HI	RC	3.48
North Gate	138091064	RC	CR	1.95
North Gate	138091065	RC	CR	6.10
North Gate	138150003	RVL	RC	0.25
North Gate	138150014	RVL	RC	0.10
North Gate	138150015	RVL	RC	0.09
North Gate	138150018	RVL	RC	0.09
North Gate	138150022	RVL	RC	2.05
North Gate	138150023	RVL	RC	0.33
North Gate	138150024	RVL	RC	0.04
North Gate	138180002	RVL	RC	0.57
North Gate	138180006	RVL	RC	0.09
North Gate	138180008	RVL	RC	0.46
North Gate	138180009	RVL	RC	0.14
North Gate	138180010	RVL	RC	0.15
North Gate	138190006	RVL	RC	0.09
North Gate	138190007	RVL	RC	0.18
North Gate	138190010	RVL	RC	0.08
North Gate	138190011	RVL	RC	0.21
North Gate	138190014	RVL	RC	0.36
North Gate	138190015	RVL	RC	0.37
North Gate	138190016	RVL	RC	0.27
North Gate	138200002	RVL	RC	0.16
North Gate	138200007	RVL	RC	1.46
North Gate	138210005	RVL	RC	0.19
North Gate	138210008	RVL	RC	0.00
North Gate	138210009	RVL	RC	0.12
North Gate	138210011	RVL	RC	1.23
North Gate	138210012	RVL	RC	0.37
North Gate	138210013	RVL	RC	0.26
North Gate	138230019	RVL	RC	0.38

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
North Gate	138230020	RVL	RC	0.15
North Gate	138230026	RVL	RC	0.17
North Gate	138230027	RVL	RC	0.40
North Gate	138230029	RVL	RC	0.21
North Gate	138230033	RVL	RC	0.33
North Gate	138230034	RVL	RC	0.18
North Gate	138240001	RVL	RC	0.36
North Gate	138240002	RVL	RC	0.15
North Gate	138240003	RVL	RC	0.25
North Gate	138240004	RVL	RC	0.21
North Gate	138240005	RVL	RC	0.08
North Gate	138240006	RVL	RC	0.28
North Gate	138250001	RVL	RC	0.27
North Gate	138250002	RVL	RC	0.06
North Gate	138250003	RVL	RC	0.02
North Gate	138250004	RVL	RC	0.44
North Gate	138260001	RVL	RC	0.36
North Gate	138260007	RVL	RC	0.29
North Gate	138260008	RVL	RC	0.23
North Gate	138260015	RVL	RC	0.32
North Gate	138260016	RVL	RC	0.20
North Gate	138260018	RVL	RC	0.05
North Mount Diablo	121030041	RC	AL	0.02
North Mount Diablo	121030042	RC	AL	0.20
North Mount Diablo	121030044	RC	AL	0.15
North Richmond	408170064	RC	PR	0.04
North Richmond	409300036	RC	PR	0.41
North Richmond	409311001	RC	PR	0.75
North Richmond	409300CCC	RC	PR	2.36
North Richmond	409300XXX	RC	PR	0.62
North Richmond	408201017	PS	LI	3.13
Oakland Hills	257020009	AL	CR	7.56
Oakland Hills	267010008	CR	PR	124.75
Oakland Hills	267010009	CR	PR	5.68
Reliez Valley	169090002	RC	RM	0.20
Reliez Valley	365170031	RC	PS	2.45
Rodeo	358030028	AL	RC	29.03
Rodeo	357163XXX	RC	MUC	0.05

3. Revisions to the DEIR

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Rodeo	357163031	RC	RMH	0.07
Rodeo	358010008	HI	RC	0.62
Rodeo	358030028	LI	RC	1.43
Rodeo	358320003	PS	RC	1.58
Rodeo	358320004	PS	RC	0.66
San Miguel	182102003	RL	RLM	0.25
San Miguel	182102004	RL	RLM	0.26
Sandmound Slough	032290002	RC	AL	0.37
Sandmound Slough	032290003	RC	AL	1.18
Sandmound Slough	032330013	RC	AL	3.10
Sandmound Slough	032330017	RC	AL	0.55
Sandmound Slough	032202011	RC	RL	0.16
Sandmound Slough	032330018	CR	PS	0.46
Sandmound Slough	032330018	RC	PS	0.40
Saranap	185220018	RL	RLM	0.52
Saranap	238021021	RL	RLM	0.35
Saranap	184010059	RM	RLM	0.19
Saranap	184450022	RM	RLM	0.25
Saranap	185220013	RC	RL	0.02
Saranap	185220014	RC	RL	0.04
Saranap	185220015	RC	RL	0.02
Saranap	185230017	RC	RL	0.20
Saranap	185230029	RC	RL	0.09
Saranap	185230033	RC	RL	0.00
Saranap	185230044	RC	RL	0.05
Saranap	184100030	RC	RLM	0.02
Saranap	184100043	RC	RLM	0.00
Saranap	184100044	RC	RLM	0.01
Saranap	184100045	RC	RLM	0.03
Saranap	184100046	RC	RLM	0.04
Saranap	184100050	RC	RLM	0.07
Saranap	184100051	RC	RLM	0.03
Saranap	184100052	RC	RLM	0.05
Saranap	184100053	RC	RLM	0.03
Saranap	184140001	RC	RLM	0.02
Saranap	184140052	RC	RLM	0.01
Saranap	184140065	RC	RLM	0.04
Saranap	184150019	RC	RLM	0.18

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Saranap	184150020	RC	RLM	0.35
Saranap	184150038	RC	RLM	0.04
Saranap	184150062	RC	RLM	0.01
Saranap	184150067	RC	RLM	0.06
Saranap	184170056	RC	RLM	0.00
Saranap	184191014	RC	RLM	0.06
Saranap	184191016	RC	RLM	0.09
Saranap	184191017	RC	RLM	0.10
Saranap	184191018	RC	RLM	0.08
Saranap	184191019	RC	RLM	0.06
Saranap	184191020	RC	RLM	0.06
Saranap	184191021	RC	RLM	0.05
Saranap	184191024	RC	RLM	0.01
Saranap	184214006	RC	RLM	0.02
Saranap	184214007	RC	RLM	0.13
Saranap	184214008	RC	RLM	0.04
Saranap	184214012	RC	RLM	0.02
Saranap	185230011	RC	RLM	0.01
Saranap	185230013	RC	RLM	0.00
Saranap	185230015	RC	RLM	0.05
Saranap	185230049	RC	RLM	0.16
Saranap	185242016	RC	RLM	0.01
Saranap	185242017	RC	RLM	0.15
Saranap	185242024	RC	RLM	0.05
Saranap	185242025	RC	RLM	0.20
Saranap	185242026	RC	RLM	0.01
Saranap	185250017	RC	RLM	0.01
Saranap	185250018	RC	RLM	0.07
Saranap	185250035	RC	RLM	0.22
Saranap	185290030	RC	RLM	0.11
Saranap	18414C002	RC	RLM	0.13
Saranap	185230033	RL	RC	0.05
Saranap	185230044	RL	RC	0.02
Saranap	184130001	RLM	RC	0.11
Saranap	184130002	RLM	RC	0.36
Saranap	184130005	RLM	RC	0.07
Saranap	184130006	RLM	RC	0.05
Saranap	184130009	RLM	RC	0.05

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Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Saranap	184130010	RLM	RC	0.14
Saranap	184130012	RLM	RC	0.12
Saranap	184130018	RLM	RC	0.13
Saranap	184140001	RLM	RC	0.00
Saranap	184140052	RLM	RC	0.00
Saranap	184140065	RLM	RC	0.00
Saranap	184140068	RLM	RC	0.01
Saranap	184150034	RLM	RC	0.05
Saranap	184150035	RLM	RC	0.04
Saranap	184150036	RLM	RC	0.01
Saranap	184150037	RLM	RC	0.04
Saranap	184150050	RLM	RC	0.04
Saranap	184150059	RLM	RC	0.06
Saranap	184150060	RLM	RC	0.08
Saranap	184150063	RLM	RC	0.03
Saranap	184150067	RLM	RC	0.00
Saranap	184150068	RLM	RC	0.02
Saranap	184150070	RLM	RC	0.01
Saranap	184170013	RLM	RC	0.04
Saranap	184170017	RLM	RC	0.09
Saranap	184490003	RLM	RC	0.04
Saranap	184490004	RLM	RC	0.05
Saranap	185230011	RLM	RC	0.12
Saranap	185230012	RLM	RC	0.02
Saranap	185242011	RLM	RC	0.01
Saranap	185242012	RLM	RC	0.02
Saranap	185242015	RLM	RC	0.03
Saranap	185242016	RLM	RC	0.02
Tassajara Valley	223020021	AL	RC	6.90
Unincorporated Clayton	122020007	RVL	AL	0.11
Vine Hill	161221020	RM	MUC	0.13
Vine Hill	161221023	RM	MUC	0.16
Vine Hill	380231005	RM	MUC	0.14
Vine Hill	159210004	LI	RH	0.26
Vine Hill	159210039	LI	RH	1.05
Vine Hill	159210042	LI	RH	4.78
Vine Hill	159210043	LI	RH	0.87
Vine Hill	161250010	AL	PS	0.45

Place	APN	GP Designation DEIR (Oct 2023)	GP Designation (Oct 2024)	GP Change Acreage
Kirker Pass	092010006	AL	to City	62.10
Kirker Pass	092020002	AL	to City	52.52
Kirker Pass	092020003	AL	to City	158.52
Kirker Pass	092030012	AL	to City	9.83
Kirker Pass	092040008	AL	to City	161.95
Kirker Pass	092050002	AL	to City	53.17

In addition, as shown in Appendix A, the changes to the proposed General Plan also include changes to the Existing and Proposed Road Network, which is provided as Figure 3-4 on page 3-19 of the DEIR. The changes to the roadway network are listed below, with the updated version of DEIR Figure 3-4 provided as Figure 3-2 of this FEIR:

- **San Pablo Avenue between Rodeo and Crockett:** The County is in the design phase for a road diet project to reduce the number of lanes from 4 lanes to 3 lanes and provide a two-way cycle track along this segment. Therefore, the map has been revised to denote "(3-4)" for this segment, indicating that the roadway will have 3 lanes but right-of-way width equivalent to 4 lanes to accommodate planned multi-modal improvements.
- **San Pablo Dam Road from Appian Way to Castro Ranch Road:** The County is pursuing a project to reduce the number of lanes from 4 lanes to 3 lanes to accommodate multi-modal improvements along this segment. Therefore, the map has been revised to denote "(3-4)" for this segment, indicating that the roadway will have 3 lanes but right-of-way width equivalent to 4 lanes to accommodate planned multi-modal improvements.

The revisions to the General Plan and CAP listed in Appendix A and the additional revisions identified by the Board of Supervisors on September 10, 2024, listed above do not alter any impact significance conclusions as disclosed in the DEIR. To demonstrate this, the remainder of this section presents revisions to the DEIR impacts and alternatives analysis text that references General Plan policies and actions that reduce environmental impacts associated with the proposed project. These policies and actions were identified as reducing environmental impacts by italicizing them in the list of relevant policy guidance in the sections titled "*Proposed General Plan Goals, Policies, and Actions*" in each section of Chapter 5, *Environmental Analysis*, of the DEIR. This section does not show DEIR revisions to account for all project changes, since other changes would not affect the project's impact on the environment.

As indicated in Appendix A, one project change is to change the name of the Climate Action Plan (CAP) to the Climate Action and Adaptation Plan (CAAP). Except for the change below to the list of acronyms, this name change is not shown in the revisions to the DEIR text presented in this section because it does not affect the analysis, but it called out here to address any potential confusion.

3. Revisions to the DEIR

Page vii, Section 5.4, *Abbreviations and Acronyms*. The following revisions are made.

~~CAP Climate Action Plan~~

CAAP Climate Action and Adaptation Plan

Pages 5.1-13 to -14, Section 5.4, *Aesthetics,* under Heading "Proposed General Plan." The following revisions are made.

Public Resources Code Section 12220(g) defines "forest land" as land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. As noted in Section 5.2, *Agriculture and Forestry Resources*, there are a total of approximately 63,806 acres of forested area in the county. Although development allowed by the proposed General Plan would consist mainly of infill and redevelopment, future development could create aesthetic impacts through the conversion of forest to non-forest lands. However, Chapter 816-6, *Tree Protection and Preservation*, of the County Ordinance Code requires that a property owner obtain a tree permit from the County before trenching, grading, or filling within the dripline of any protected tree or before cutting down, destroying, trimming by topping, or removal of any protected tree. In addition, the proposed Conservation, Open Space, and Working Lands Element includes policies aimed at preserving and protecting trees from future development. Specifically, Policy COS-P6.1 directs the County to preserve natural woodlands and significant trees, particularly mature native species, intact coastal scrub and chaparral, and grasslands, especially those with native grass and wildflower populations and Action COS-A6.2 directs the County to establish an Oak Woodland Conservation Program with mitigation ratios and tree replacement and planting standards.

Pages 5.2-19 to -20, Section 5.2, *Agriculture and Forestry Resources,* under Heading "Proposed General Plan." The following revisions are made.

Moreover, the intent of the proposed General Plan is to preserve this land. For example, Policy COS-P2.2 directs the County to preserve and protect productive agricultural land from urban conversion, particularly land designated as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland on the Important Farmland Map, land with Class 1 or Class 2 soils, and land designated Agricultural Core. This policy, along with the following, would help to preserve agricultural lands from future urban development:

- **Policy LU-P2.1:** Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.
- **Policy LU-P2.3:** Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.

- **Policy LU-P2.4:** ~~Prohibit~~ Deny applications for major subdivisions outside the ULL ~~as well as~~ and successive minor subdivisions of lots outside the ULL that were created through previous subdivisions.
- **Policy LU-P2.8:** Discourage extension of water and sanitary sewer lines into areas outside the ULL, except to serve public and semi-public uses that are not growth inducing, or when such extension is necessary to address a declared public health emergency. When lines are extended outside the ULL, they should be designed to service the intended use only, and not allow for additional future service connections.

3. Revisions to the DEIR

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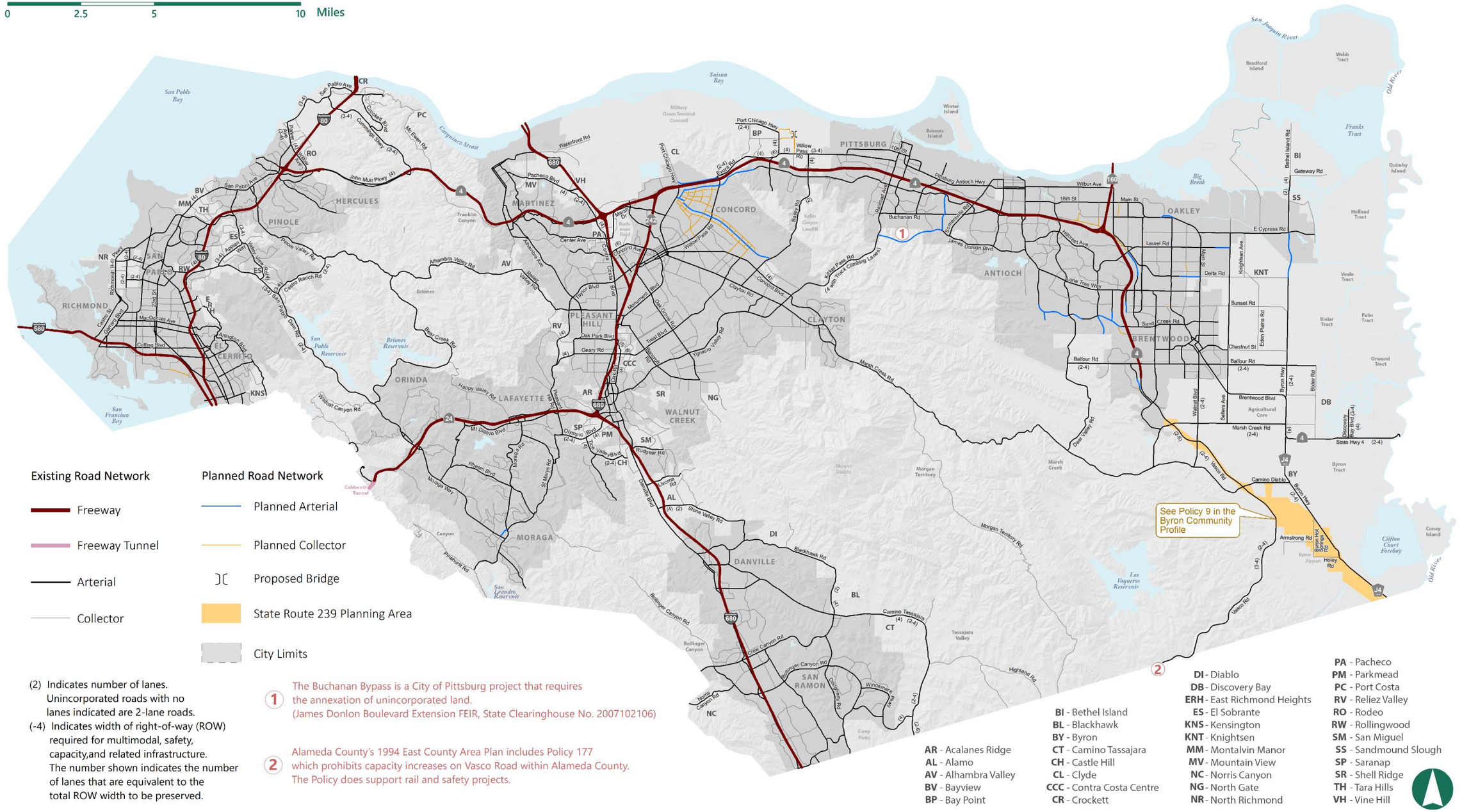
Figure 3-2 Existing and Proposed Road Network



3. Revisions to the DEIR

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Page 5.2-23, Section 5.2, *Agriculture and Forestry Resources,* under Heading "Proposed General Plan." The following revisions are made.

The proposed Conservation, Open Space, and Working Lands Element includes policies that aim to preserve forested areas:

- **Policy COS-P6.1:** Preserve natural woodlands and significant trees, particularly mature native species, intact coastal scrub and chaparral, and grasslands, especially those with native grass and wildflower populations.
- **Policy COS-P6.2:** Encourage planting and propagation of native trees throughout the county to enhance the natural landscape, provide shade, sustain wildlife, absorb stormwater, and sequester carbon.
- **Policy COS-P6.3:** Support protection of native trees, especially oaks, in foothill woodlands and agricultural areas by encouraging voluntary installation of fencing around individuals or clusters of trees to prevent grazing and promoting replanting of native species.
- **Policy COS-P6.5:** Encourage revegetation of native species in areas that were previously converted for agriculture but are no longer in production.

Page 5.2-24, Section 5.2, *Agriculture and Forestry Resources,* under Heading "Proposed General Plan." The following revisions are made.

In addition, the proposed General Plan also includes Policy COS-P2.4, which requires new projects adjacent to agriculture to establish appropriate buffers, with consultation with the County Agricultural Commissioner, on their properties, as necessary to minimize conflicts and protect agriculture. The General Plan also includes Action COS-A2.4, which would amend County Ordinance Code Title 8 – Zoning to include development standards and design guidelines for urban land uses that interface with agricultural uses, addressing setbacks on urban properties. Therefore, the other agricultural impacts of the proposed General Plan would be less than significant.

Pages 5.3-1 to -80, Section 5.3, *Air Quality*. Given the extent of changes to this section, the entire section with all changes is provided in Appendix B.

See Appendix B for all updates and revisions to Section 5.3, *Air Quality*. See also Appendix C for a revised version of DEIR Appendix 5.3-1, *Air Quality and Greenhouse Gas Emissions Data.*

Pages 5.4-25 to -26, Section 5.4, *Biological Resources,* under Heading "Proposed General Plan." The following revisions are made.

For example, Policy COS-P4.3 requires a biological resources assessment to be prepared according to State and federal protocols for projects with the potential to affect rare, threatened, endangered, or special-status species or their habitat, with appropriate mitigation implemented for identified impacts, preferably near the impact and

within the county; Policy COS-P4.6 requires well-timed, comprehensive floristic and vegetation surveys to be prepared according to State and federal protocols when development is proposed on land with potentially suitable habitat for special-status plant species, sensitive natural plant communities, or locally rare plants, including areas mapped by CNPS as Botanical Priority Protection Areas; Policy COS-P5.3 requires avoidance, minimization, and/or compensatory mitigation for development that would affect a wetland, wetland species, or adjacent upland habitat areas; and Policy COS-9.3 opposes all efforts to construct an isolated conveyance (e.g., peripheral canal, tunnel) or any other water diversion system that would reduce Delta water flows unless and until it can be conclusively demonstrated that such a system would protect, preserve, and enhance water quality and fisheries of the San Francisco Bay/Delta estuary system.

Pages 5.4-27 to -28, Section 5.4, *Biological Resources*, under Heading "Proposed General Plan." The following revisions are made.

Construction activities could have direct and indirect impacts on riparian habitat and other sensitive natural communities. Construction projects in the EIR Study Area could also affect sensitive natural communities by spreading or introducing invasive plant species to currently uninfected areas. Invasive species spread aggressively and crowd out native species, potentially altering the species composition of natural communities. A predominance of invasive species reduces the overall habitat quality for native plants and wildlife. However, given that most development under the proposed General Plan is anticipated to occur within the ULL, specific impacts may be lessened through implementation of the goals, policies, and actions of the proposed General Plan. The Conservation, Open Space, and Working Lands Element of the proposed General Plan includes policies and actions that would mitigate potential impacts on riparian habitat or other sensitive natural communities, including policies and actions associated with goals that aim to preserve open space for environmental protection (Goal COS-1); preserve and enhance ecological resources and wildlife habitat (Goal COS-4); protect and restore natural watercourses, riparian corridors, and wetland areas (Goal COS-5); preserve and enhance native upland habitat (Goal COS-6); protect water quality (Goal COS-8); and protect, preserve, and enhance natural resources of the San Francisco Bay/Sacramento-San Joaquin Delta estuary system and shoreline (Goal COS-9). For example, Policy COS-P1.3 discourages converting land designated Resource Conservation or Parks and Recreation to urban uses and requires permanent protection of other open space or parklands if conversion is to occur; Policy COS-P4.7 ~~COS-P4.6~~ requires avoidance, protection, and restitution related to sensitive ecological resources; Policy COS-P5.2 requires ~~new~~ public infrastructure and development projects to preserve and, whenever possible~~,~~ restore and enhance, natural watercourses, floodplains, and riparian habitat; Policy COS-P5.3 requires avoidance, minimization, and/or compensatory mitigation for development that would affect a wetland, wetland species, or adjacent upland habitat areas; Policy COS-P6.1 requires the preservation of natural woodlands and significant trees; and Policy COS-9.4 requires plans for land uses along shorelines to not pose a threat to Bay or Delta resources, including water quality and shoreline and marshland habitats. In addition, Action COS-A4.1 directs the County to prepare and maintain a detailed inventory of ecologically significant resource areas, including unique natural areas, wetlands, floodplains, and riparian resources, for the portion of the county not covered by the HCP/NCCP; Action COS-A6.1 directs the County to update County Ordinance Code Chapter 816-6, Tree Protection and Preservation, to enhance protection for specified native trees and strengthen mitigation requirements/restitution for ~~tree~~ removal

commensurate with the benefits the tree provides; and Action COS-A6.2 directs the County to develop an Oak Woodland Conservation Program that establishes special mitigation ratios for the removal of oak trees, along with specific tree replacement and planting standards to ensure long-term growth and survival.

Page 5.4-28, Section 5.4, *Biological Resources,* under Heading "Proposed General Plan." The following revisions are made.

Regarding the spread or introduction of invasive plant species, Policy COS-P4.8 requires the use of California native plant species in large landscaped areas in ~~the majority of landscaping for~~ new developments as well as construction practices that avoid the spread of invasive plant species by minimizing surface disturbance, seeding and mulching disturbed areas with certified weed-free native mixes, disinfecting/decontaminating equipment, and using native noninvasive, drought-resistant species in erosion-control plantings. Policy COS-P6.4 encourages the removal of invasive non-native tree species, and Policy COS-P8.3 supports development and implementation of a long-term, areawide integrated vegetation management program to control invasive weeds in a way that reduces pesticide use and preserves water quality. Furthermore, any disturbance or alteration of streams, lakes, or non-federally protected (non-jurisdictional) wetlands would require a permit with conditions that would protect sensitive natural communities. A Section 1602 SAA would be needed from the CDFW prior to initiation of project construction activities that would divert, obstruct, or change the natural flow of a river, stream, or lake or use material from a streambed. Non-jurisdictional wetlands include wetland features that are not hydrologically connected to navigable waters in rivers and are not under Corps jurisdiction. These wetlands would still be considered waters of the State and would be regulated according to the waste discharge requirements that would be issued by the RWQCB.

Page 5.4-29, Section 5.4, *Biological Resources,* under Heading "Proposed General Plan." The following revisions are made.

The EIR Study Area contains waters of the United States, which include jurisdictional wetlands and other waters. Construction activities could have direct and indirect impacts on waters of the United States. However, given that most development under the proposed General Plan is anticipated to occur within the ULL, specific impacts may be lessened through implementation of the goals, policies, and actions of the proposed General Plan. The Conservation, Open Space, and Working Lands Element of the proposed General Plan includes policies and actions that would mitigate potential impacts on wetlands, including policies and actions associated with goals that aim to protect and restore natural watercourses, riparian corridors, wetland areas (Goal COS-5) and water quality (Goal COS-8). For example, Policy COS-P5.1 supports the protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands; Policy COS-P5.2 requires ~~new~~ public infrastructure and development projects to preserve and, whenever possible~~,~~ restore and enhance, natural watercourses, floodplains, and riparian habitat; Policy COS-P5.3 requires avoidance, minimization, and/or compensatory mitigation for development that would affect a wetland, wetland species, or adjacent upland habitat areas; Policy COS-P5.4 requires new buildings and structures on private property to be set back from the edge of any wetland area and allows encroachment into a required wetland setback area only when a parcel

would otherwise be rendered unbuildable and impacts have been adequately mitigated; Policy COS-P5.5 requires acquisition of deeded development rights to setback areas surrounding wetlands, floodplains, and natural watercourses to ensure preservation of the resources and protect adjacent improvements; Policy COS-P5.8 prohibits direct runoff of pollutants and siltation into marsh, creek, and wetland areas from outfalls serving urban development; and Policy COS-8.2 requires coordination with other agencies to control point and non-point sources of water pollution and maintain water quality standards.

Pages 5.4-31 to -32, Section 5.4, *Biological Resources*, under Heading "Proposed General Plan." The following revisions are made.

For example, Policy COS-P1.1 supports efforts to acquire and permanently protect areas that connect protected lands in order to form a cohesive system of open space and plan infrastructure so as to avoid interfering with such acquisitions whenever possible; Policy COS-P1.3 discourages the conversion of designated Resource Conservation or Parks and Recreation land to urban uses and requires permanent protection of other open space or parklands if conversion is to occur; Policy COS-P1.4 requires new projects adjacent to protected open space areas to establish buffers; Policy COS-P4.1 requires setbacks around ecologically significant resource areas and prohibits projects that would lead to fragmentation of ecologically significant resource areas; Policy COS-P4.4 protects ~~habitat and~~ wildlife migration corridors including natural and channelized creeks providing habitat in urban settings; Policy COS-P4.5 discourages ~~the~~ use of fencing that poses risks to wildlife; Policy COS-P5.1 supports protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands; Policy COS P5.2 requires ~~new~~ public infrastructure and development projects to preserve and, whenever possible~~,~~ restore and enhance, natural watercourses, floodplains, and riparian habitat; Policy COS-P5.3 requires avoidance, minimization, and/or compensatory mitigation for development that would affect a wetland or adjacent upland habitat; Policy COS-P5.4 requires new buildings and structures on private property to be set back from wetlands; and Policy COS-P6.1 requires preserving natural woodlands and significant trees.

Page 5.4-34, Section 5.4, *Biological Resources,* under Heading "Proposed General Plan." The following revisions are made.

The policies in the proposed General Plan would not conflict with existing aforementioned County ordinances for the protection of biological resources but, rather, would expand on them to address issues regarding sensitive biological resources. Regarding County Ordinance Code Chapter 82-1, Policy LU-P2.1 requires continued implementation of the 65/35 Land Preservation Standard, using the County ULL to focus development while preserving agricultural land, rangeland, natural habitats, watersheds, and open space; Policy LU-P2.2 enhances the ULL's effectiveness by supporting efforts to acquire and permanently protect land along the ULL boundary; and Policy LU-P2.3 limits development outside the ULL to non-urban uses. Regarding County Ordinance Code Chapter 816-6, Policy COS-P6.1 requires the preservation of natural woodlands and significant trees, particularly mature native species, intact coastal scrub and chaparral, and grasslands, especially those with native grass and wildflower populations; Policy COS-P6.3 supports the protection of native trees, especially oaks, in foothill woodlands and agricultural areas by encouraging the voluntary installation of fencing

around individuals or clusters of trees to prevent grazing and promoting the replanting of native species. Action COS-A6.1 directs the County to update County Ordinance Code Chapter 816-6 to enhance tree protections of specified native trees and strengthen mitigation requirements/restitution for ~~tree~~ removal commensurate with the benefits the tree provides; Action COS-A6.2 directs the County to develop an Oak Woodland Conservation Program that establishes special mitigation ratios for the removal of oak trees, along with specific tree replacement and planting standards to ensure long-term growth and survival and amendments to the County Ordinance Code as needed to implement the program.

The proposed General Plan also includes policies supporting the East Contra Costa County HCP/NCCP. For example, Policy COS-P4.2 supports land conservation and restoration consistent with the HCP/NCCP and discourages development in areas where such conservation is planned. Additional policies for the protection of biological resources are also consistent with the HCP/NCCP, including Policy COS-P4.3, which requires a biological resources assessment, prepared according to State and federal protocols, for projects with the potential to affect rare, threatened, endangered, or special-status species or their habitat and implementation of appropriate mitigation for identified impacts, preferably near the impact and within the county; Policy COS-P4.4, which protects ~~habitat and~~ wildlife migration corridors including natural and channelized creeks providing habitat in urban settings; Policy COS-P4.6, which requires floristic and vegetation surveys, prepared according to State and federal protocols, when development is proposed on land with potentially suitable habitat for special-status plant species, sensitive natural plant communities, or locally rare plants, including areas mapped by CNPS as Botanical Priority Protection Areas; and Policy COS-P5.1, which supports the protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands.

Page 5.5-12, Section 5.5, *Cultural Resources and Tribal Cultural Resources,* under Heading "Proposed General Plan." The following revisions are made.

As detailed in Section 5.5.1.1, there are a number of federal and State regulations in place to protect historical resources within the EIR Study Area. Currently known or future historic sites or resources listed in the National or California Registers or the Contra Costa County HRI would be protected through State and federal regulations restricting alteration, relocation, and demolition of historical resources. Compliance with the State and federal regulations is intended to ensure that development would not result in adverse impacts to identified historic and cultural resources. Historical resources are protected under the regulations of the NHPA when projects involve federal agencies. In addition, the proposed General Plan policies take a comprehensive approach to the protection of historical resources. The Conservation, Open Space, and Working Lands Element of the proposed General Plan includes policies and actions that would mitigate potential impacts on historical resources, including through the policies and actions under Goal COS-10, which aims to identify and preserve historic resources. For example, Policies COS-P10.1 and COS-P10.2 encourage the preservation and adaptive reuse of historic resources. This includes using the Secretary of the Interior's Standards for the Treatment of Historic Properties, where possible. Policy COS-P10.11 seeks to incentivize preservation and adaptive reuse by establishing programs and funding mechanisms that support the preservation, restoration, and enhancement of cultural, historic, and archaeological sites. Policy COS P10.5 requires applicants to engage a qualified consultant to prepare an evaluation of historic resources that may be present on a project site when a project

involves a resource listed on the County's HRI or as otherwise necessitated through the CEQA process. Policy COS-P10.7 requires significant historic resources to be either preserved onsite or adequately documented as a condition of removal. Any documentation of historic resources shall be conducted in accordance with Historic American Building Survey (HABS) Level III standards, as defined by the US Secretary of the Interior. Actions COS-A10.1 through COS-A10.4 support these policies, ensuring that surveys of existing and as-yet unknown resources are performed and updated regularly, and that planning tools, such as ordinances, design guidelines, context statements, and management plans are put in place to support implementation of the policies.

Page 5.5-14, Section 5.5, *Cultural Resources and Tribal Cultural Resources,* under Heading "Proposed General Plan." The following revisions are made.

In addition, the proposed General Plan policies take a comprehensive approach to the protection of archaeological resources. The proposed Conservation, Open Space, and Working Lands Element includes policies and actions that would mitigate potential impacts on archaeological resources, including through the policies and actions under Goal COS-10, which aims to identify and preserve archaeological resources. For example, Policy COS-P10.1 encourages the preservation of sites and areas having identifiable archaeological significance. Policy COS-P10.5 requires applicants to engage a qualified consultant to prepare an evaluation of archaeological resources that may be present on a project site when warranted through the CEQA process. Policy COS-P10.6 requires that upon discovery of a significant archaeological artifact during construction, ground disturbing activities must halt within a 50-foot radius of the find until its significance can be determined by a qualified archeologist and appropriate protection and preservation measures developed. Policy COS-P10.7 requires significant archaeological resources to be either preserved onsite or adequately documented as a condition of removal (any documentation of historic resources shall be conducted in accordance with Historic American Building Survey Level III standards, as defined by the US Secretary of the Interior.), COS-A10.1 through COS-A10.4 support these policies, ensuring that surveys of existing and as-yet unknown resources are performed and updated regularly, and that planning tools, such as ordinances, design guidelines, context statements, and management plans are put in place to support implementation of the policies.

Page 5.5-19, Section 5.5, *Cultural Resources and Tribal Cultural Resources,* under Heading "Impact 5.5-1." The following revisions are made.

No feasible mitigation measures are available. Policies and actions in the proposed General Plan, including Policy COS-P10.5 requiring evaluation of historic resources for projects that may impact a resource listed in the County's Historic Resources Inventory, and Policy COS-P10.7 requiring significant historic resources to be either preserved on-site or adequately documented as a condition of removal (any documentation of historic resources shall be conducted in accordance with Historic American Building Survey Level III standards, as defined by the US Secretary of the Interior), in addition to federal and State regulations, would reduce impacts to the extent possible and additional project-specific mitigation measures would be incorporated pursuant to future project-specific review.

Pages 5.6-1 to -38, Section 5.6, *Energy*. Given the extent of changes to this section, the entire section with all changes is provided in Appendix D.

See Appendix D for all updates and revisions to Section 5.6, *Energy*.

Page 5.7-16, Section 5.7, *Geology and Soils,* under Heading "Surface Rupture of a Fault." The following revisions are made.

The proposed General Plan Health and Safety Element includes policies aimed at reducing potential impacts from development in and near areas with known faults. In particular, Policy HS-P4.3 discourages new below market- rate housing in Alquist-Priolo Fault Zones; Policy HS-P11.1 requires ~~geotechnical reports for all sites in areas of known or suspected seismic or other geologic hazards with effective mitigation measures incorporated into the project design~~ appropriately detailed engineering geologic or geotechnical investigations for projects in Alquist-Priolo Earthquake Fault Zones or Seismic Hazard Zones delineated by the California Geological Survey, as well as any other areas of steep slopes or areas of suspected ground failure known to the county; Policy HS-P11.2 prohibits the construction of buildings for human occupancy in areas where seismic and other geologic hazards cannot be adequately mitigated; and Policy HSP11.3 discourages construction of critical facilities and buildings in Alquist-Priolo Fault Zones, encourages earthquake retrofitting, and requires critical facilities and buildings to be sited, designed, and constructed to withstand seismic stresses.

Page 5.7-17, Section 5.7, *Geology and Soils,* under Heading "Proposed General Plan." The following revisions are made.

Ground Shaking

Due to the location and underlying geology of Contra Costa County, all future development in the EIR Study Area would likely be subject to strong seismic ground shaking. Several policies in the proposed Health and Safety Element help to mitigate impacts from ground shaking. Policy HS-P11.2 prohibits construction of buildings for human occupancy in areas where seismic and geologic hazards cannot be mitigated. Policy HS-P11.3 discourages construction of critical facilities and buildings in Alquist-Priolo Fault Zones, encourages earthquake retrofitting, and if there are no feasible alternatives to siting critical facilities and buildings intended for human occupancy in the Fault Zones, requires ~~critical facilities and~~ buildings to be sited, designed, and constructed to withstand seismic stresses. Additionally, all future residential development would be required to conform to CBC requirements and standards established to prevent significant damage due to ground shaking during seismic events. Adhering to these requirements would make impacts associated with ground shaking less than significant.

3. Revisions to the DEIR

Liquefaction

As shown in Figure 5.7-2, several areas of the county are susceptible to liquefaction hazards. Therefore, future development under the proposed General Plan has the potential to be subject to liquefaction hazards. However, the proposed General Plan Health and Safety Element includes policies that address development in areas prone to liquefaction hazards and help to mitigate the risks posed by liquefaction. Policy HS-P11.1 requires appropriately detailed engineering geologic or geotechnical investigations for projects in Alquist-Priolo Earthquake Fault Zones or Seismic Hazard Zones delineated by the California Geological Survey, as well as any other areas of steep slopes or areas of suspected ground failure known to the county ~~geotechnical reports for all sites in areas of known or suspected seismic or other geologic hazards, including liquefiable soils~~, and requires that these reports include recommended means of mitigation of any adverse condition representing a hazard to improvements and recommendations to assure proper implementation of mitigation measures during construction ~~effective mitigation measures incorporated into the project design. In addition, Policy HS-P11.2 prohibits construction of buildings intended for human occupancy in areas where geologic hazards, such as liquefaction, cannot be adequately mitigated~~.

Additionally, all future development would be required to conform to CBC requirements and standards established to prevent significant damage due to ground shaking during seismic events. Therefore, impacts associated with liquefaction would be considered less than significant.

Landslides

As shown on Figure 5.7-3, large areas of the EIR Study Area with hill terrain are susceptible to landslides. The County restricts development on open hillsides and ridgelines and generally prohibits development on hillsides with slopes exceeding 25 percent, as referenced in Section 82-1.016, Hillside Protection. of the County Ordinance Code. Compliance with CBC requirements, including implementation of recommendations provided in site specific geotechnical reports would reduce or avoid impacts related to landslides. In addition, the proposed General Plan Health and Safety Element includes policies that help to mitigate impacts related to landslides and unstable geologic conditions. For example, Policy HS-P11.5 discourages development on slopes exceeding 15 percent and prohibits development on slopes exceeding 25 percent to avoid instability, extensive grading, and unnecessary land disturbance, and Policy HS-P11.6 prohibits road dedications or private road construction in unstable hillside and landslide hazard areas unless potential hazards have been mitigated to the County's satisfaction ~~without adequate mitigation~~ All private roads constructed in such areas must be fully compliant with private road standards adopted by the County and local fire protection district with jurisdiction.

Pages 5.8-1 to -42, Section 5.8, *Greenhouse Gas Emissions*. Given the extent of changes to this section, the entire section with all changes is provided in Appendix E.

See Appendix E for all updates and revisions to Section 5.8, *Greenhouse Gas Emissions*. See also Appendix F for a revised version of DEIR Appendix 5.8-1, *Climate Action and Adaptation Plan*.

Page 5.9-40, Section 5.11, *Hazards and Hazardous Materials,* under Heading "Operation." The following revisions are made.

Furthermore, the proposed Health and Safety Element contains goals, policies, and actions that require local planning and development decisions to consider impacts that contribute to the risk of loss, injury, or death as a result of hazardous materials releases. The proposed policies and actions under Goal HS-9 that are italicized in Section 5.9.3.1, Proposed General Plan Goals, Policies, and Actions, would serve to minimize potential adverse impacts from hazardous materials, including by proposing more stringent regulation on certain hazardous material uses. For example, Policy HS-P9.5 would require industrial projects involving use, management, or generation of hazardous materials or waste, particularly those utilizing stationary or fixed storage tanks, in areas at risk from sea-level rise, surface or emergent groundwater flooding, or tsunami to incorporate best management practices to reduce risk and prepare plans for prevention and remediation of hazardous materials/waste releases resulting from inundation ~~that facilities that manage and store hazardous waste in areas at risk of sea-level rise and flooding conduct sea-level rise studies to address the risk of hazardous materials release from rising water levels, including rising groundwater~~. Policy HS-P9.10 specifically prohibits new hazardous waste facilities in ecologically sensitive areas or areas at-risk of flood and geologic hazards. Policies HS-P9.10, HS-P9.11, and HS-P9.12 would also help to ensure that hazardous waste facilities are assessed and sited in compliance with SB 673 (Health and Safety Code Sections 25200.21(b) and (c)).

Page 5.9-44, Section 5.11, *Hazards and Hazardous Materials,* under Heading "Proposed General Plan." The following revisions are made.

Additionally, several proposed General Plan Health and Safety Element policies and actions support the update and implementation of the County's LHMP and other emergency planning efforts. Policy HS-P7.3 requires new development within a Very High Fire Hazard Severity Zone in the Local Responsibility Area (LRA) or State Responsibility Area (SRA) or in areas that may be designated as the Wildland-Urban Interface (WUI), and on a residential parcel with evacuation constraints, to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with an evacuation plan during the construction period.

Pages 5.11-16 to -17, Section 5.11, *Land Use and Planning,* under Heading "Plan Bay Area 2050." The following revisions are made.

The Land Use Element of the proposed General Plan sets the foundation for future growth, change, and preservation in the EIR Study Area. In addition to the policies identified in Impact Discussion 5.11-1, the following proposed General Plan goals and policies would serve to support the concepts in Plan Bay Area by encouraging infill and limiting the extent of development (Goal LU-2 and associated policies), supporting a sustainable development pattern that places a mix of jobs and housing in close proximity to each other and to transit (Goal LU-3 and associated policies), directing development to where there is already infrastructure and

services (Goal LU-5 and associated policies, plus Policy LU-P7.5), and promoting mixed-use development (Goal LU-8 and associated policies):

- **Goal LU-2:** Growth and conservation that are balanced to preserve and enhance the quality of life, protect the environment and public safety, and benefit all those who live or work in Contra Costa County.
  - **Policy LU-P2.1:** Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.
  - **Policy LU-P2.3:** Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.
  - **Policy LU-P2.4:** ~~Prohibit~~ Deny applications for major subdivisions outside the ULL ~~as well as~~ and successive minor subdivisions of lots outside the ULL that were created through previous subdivisions.
  - **Policy LU-P2.5:** Encourage infill development.
  - **Policy LU-P2.6:** Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).
  - **Policy LU-P2.8:** Discourage extension of water and sanitary sewer lines into areas outside the ULL, except to serve public and semi-public uses that are not growth inducing, or when such extension is necessary to address a declared public health emergency. When lines are extended outside the ULL, they should be designed to service the intended use only, and not allow for additional future service connections.

- **Goal LU-5:** Coordinated land use, transportation, and infrastructure decisions so that growth occurs in locations where capacity and services are available or committed.
  - **Policy LU-P5.1:** Allow development only where requisite community services, facilities, and infrastructure can be provided.
  - **Policy LU-P5.2:** Consider the potential locations of planned public infrastructure projects (e.g., transit lines, major roadways, drainage improvements) when evaluating development proposals and deny development applications that would interfere with implementation of such projects.
  - **Policy LU-P7.5:** Require new residential projects to provide convenient access/connections to public transit, local destinations, and multi-use trails ~~whenever possible~~.

Pages 5.11-18 to -19, Section 5.11, *Land Use and Planning,* under Heading "Delta Plan." The following revisions are made.

As described previously, the Delta Plan is a comprehensive long-term management plan for the Sacramento San Joaquin River Delta. The Delta Plan includes rules and recommendations that support the State's goals for the Delta to: (1) improve water supply; (2) protect and restore a vibrant and healthy Delta ecosystem; and (3) preserve, protect, and enhance the unique agricultural, cultural, and recreational characteristic of the Delta. As listed below, the proposed General Plan includes goals and policies that support these goals of the Delta Plan.

- **Goal COS-7:** Sustainable surface and groundwater resource management.
  - **Policy COS-P7.1:** Require new development to reduce ~~potable~~ water consumption through use of water efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water, where available.
  - **Policy COS-P7.4:** For projects in areas without a water service provider, require proof of adequate on-site groundwater during the development review process. In addition to requiring compliance with the County's well regulations related to water quality and flow rate, require documentation that the proposed project will not have a significant cumulative impact on the aquifer or negatively affect development that already relies on the same groundwater supply.
  - **Policy COS-P7.5:** Prohibit new development that would create or significantly aggravate groundwater overdraft conditions, land subsidence, or other "undesirable results," as defined in Section 354.26 of the California Water Code.
  - **Policy COS-P7.6:** Support multipurpose water storage options that incorporate water supply, flood control, surface and groundwater storage, groundwater management, and ecosystem components.

Page 5.11-21, Section 5.11, *Land Use and Planning*, under Heading "East Contra Costa HCP/NCCP." The following revisions are made.

East Contra Costa HCP/NCCP

As discussed in Section 5.4, Biological Resources, the East Contra Costa County HCP/NCCP is intended to provide regional conservation and development guidelines to protect natural resources while improving and streamlining the permit process for take of State and federally listed species. The HCP/NCCP was developed by a team of scientists and planners with input from independent panels of reviewers and stakeholders. The proposed General Plan discourages conversion of land designated Resource Conservation or Parks and Recreation to urban uses and requires mitigation through the replacement of land with equal biologic, scenic, or recreational value if such conversion is to occur~~s~~, per Policy COS-P1.3. Additionally, Policy COS-P4.2 encourages consistency with the HCP/NCCP by directing the County to support land conservation and restoration consistent with the HCP/NCCP and discourage development in areas where conservation is planned. Policies COS-P1.1 and COS-P1.2 also support the goals of the HCP/NCCP to protect open space and ecologically sensitive areas. As such, the proposed General Plan is consistent with the adopted HCP/NCCP

in terms of land uses and habitat protection. Implementation of the General Plan would not conflict with the provisions of the East Contra Costa HCP/NCCP.

Page 5.13-30, Section 5.11, *Noise*, under Heading "Proposed General Plan." The following revisions are made.

As part of implementing the proposed project, various individual future development projects would generate temporary noise level increases on and adjacent to construction sites in the EIR Study Area. Construction within the EIR Study Area would be limited to weekdays and non-holidays to the hours set forth in the proposed General Plan Policy HS-P14.7. The hours would be from 7:30 ~~8:00~~ a.m. to 5:00 p.m. when construction occurs within 1,000 feet of a noise sensitive receptor; and 7:00 a.m. to 6:00 p.m. when construction occurs at distances greater than 1,000 feet from the nearest noise-sensitive receptor. Construction is performed in distinct steps, each of which has its own mix of equipment, and, consequently, its own noise characteristics. Table 5.13-9, Reference Construction Equipment Noise Levels, lists typical construction equipment noise levels recommended for noise-impact assessments based on a distance of 50 feet between the equipment and noise receptor.

Pages 5.14-12 to -13, Section 5.14, *Population and Housing,* under Heading "Proposed General Plan." The following revisions are made.

The proposed Land Use Element serves as the blueprint for the development of public and private property in the EIR Study Area and sets the foundation for future growth, change, and preservation. The following Land Use Element policies and actions would serve to minimize potential adverse impacts related to growth:

- **Policy LU-P.1.1**: The General Plan Update Environmental Impact Report (EIR) assumes the following maximum development projections for the year 2045:
  a) 23,200 new dwelling units.
  b) 1.2 million square feet of new commercial and office space.
  c) 5 million square feet of new industrial space.

  If new development approved within the unincorporated county reaches the maximum number of residential units and commercial/office and industrial square feet projected in the General Plan EIR, require that environmental review conducted for any subsequent development project address growth impacts that would occur from development exceeding the General Plan EIR's projections.
- **Action LU-A1.1**: Track growth to ensure it does not exceed the development projections analyzed in the General Plan EIR and described in Policy LU-P1.1 without subsequent environmental review.
- **Policy LU-P2.1**: Continue implementing the 65/35 Land Preservation Standard, using the County ULL to focus future development in the county's established urban and suburban communities while preserving agricultural land, rangeland, natural habitats, watersheds, and open space.

- **Policy LU-P2.3**: Limit development outside the ULL to non-urban uses, such as agriculture, mineral extraction, wind and solar energy production, natural carbon sequestration, other resource-based uses, and essential infrastructure.
- **Policy LU-P2.4**: ~~Prohibit~~ Deny applications for major subdivisions outside the ULL ~~as well as~~ and successive minor subdivisions of lots outside the ULL that were created through previous subdivisions.
- **Policy LU-P2.5**: Encourage infill development.
- **Policy LU-P2.6**: Encourage clustering of allowable densities to reduce development footprints; protect scenic resources, natural features, and open spaces; and avoid hazardous areas (e.g., floodplains).
- **Policy LU-P3.1**: Support regional efforts to achieve a jobs-housing balance within the county and within subregions of the county by maintaining an adequate supply of developable land designated for job-generating uses. For any General Plan amendment proposing to convert commercial, industrial, or office land uses to residential or non-urban land uses, evaluate the project's effect on the local and countywide jobs-housing balance.
- **Policy LU-P5.1**: Allow development only where requisite community services, facilities, and infrastructure can be provided.
- **Policy LU-P5.2**: Consider the potential locations of planned public infrastructure projects (e.g., transit lines, major roadways, drainage improvements) when evaluating development proposals and deny development applications that would interfere with implementation of such projects.
- **Action LU-A5.2**: Work with LAFCO and utility service providers to:
  a) Annex lands planned for urban development by this General Plan into their service areas.
  b) Detach private lands, especially agricultural or rural lands, from district boundaries if they are not planned for urban development and are not currently served.

Page 5.15-42, Section 5.7, Public Services and Recreation, under Heading "Proposed General Plan." The following revisions are made.

To offset impacts from future development, all new projects must adhere to County Ordinance Code Division 720 (Ordinance No. 2007-17), which collects impact fees from new development to fund parks and recreation services. The County's continued implementation of park improvement and development projects would ensure that the adequate amount of parkland would be available. Each RPD and CSD (of those that provide parks and recreation services) also collect revenue from property taxes, assessments, and service charges to fund improvements, which in turn would serve to reduce the potential for deterioration of existing facilities. Several additional policies and actions under Goal PFS-8 of the proposed Public Facilities and Services Element would also help to provide adequate local facilities. For example, Policy PFS-P8.5 states that ~~whenever possible,~~ the County shall require projects subject to the Park Dedication or Park Impact Fee Ordinances to develop parks and recreation amenities ~~listed~~ identified in, or ~~added~~ proposed for addition to, the County's Park Capital Improvement Plan. Park impact fees or in-lieu fees should be assessed only when the County determines developer improvements are not feasible. Action PFS-A8.3 would help to implement this policy by requiring

an annual update of the park dedication and in-lieu fee requirements. Action PFS-A8.1 would also support local parks by creating a cross-agency County entity that coordinates the planning and funding of local parks, recreational facilities, and trails.

Page 5.16-38, Section 5.16, *Transportation,* under Heading "Roadway." The following revisions are made.

Roadway

CCTA implements and manages several countywide programs that direct circulation improvements on County roadways, including the CMP and Growth Management Program. These programs help to ensure that County roadway improvements are organized and funded. The County's Transportation Demand Management Ordinance (Chapter 82-32 of the County Ordinance Code) helps to implement these CCTA programs within the EIR Study Area. Development under the proposed General Plan would be subject to TDM requirements in addition to transportation impact development fees, as applicable. Projects would also be subject to review under the County's Transportation Analysis Guidelines. Several proposed General Plan policies and actions also demonstrate compliance with and support CCTA's and the County's roadway-related programs. These include Policy TR-P1.4, which would ~~direct development to~~ reduce single-occupant vehicle use and vehicle miles traveled (VMT) by improving infrastructure, implementing supportive policies such as the TDM Ordinance, and enhancing public transit options. ~~comply with the TDM strategies for reducing single occupant vehicle usage, and~~ Policy TR-P1.6, which directs the County to partner with CCTA and Caltrans to better manage traffic operations on the State highway system in the county. Action TR-A1.1 would ensure that the County reviews and updates the TDM guidelines at least every five years to incorporate best practices. Through these and other policies and actions throughout the Transportation Element, the proposed General Plan shows consistency with the goals and intent of the County/CCTA's roadway-related programs, plans, policies, and ordinances. Therefore, impacts are less than significant.

Page 5.16-48, Section 5.16, *Transportation,* under Heading "Proposed General Plan." The following revisions are made.

Additionally, the proposed General Plan includes several policies and actions that would help to ensure that roadways accommodate emergency access, including Policy TR-P4.10 in the proposed Transportation Element, which would ensure that roadway infrastructure within new development areas balances the accommodation of emergency response vehicles with the day-to-day safety of vulnerable road users. Additionally, policies and actions in the proposed Health and Safety Element that apply to evacuation routes would have similar impacts on emergency access routes. These include Policy HS-P7.3, which requires new development within a Very High Fire Hazard Severity Zone in the Local Responsibility Area (LRA) or State Responsibility Area (SRA) or in areas that may be designated as the Wildland-Urban Interface (WUI), and on a residential parcel with evacuation constraints, to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with evacuation plans during the construction period; this policy would ensure that temporary roadway impairments are addressed within traffic control plans. In addition, Policy HS-P13.1 requires new development in High and Very High Fire Hazard Severity Zones, the WUI, and 100-year or 200-

year floodplains to have access to at least two emergency evacuation routes. Action HS-A13.1 would direct the County to partner with cities and public protection agencies to delineate evacuation routes, identifying their capacity, safety, and viability under different hazard scenarios, as well as emergency vehicle routes for disaster response, and where possible, alternate routes where congestion or road failure could occur.

Page 5.18-26, Section 5.18, *Wildfire,* under Heading "Proposed General Plan." The following revisions are made.

Additionally, Policy HS-P7.3, which requires new development within a Very High Fire Hazard Severity Zone in the LRA or SRA or in areas that may be designated as the WUI, and on a residential parcel with evacuation constraints, to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with evacuation plans during the construction period, would ensure that temporary roadway impairments or evacuation plan impacts are addressed within traffic control plans. With the implementation of this policy, impacts would be less than significant.

Page 5.18-28, Section 5.18, *Wildfire*, under Heading "Slope Impacts." The following revisions are made.

Slope Impacts

As discussed in Section 5.18.1.2, the topography in the EIR Study Area varies between steeply sloped mountains to flat valleys and shorelines. Construction of future development projects may require grading and site preparation activities that could change the slope of a single parcel or site. Potential future development under the proposed General Plan could increase development density in both flat and steeper areas of the county. However, proposed Land Use Element Policy LU-P5.6 ~~Health and Safety Element Policy HS-P4.6~~ directs the County to allow for decreased residential density below the minimum density requirement in hazard-prone areas, including those with slopes that exceed 15 percent.

All potential future residential development within the EIR Study Area would be required to comply with the CBC, SRA and Very High FHSZ Fire Safe Regulations, and Contra Costa County Ordinance Code grading requirements, which include standards to minimize the ignition and spread of wildfire due to slopes. Furthermore, the proposed Health Safety Element includes several policies and actions that would address potentially significant impacts with regard to development within FHSZs. For example, Policy HS-P7.1 would require denial of entitlements for projects creating additional residential units (i.e., units not allowed by-right) ~~applications for new residential subdivisions~~ in Very High FHSZs in the LRA or SRA, as well as to ~~and~~ discourage ~~residential subdivisions~~ such projects in High FHSZs in the SRA and discourage them in the LRA unless adequate fire protection services are provided. Other potential housing types including below-market-rate housing are discouraged in the WUI and FHSZ areas per Policy HS-P4.3. All development in ~~the WUI or~~ High and Very FHSZs in the LRA or SRA, or in areas that may be designated as the WUI must incorporate fire-safe design features that meet the State Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulation for road ingress and egress, fire equipment access, and adequate water supply, as stated in Policy HS-P7.2. Policy HS-P7.4 outlines the requirements for fire protection plans that must be implemented for subdivisions and projects requiring a land use permit in High and Very High FHSZs. The

proposed Health and Safety Element includes several other policies and actions under Goal HS-7, as shown in Section 5.18.3, Proposed General Plan Goals, Policies and Actions, that would improve fire safety in the county.

Page 5.18-32, Section 5.18, *Wildfire,* under Heading "Proposed General Plan." The following revisions are made.

Potential future development under the proposed General Plan could contribute to post-fire slope instability or drainage changes upstream. However, as discussed previously, proposed Health and Safety Element Policy HS-P7.1 would require denial of entitlements for projects creating additional residential units (i.e., units not allowed by-right) ~~applications for new residential subdivisions~~ in Very High FHZs in the LRA or SRA and Policy HS-P4.3 discourages locating below market-rate housing development inside of mapped hazard zones as identified in the Health and Safety Element; however, this does not prevent other types of residential development from being in mapped hazard zones.

Page 5.18-34, Section 5.18, *Wildfire,* under Heading "Proposed General Plan." The following revisions are made.

Though all urban development would occur within the ULL, outside the majority of the most wildfire-prone and inaccessible areas, the proposed General Plan land use map would continue to allow residential and commercial development in FHSZs where topography is steeper and evacuation access is limited per Figure 5.9-4. However, the proposed Health and Safety Element includes several policies and actions that would address potentially significant impacts from development within FHSZs. For example, Policy HS-P7.1 would require denial of entitlements for projects creating additional residential units (i.e., units not allowed by-right) ~~applications for new residential subdivisions~~ in Very High FHSZs in the LRA or SRA, as well as to ~~and~~ discourage ~~residential~~ such ~~subdivisions~~ projects in High FHSZs in the SRA and discourage them in the LRA unless adequate fire protection services are provided. Other potential housing types including below-market-rate housing are discouraged in the WUI and FHSZ areas per Policy HS-P4.3. All development in ~~the WUI or~~ High and Very FHSZs in the LRA or SRA, or in areas that may be designated as the WUI must incorporate fire-safe design features that meet the State Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulation for road ingress and egress, fire equipment access, and adequate water supply, as stated in Policy HS-P7.2. Policy ~~HS-P7.3~~ HS-P7.4 outlines the requirements for fire protection plans that must be implemented for subdivisions and projects requiring a land use permit in High and Very High FHSZs. The proposed Health and Safety Element includes several other policies and actions under Goal HS-7 that would improve fire safety in the county.

Page 7-6, Chapter 7, *Alternatives to the Proposed Project,* under Heading "Reduction of Warehousing Uses Near Impacted Communities Alternative." The following revisions are made.

The proposed General Plan includes policy guidance that addresses impacts from heavy-duty trucks, including Policy HS-P1.8, which requires industrial projects ~~over~~ resulting in 25,000 square feet or more of gross habitable floor area to be near zero-emission ~~(NZE)~~ operations, including from the associated fleet, by providing ~~ZE~~ zero-emission vehicle~~-capable~~ parking for all anticipated truck traffic to prevent idling and off-site queuing,

providing electrified loading docks with receptacles allowing plugin of refrigerated trucks, using heavy-duty trucks that are model year 2014 or later and expediting a transition to ~~ZE~~ zero-emission trucks, and using a clean fleet of delivery vehicles.

Page 7-8, Chapter 7, *Alternatives to the Proposed Project,* under Heading "No Project/Existing Plans Alternative." The following revisions are made.

Additionally, this Alternative would prevent the adoption and implementation of the new policies, strategies, and actions under the proposed General Plan and CAP that would reduce impacts associated with development in the county. For example, Policy HS-P7.1 in the proposed Health and Safety Element would deny entitlements for projects creating additional residential units (i.e., units not allowed by right) ~~prohibit approval of residential subdivisions~~ in Very High FHSZs in the LRA or SRA, which would reduce impacts associated with wildfire hazards when compared to the policy guidance under the existing General Plan. Policies and actions in the proposed Land Use and Transportation Elements, in addition to the strategies and actions provided in the proposed CAP, incorporate numerous vehicle miles traveled (VMT) and GHG-reducing measures that would likely lead to increased use of alternative modes of transportation and other types of reductions in VMT and GHGs. When compared to this Alternative, the proposed project would increase densities in community cores, resulting in further reductions in VMT. The full analysis of this alternative for each topical resource issue is shown in Table 7-1, *No Project/Existing Plans Environmental Analysis*.

3. Revisions to the DEIR

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APPENDIX A:
STAFF-RECOMMENDED CHANGES TO THE PROPOSED PROJECT

MEMORANDUM

DATE August 21, 2024

TO Contra Costa County Department of Conservation and Development

FROM PlaceWorks

SUBJECT Public Review of Draft 2045 General Plan and Draft Climate Action and Adaptation Plan 2024 Update and Staff-Recommended Changes

Introduction

This memo provides a summary of the public outreach efforts and comments on the Draft Contra Costa County 2045 General Plan and the Draft Climate Action and Adaptation Plan 2024 Update. The memo begins with an overview of the public review process, followed by a summary of the public comments received through the various engagement channels. It concludes by presenting the staff-recommended revisions to the General Plan and Climate Action and Adaptation Plan in response to public comments and new information available since the draft documents were published.

Public Review Process

The Draft Contra Costa County 2045 General Plan and the Draft Climate Action and Adaptation Plan 2024 Update were published on the Envision Contra Costa website on October 17, 2023, starting a public comment period that lasted through April 22, 2024. The public review process included digital and in-person activities and events as a means of sharing the draft documents with the public and receiving feedback. Engagement events included: webinars, in-person open houses held in each supervisorial district, Municipal Advisory Committee (MAC) meetings, meetings with various County boards and commissions, and meetings with various community groups. Comments were accepted in written and verbal form at open houses and MAC meetings; written comments were also accepted through an online commenting platform and via email.

The announcement of the draft documents and promotion of events primarily occurred via email through the Envision Contra Costa mailing list; during the public comment period, 14 eblasts related to the public review process were sent to the 1,277 subscribers on this mailing list. This outreach also occurred via social media, with 12 unique posts shared to Facebook, Instagram, and Twitter/X. Other methods of outreach and communication occurred through flyer distribution and sharing updates through the various District Supervisor mailing lists and newsletters. County staff also contacted community groups that had attended prior engagement events or otherwise expressed interest in the project and offered to provide an overview of the draft documents at their meetings.

To support this public review process, the County prepared the following materials:

- A brief, two-page user guide describing the draft documents and how to provide feedback
- A 12-page booklet providing a detailed overview of the draft documents and how to provide feedback
- A five-part video series describing the draft documents, centered around the four General Plan themes, plus a vision for the future as described by Contra Costa County youth
- A presentation in Spanish providing an overview of the draft documents and how to provide feedback

The engagement events and channels are described below. Highlights of the public review process include:

- Notifications to 1,277 mailing list subscribers over 14 eblasts
- 12 unique social media posts shared to Facebook, Instagram, and Twitter/X
    - Facebook: 1,141 views, 30 reactions/likes, and 17 shares
    - Instagram: 667 views, 64 likes, and 7 shares
    - Twitter/X: 3,846 views, 8 likes, and 11 retweets/shares
- 38 meetings with over 300 attendees
- 63 comments by 33 commenters on the online commenting platform
- 81 comment letters and emails
- 1,349 views of video series, with 7 likes and 5 comments
    - Nextdoor posts about video series (almost 600,000 followers): viewed by 181,364 users, with 108 thanks and 172 replies
    - Twitter/X posts about video series (over 23,000 followers): viewed by 10,160 users

WEBINARS

The County hosted two webinars to provide an overview of the draft documents and the various methods of providing feedback. These events bookended the district open houses with webinars held in December 2023 and March 2024. Each webinar included a high-level presentation of the Draft General Plan and Climate Action and Adaptation Plan contents and themes, followed by an overview of the methods to provide feedback. There was also time for questions from attendees. Simultaneous interpretation from English to Spanish was available at each event.

The webinars were held from 5:30 to 6:30 on the following dates:

- Webinar 1: December 4, 2023, 25 attendees
- Webinar 2: March 26, 2024, 8 attendees

DISTRICT OPEN HOUSES

The County hosted a series of in-person events in each supervisorial district in the county. The two-hour events were organized in an open house format to allow community members to participate at their own pace. At the sign-in table, attendees received copies of the user guide and the longer booklet summarizing the draft documents, as well as a comment card. There were also printed copies of the public review drafts of the Contra Costa County 2045 General Plan, Climate Action and Adaptation Plan 2024 Update, and Community Profiles (from the General Plan Stronger Communities Element) for viewing. There were seven stations placed around the room with banners presenting key background information and relevant policy topics in English and Spanish. Four of the stations represented the themes of the General Plan: community health, environmental justice, sustainability, and economic development. The three other stations included an overview of the Climate Action and Adaptation Plan, Community Profiles, and countywide land use map. Each station was staffed by a facilitator who recorded comments from the participants, answered questions, and sought feedback to gauge community perspective on the draft documents. A Spanish-speaking facilitator was also available at each event to record comments and answer questions from Spanish speakers. There was also a station with a laptop to demonstrate how to comment on the documents online using the online commenting tool.

Approximately 61 community members attended the five events, which were held from 5:00-7:00 PM on the following dates and locations:

- District 1 (El Cerrito): February 21, 2024, approximately 13 attendees
- District 2 (Alamo): December 14, 2023, approximately 20 attendees

- District 3 (Knightsen): January 10, 2024, approximately 5 attendees
- District 4 (Contra Costa Centre): January 22, 2024, approximately 20 attendees
- District 5 (Martinez): March 14, 2024, approximately 3 attendees

MAC MEETINGS

County staff attended a meeting of each MAC to share information about the draft documents, including the relevant Community Profiles in the General Plan. In total, staff attended 13 MAC meetings, listed below.

- Byron MAC: October 24, 2023, approximately 6 attendees
- Rodeo MAC: October 26, 2023, 12 attendees
- Bay Point MAC: November 7, 2023, approximately 20 attendees
- Pacheco MAC: November 8, 2023, 12 attendees
- Diablo MAC: November 13, 2023, 19 attendees
- Bethel Island MAC: November 14, 2023, 27 attendees
- Discovery Bay Community Services District (CSD): November 15, 2023, 19 attendees
- Kensington MAC: November 29, 2023, 21 attendees
- North Richmond MAC: December 5, 2023, 20 attendees
- Alamo MAC: December 5, 2023, 20 attendees
- El Sobrante MAC: December 13, 2023, 23 attendees
- East Richmond Heights MAC: December 20, 2023, approximately 20 attendees
- Knightsen Town Advisory Council (TAC): April 16, 2024, approximately 20 attendees

COUNTY BOARDS AND COMMISSIONS MEETINGS

Various County boards and commissions held study sessions on the draft documents during the public comment period. County staff presented an overview of the draft documents and ways to provide feedback, and answered questions. There were six study sessions with the following boards and commissions:

- Board of Supervisors Study Session, October 24, 2023
- Sustainability Committee Meeting, November 27, 2023
- Sustainability Commission Meeting, December 11, 2023
- Aviation Advisory Committee Meeting, January 11, 2024
- Fish and Wildlife Committee Meeting, March 20, 2024
- Transportation, Water, and Infrastructure Committee Meeting, May 13, 2024

COMMUNITY GROUP MEETINGS

County staff attended meetings of various community groups and organizations to share information about the draft documents and ways to provide feedback, and answer questions. Staff attended 12 community group meetings, listed below.

- Contra Costa Community Economic Resilience Fund Sub-Regional Table, October 26, 2023
- La Clinica and Lifelong Medical Workshop for Promotoras (Community Health Ambassadors): October 28, 2023
- Richmond Community Foundation (RCF) Connects: November 15, 2023
- Industrial Association of Contra Costa County Board of Directors: November 16, 2023
- East Contra Costa Community Alliance: November 17, 2023
- Western States Petroleum Association/Bay Area Refining Committee: December 14, 2023

- Healthy and Active Before 5: December 19, 2023
- Contra Costa History Alliance: January 17, 2024
- Contra Costa Taxpayers Association: February 23, 2024
- 350 Contra Costa, Bay Miwok Interfaith Climate Action Network of Contra Costa County, Greenbelt Alliance, GRID Alternatives, Sunflower Alliance, Contra Costa Climate Leaders, Center for Human Development and the East County Community Leaders Network, Climate Reality, Citizens Climate Lobby, and Diablo Water District: March 7, 2024
- Contra Costa Watershed Forum: March 14, 2024
- Concord Historical Society: March 21, 2024

ONLINE AND EMAIL COMMENTS

To facilitate online commenting, the County posted the draft documents on Konveio, a document publishing and community engagement software platform. On this platform, community members were able to read the documents in their entirety or search for specific words or phrases of interest and provide comments by clicking anywhere on the document page. Users were also able to view comments made by other users. Nineteen people submitted 39 comments on the Draft General Plan and 14 people submitted 24 comments on the Draft Climate Action and Adaptation Plan.

Community members were also able to email comment letters directly to the County project team. The project team received 81 comment letters and emails from individuals, public agencies, and non-governmental organizations.

VIDEO SERIES

The County prepared a series of short videos describing the draft documents, centered around the core themes of the General Plan – community health, environmental justice, economic development, and environmental sustainability – as well as a vision for the future articulated by Contra Costa County youth. The videos, which featured District Supervisors, community leaders, and students, were hosted on YouTube and shared via the County's social media platforms and the Envision Contra Costa mailing list. Social media view statistics are as follows:

- Nextdoor posts (almost 600,000 followers): viewed by 181,364 users, with 108 thanks and 172 replies
- Twitter/X posts (over 23,000 followers): viewed by 10,160 users
- YouTube: Videos viewed 1,349 times, with 7 likes and 5 comments

Public Comments

Comments on the Draft Contra Costa County 2045 General Plan and the Draft Climate Action and Adaptation Plan 2024 Update were received at open houses, MAC meetings, and through the online commenting platform and email.

OPEN HOUSES

Detailed notes from the open house series are available on the Envision Contra Costa website. A summary of the input received for each open house station is provided below.

Land Use

Open house participants voiced the need for homeownership opportunities and "family-friendly" housing. While the majority of comments recognized that more housing is needed, the sentiment regarding where new housing

should be built and at what density was not universal. Some participants suggested putting more homes in high-resource areas with good air quality and health conditions instead of increasing density in areas that are burdened with pollution and other challenges. Others commented on the need to transition density from high to low in a way that aligns with existing neighborhood design. Finally, some felt land use changes were happening too quickly. There was concern about overflow parking in neighborhoods from nearby commercial centers and BART stations and a suggestion to increase residential parking in these areas, such as in Contra Costa Centre.

Environmental Justice

Comments on the Environmental Justice theme related to the placement of housing. Residents voiced concern that too much new housing was being sited in communities with high pollution levels. Participants suggested increasing residential density in affluent, low-pollution neighborhoods.

Community Health

Participants were supportive of policies that expand bicycle and pedestrian infrastructure throughout the county, especially those intending to create a complete bicycle network and reduced the need for cyclists to cross busy roads unprotected. There was also support for additional libraries throughout the county to improve social cohesion, as libraries serve as a gathering space and archive for the area's history.

Economic Development

Comments received at the Economic Development station related to housing, open space, and local representation in governance. Participants suggested a diverse mix of affordable housing sizes and types, including those for young families. Others suggested developing single-family homes instead of more multi-family housing. Participants suggested that new open space in residential developments be at the ground level instead of on rooftops to ensure public accessibility. Participants also noted a feeling of a lack of representation, both from land use decisions made by adjacent incorporated jurisdictions and the viewpoints of elected County officials.

Sustainability

Participants voiced concern regarding water management and climate change as patterns of rainfall and therefore flooding could change. They suggested focusing on solutions for rainwater capture and groundwater management to prevent flooding.

Community Profiles

Feedback received on the Community Profiles was specific to individual communities, often the one where the Open House was hosted or nearest to. Most of the comments received were related to housing and land use. Some residents expressed concern over increasing density in their community while others encouraged it. Participants suggested focusing on homeownership as a community goal. They also suggested clustering development of housing, both single-family and multi-family, and including buffer areas between areas of high and low density. Finally, there was a suggestion to improve pedestrian safety.

Climate Action and Adaptation Plan

In relation to the Climate Action and Adaptation Plan, participants commented on specific activities that produce or reduce emissions and on the concept of public education around environmental issues. There was a suggestion to reduce emissions from wastewater processing. There was concern regarding the negative health impacts of artificial turf. There was a suggestion to provide more education on zero-emission modes of

transportation and transportation planning assistance to encourage residents to switch from personal gas-powered vehicles. There was also a suggestion to create an "integrated communication plan" for sharing climate action commitments and progress with residents. There was concern around streets being too narrow for compost service in specific neighborhoods. Finally, there was concern regarding rising home insurance costs due to wildfire and other hazard risks.

MAC MEETINGS

Given the localized focus of the MAC meetings, the feedback gathered at these meetings was mostly relevant to the Community Profiles section of the General Plan Stronger Communities Element, although some comments relate to countywide General Plan policy. Feedback received at each MAC meeting is summarized below.

Byron

- Questions about the Urban Limit Line and its relation to Byron.
- Comments about proposed density changes in agricultural areas.
- Concerns with the Byron Community Profile inaccurately describing the community.

Rodeo

- New John Swett Unified School District School Garden being planted.
- Concerns about a potential new gas station being built in Rodeo. There's already one gas station and no grocery store in the community. The nearest grocery store is in the city up a hill.
- There are no bus stops/routes that serve Rodeo.
- Concerns about landscaping and certain areas of the community lying empty with no new vegetation.

Bay Point

- Protect pedestrian corridors.
- Concern about property owned by PG&E in Bay Point and allegations of potential release of unusual substances onto adjacent properties.
- The Community Advisory Panel is working to plant native plant species to absorb metals from the ground in certain areas of Bay Point.
- Questions were raised about what energy efficiency services are offered by the County for low-income residents and if the County has incentives for installing solar and for panel upgrades.
- Question about what the County is doing to get more public EV charging stations in Bay Point. There is only one EV charging station in the community, and it is not easy to get to for many residents.

Pacheco

- Question about whether the General Plan applies to the unincorporated county only.
- Question about whether the GHG reduction goals are in alignment with State targets.
- Question about what climate equity is.
- Question about whether the County will be incentivizing activities that will be required to meet our reduction targets.

Diablo

- Question about how to best get the word out about the updated General Plan and Climate Action and Adaptation Plan.

- Question about what the County is doing to support Historic Districts and whether they are included in the General Plan.
- Question about whether the Climate Action and Adaptation Plan includes estimates/maps for sea level rise in the Bay.

Bethel Island

Flooding Comments:

- High level of concern from community members about flooding.
    - It took 11 months to get an updated map of ditches and drainage.
    - It's unclear who has authority to plan for resilience centers.
    - The Local Hazard Mitigation Plan does not anticipate the flooding experienced in the community in the last few years.
    - Roads are designed with a crown to shed water, and this sends water onto residents' properties. Questions about who should collect and convey that water.
    - Request for an additional evacuation route.
    - Concerns that government won't take responsibility for helping residents with these concerns.
- Concerns about whether/how rescue efforts would happen on Bethel Island if there were an emergency, particularly flooding or bridge closed.
- Residents are frustrated that they have been raising these concerns with the MAC and there does not appear to be any action by the MAC or the Board of Supervisors.

Other Comments:

- Questions about whether there is a change to zoning proposed, and whether a residential property could be rezoned to commercial if it wants to lease out dock space.
- Question about whether the General Plan includes traffic studies.
- Concerns about new homes being built in the area and these new residents are creating traffic congestion. This is particularly worrisome for residents if there is a need to evacuate.
- Community Profile incorrectly states there is a fire station on the island.
- Questions about the relationship between the City of Oakley and the County and which agencies can influence the rate of new housing allowed in Oakley.
- Concerns about road improvements.

Discovery Bay

- Provided an overview of Community Services District's past comment letters and input on the General Plan.
- Question about CEQA review requirements for projects that abide by the General Plan/Climate Action and Adaptation Plan.
- Noted a few edits to the Discovery Bay Community Profile; for example, Discovery Bay refers to waterways as "bays" and information about Slifer Park needs to be updated. The CSD Board will compile comments and submit them to the County.
- Discussion about the residential land use designation on the parcel across from the Community Center. Questions about the County's role in approving the project, whether the County can deny the project, whether the property owner has to build according to the land use designation, and whether the property owner can do nothing.

- Concern about funding for additional utilities, infrastructure, and emergency services if more housing is built.
- Discussion about Cecchini Ranch property.
- Question about how the Climate Action and Adaptation Plan, which aims to reduce emissions, works with the General Plan, which increases emissions due to additional development.

Kensington

- Question about whether seismic retrofit incentives for residential properties were already available.
- Compliments for efficiency of permitting process to retrofit all sidewalks to include ramps for accessibility.
- Question about how to leave comments online.
- Question about whether the General Plan and/or Local Hazard Mitigation Plan address mudslide hazards. Concerns about recent rain levels leading to more mudslide hazards.

North Richmond

- Discussion about the Light Industry land use designation.
- Concern about trucks going through the community.
- Discussion about housing density. Questions about why the General Plan allows more housing in this community and suggestion to provide for lower-density housing.
- Concern about differences in resources and tax value. Discussion about advantages to obtaining State funding when in well-resourced communities.
- Support for trend of homeownership, noting that Parkway Estates and Bella Flores are thriving.
- Question about whether investments in infrastructure will happen.
- Discussion about quality of life and mixed use.
- Discussion about warehouse moratorium for North Richmond.
- Concerns about light industrial impacts on quality of life.
- Question about how the County is getting information to the community.
- Question about what the first sentence about the purpose of the General Plan means and what changes are being considered (e.g., housing, bike lanes, physical activity).
- Questions about GHG emissions from different sectors and why some are higher/lower.
- Questions about the 30-year goals and whether they consider the community that will be here at that time. Questions about how the County accounts for demographics and community preferences.

Alamo

- Questions about current energy efficiency programs, including BayREN.
- Questions and comments on State housing allocation for Alamo.

El Sobrante

- Suggestion to explore creating a noise ordinance for smaller gatherings of less than 75 people. Noise and parties are a big issue after the pandemic.
- Concern about a traffic study to be done looking at a road diet for improved bike lanes.
- Concerns about traffic and not being able to evacuate in an emergency.
- Difficulty reaching Public Works. Community members want to discuss a variety of issues with them but are unable to get them to attend MAC meetings or respond to their concerns.
- Highlghted the Chamber of Commerce.

- Discussion about appointing people to serve on the revitalized Planning and Zoning Committee, which would be focused on going out to sites for which a planning application has been submitted to evaluate in-person the impacts to neighbors, since it's hard to interpret the impacts of plans on paper.
- Concerns about the time it takes to get to the emergency room and receive medical attention. There is a lack of capacity in West County for emergency room service. The only place to receive emergency room care in West County is Kaiser Richmond; otherwise people are transported to Walnut Creek, Martinez, or Oakland.
- Questions about whether land use designations on the land use map are consistent and compatible with the land uses on parcels controlled by the cities. In El Sobrante, one side or segment of a street is within the City of Richmond while the other side/segment of the same street is within the County's jurisdiction, without any clear distinction between the two; there needs to be more coordination between the cities and the County.

East Richmond Heights

- Questions about how the General Plan will protect views.
- Question about how walkability will be addressed in the General Plan.
- Question about whether there is a height limit in the Mixed-Use designation.
- Question about how to access the Draft General Plan.

Knightsen

- Questions and comments about the Urban Limit Line, particularly where Brentwood and Oakley abut the unincorporated county.
- Questions about the density requirements/limitations for agricultural areas.
- Comments about the County's permitting processes.

COMMENT LETTERS/EMAIL AND KONVEIO COMMENTS

Below is a summary of comments received through comment letters and emails and the Konveio platform. Visit this link to see all letters and emails commenting on the Draft General Plan and Climate Action and Adaptation Plan, organized chronologically. To see the Konveio comments on the Draft General Plan, visit this link, which presents the Draft General Plan with embedded comments. To see the Konveio comments on the Draft Climate Action and Adaptation Plan, visit this link, which presents the Draft Climate Action and Adaptation Plan with embedded comments.

Draft General Plan

- Stronger Communities Element
  - » Increase residential density in areas with low pollution and access to jobs and schools using thoughtful transitions to existing development.
  - » Permanently protect all affordable housing.
  - » Increase accountability and ensure impacts from development are thoroughly reviewed and mitigated.
  - » Increase attention and stringency in policies to protect children and young people, who are sensitive receptors, when considering industrial siting and development.
  - » Ensure that County construction follows high road labor standards to provide living-wage construction jobs and optimal climate performance; organize housing construction under project labor agreements.

- Land Use Element
  - » Address concerns regarding neighborhood character changing as higher densities are proposed, specifically on Cherry Lane in Contra Costa Centre.
  - » Effectively integrate high-density development into existing low-density neighborhoods with thoughtful transitions or buffers.
  - » Encourage homeownership and a diverse mix of housing types.
- Transportation Element
  - » Remove language related to Level of Service and replace with vehicle miles traveled (VMT) as the main metric for measuring traffic impacts.
  - » Add more specificity and detail to the active transportation section.
  - » Improve pedestrian and cyclist safety through expansion of the sidewalk and bicycle network and addition of safety devices (e.g., crossing signals).
  - » Include references to electric bicycles when discussing electric vehicle (EV) charging infrastructure.
  - » Phase out the use of leaded aviation fuel to reduce the health impacts to nearby communities, especially to sensitive receptors like children.
- Conservation, Open Space, and Working Lands Element
  - » Increase attention to ecological and natural resource areas when considering road and highway projects and development.
  - » Revise policy language to include references to "creeks" specifically when discussing other waterways. Expand policies to protect creeks and riparian areas through such practices as removing barriers to fish passage, removing invasive plant species, and planting native plant species.
  - » Establish a moratorium on oil and gas production well permits while the new ordinance is being developed.
  - » Increase the restrictions on oil and gas production well permits (e.g., increased setbacks from sensitive receptors or outright ban).
  - » Require regular, periodic monitoring of emissions at existing oil and gas operations.
- Health and Safety Element
  - » Replace natural gas appliances with electric options to improve indoor air quality and lower greenhouse gas (GHG) emissions.
  - » Address concerns regarding rising insurance costs due to hazards, or cancelation of insurance due to increased risk.
  - » Provide more comprehensive maps that show additional information within the incorporated cities and towns.
  - » Encourage industrial modernization projects that support State energy and climate goals, reduce environmental contamination, and support healthy working conditions.
- Multiple Elements
  - » Add more specific implementation timelines and language, especially for environmental policies.
  - » Rectify inconsistencies between Climate Action and Adaptation Plan strategies and actions and General Plan policies.

Draft Climate Action and Adaptation Plan

- Include language to monitor tree canopies and ensure effective tree replacement.
- Consider the role of artificial turf.

- Provide greater clarification on the role of offsets.
- Increase the certainty of specific commitments and provide more information regarding performance standards.
- Speed up Climate Action and Adaptation Plan implementation.
- Create an online dashboard to monitor implementation of Climate Action and Adaptation Plan strategies and actions.
- Provide more detailed descriptions of tables and charts, as these are complicated technical processes that are not always approachable for the average reader.
- Provide a more detailed explanation of the increases and decreases in GHG emissions between inventory years and forecast years.

Staff-Recommended Changes to the General Plan

Staff conducted a detailed review of the comments received on the Draft Contra Costa County 2045 General Plan. This section presents staff-recommended changes to the Draft General Plan in response to these comments. Each recommended change is presented after a reference to the comment(s) to which the change responds. Not every individual public comment is addressed. For specific comments not referenced in this memo, staff is not recommending a change in response.

This section also presents staff-recommended changes to the Draft General Plan that are based on new information that has become available since the Draft General Plan was published on October 17, 2023, as well as changes recommended by staff to clarify the content.

Changes are presented by ~~striking out~~ text to delete and <u>underlining</u> text to add. Other changes are described as appropriate. Changes are labeled by the page number of the corresponding text from the October 17, 2023, draft. For changes to goals, policies, actions, figures, and tables, the associated number is listed; for introductory narrative or contextual text, the section name is provided.

Please note that staff plans to update photos and captions throughout the document, but those changes are not presented in this memo, as they do not affect the substance of the General Plan. All map figure edits are discussed together at the end of this section.

VISION PAGE (AFTER TITLE PAGE)

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

- All communities benefit equitably from a<u>n environmentally sustainable, prosperous, and just economy.</u> ~~growing economy that is sustainable and just.~~

INTRODUCTION

The following changes are recommended by staff based on new information or to clarify content.

Page 1-1/Legal Authority

California ~~law~~ Government Code Section 65301 requires every county and city in the state to adopt a general plan "for the physical development of the county or city, and of any land outside its boundaries which in the planning agency's judgement bears relation to its planning."

Page 1-2/Legal Authority

Together with specific plans adopted for various communities, the Zoning Code and related sections of the County Ordinance Code, Climate Action and Adaptation Plan, and Objective Design Standards, the County's General Plan serves as the basis for planning- and infrastructure-related decisions made by County staff, the County Planning Commission and other County commissions and committees, and the Board of Supervisors.

Page 1-2/User's Guide

It was crafted with a constant eye toward keeping it clear, implementable, and useful as time passes~~, implementable, and easy to understand~~. The graphic on the following page explains the individual components found on a typical page of the Plan ~~that provides~~ providing policy guidance.

Page 1-4/Table INT-1

Stronger Communities/Also incorporated throughout ~~all~~ most other Elements

Page 1-7/Implementing the General Plan

Long-range planning in Contra Costa County ~~does not end~~ begins with adoption of the General Plan. To achieve the community's vision and objectives, decisions ~~about~~ on development projects, capital improvements, County programs and services, and other issues related to the physical environment must be consistent with the General Plan's policies. ~~In addition, the~~ The implementing actions identified throughout the Plan must be carried out. Finally, the County ~~needs to~~ must monitor progress in achieving the major goals of the Plan, ~~periodically~~ adjusting policy guidance as needed to advance those goals ~~in response to contextual changes that may occur over the next 20 years~~ through the 2024-2045 planning period.

Page 1-8/Relationship of the General Plan to Other County Planning Documents

- The **Climate Action and Adaptation Plan (CAAP)** implements the General Plan's policy guidance to adapt to changing climate conditions and reduce greenhouse gas (GHG) emissions. The CAAP addresses behaviors, regulations, and investment decisions that directly reduce GHG emissions or promote climate resilience and lays out an implementation and monitoring program to ensure that the County reduces GHG emissions consistent with State emissions reduction targets.

State law requires consistency between the General Plan and its subordinate implementing documents. ~~Therefore~~ Thus, when the General Plan is amended, the County must review its other planning documents and amend them as necessary to ensure consistency is maintained ~~consistency with the General Plan.~~ Pursuant to State law, wherever a conflict or inconsistency exists between the General Plan and its subordinate documents, the General Plan controls and shall be followed.

Page 1-8/General Plan Action Program

The Contra Costa County DCD is responsible for maintaining the Action Program and tracking ~~implementation~~ progress. The Action Program is maintained as an accompanying document to the General Plan so ~~that~~ it can be ~~regularly~~ updated as actions are accomplished without the need for a ~~formal~~ General Plan amendment.

~~As with other County policy documents,~~ The pace of implementation of the ~~a~~Action~~s~~ Program ultimately is ~~subject to~~ dependent on the resources ~~that~~ the County and its partners have ~~to carry them out~~ available and ~~need to~~ must remain consistent with the County's long-term financial plans, as reflected in its annual budget.

Page 1-8/Header and text edit

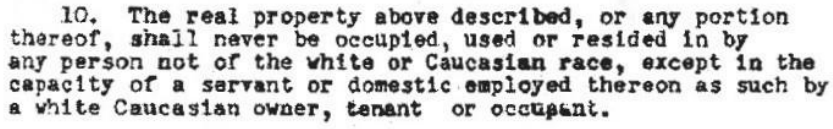
~~Tracking~~ Assessing Progress Toward Goals

Every five years over the lifetime of the General Plan, the County will ~~track~~ assess progress in achieving its major goals through a review of the performance measures listed at the end of each General Plan Element.

PLANNING CONTEXT

The following changes are recommended by staff based on new information or to clarify content.

Page 2-6/Relationship Between Land Use Practices and Socioeconomic Outcomes (new image and caption)



10. The real property above described, or any portion thereof, shall never be occupied, used or resided in by any person not of the white or Caucasian race, except in the capacity of a servant or domestic employed thereon as such by a white Caucasian owner, tenant or occupant.

Restrictive covenants like this were included in the deeds to thousands of residential properties developed in Contra Costa County following World War II.

Page 2-6/The General Plan Update Process

Over the next ~~four~~ five years, the County held or participated in over ~~125~~ 150 public and community-organized meetings with residents, community advocates, stakeholders, and public officials, including:

- Multiple ~~M~~meetings of the Board of Supervisors, Planning Commission, Sustainability Commission, Library Commission, Hazardous Materials Commission, Arts and Culture Commission, Sustainability Committee, Transportation, Water, and Infrastructure Committee, Aviation Advisory Committee, Historic Landmarks Advisory Committee, ~~Aviation Advisory Committee,~~ and all 13 Municipal Advisory Councils.
- ~~Almost~~ Over 50 community meetings, workshops, and open houses held across the county.
- Stakeholder meetings on environmental justice, community health, sustainability, and economic development.
- Native American tribal consultations.
- Over ~~2~~30 meetings with various community-based organizations representing a wide range of interests in the county.

Page 2-7/The General Plan Update Process

The countywide policy framework is based on ~~a combination of guidance from the 1991 General Plan~~, input from community members and decision-makers throughout the process, State and local laws, ~~and~~ best practices in the planning field, and to a lesser extent, guidance from the 1991 General Plan.

Page 2-8/The General Plan Update Process

During the second half of 2022 and into 2023, the County refined the countywide goals, policies, and actions and prepared the remaining components of the General Plan (~~e.g.,~~ maps, context, ~~and~~ glossary, etc.). The ~~entire~~ completed draft General Plan, along with the draft Climate Action and Adaptation Plan (CAAP) and their accompanying draft Environmental Impact Report, were released for public review in ~~Fall~~ October 2023, with the review period ending in April 2024. Nearly 300 individual comments and suggestions were submitted. The County reviewed these comments and presented revised drafts of the General Plan and CAAP to the Planning Commission and Board of Supervisors during study sessions in August and September 2024.

STRONGER COMMUNITIES ELEMENT

The following change is recommended by staff based on new information or to clarify content.

Page 3-1/Introductory text

- The **Economic Vitality and Empowerment** section includes policy guidance to develop and maintain a workforce that possesses the education and skills employers need, promote living wage job opportunities, and cultivate a thriving economy that contributes to the region's economic health.

The following change is recommended in response to a comment letter received on April 22, 2024, from Holland and Knight on behalf of the Committee for Industrial Safety.

Page 3-3/Environmental Justice

Contra Costa County is home to a high concentration of refineries and other large industrial facilities. While these industries contribute to pollution and contamination in Impacted Communities, ~~many community members also value the~~ they also provide jobs, tax ~~benefits~~ revenue, community investments, and local energy production ~~they provide~~.

The following change is recommended in response to a comment letter received on February 12, 2024, from the Western States Petroleum Association.

Page 3-5/Policy SC-P1.1

In partnership with residents of Impacted Communities, affected workers, business/industry, environmental and environmental justice advocates, community colleges, workforce development and training entities, local government, and other involved agencies, support transition from ~~petroleum refining and other~~ highly polluting industries to a net-zero emission economy based on renewable and sustainable industries that provide living-wage jobs.

The following change is recommended by staff based on new information or to clarify content.

Page 3-5/Policy SC-P1.2

Streamline ~~the~~ permitting ~~process~~ for new development, redevelopment, and rehabilitation projects that promote~~s~~ community objectives in Impacted Communities, especially as identified in the Community Profiles.

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 3-5/Policy SC-P1.3

Support ~~development~~ creation of walkable districts by facilitating development of ~~that provide~~ a range of neighborhood-serving retail and service uses, public amenities, and ~~related~~ essential infrastructure (such as lighting) ~~to~~ for residents of Impacted Communities within walking distance of their homes.

The following changes are recommended by staff based on new information or to clarify content.

Page 3-5/Policy SC-P1.5

Maintain a streamlined process to permit and facilitate partial and temporary street closures for community-~~driven~~ sponsored amenities and activities, such as parklets, farmers' markets, arts and cultural events, and outdoor dining, and assist applicants through the permit process.

Page 3-5/Policy SC-P1.6

For projects with potential to negatively affect~~ing~~ an Impacted Community, support community benefits agreements (CBAs) negotiated with the project applicant to address the community's expressed needs. The primary objective of these CBAs is to mitigate project impacts to the greatest extent possible, which could include mitigations exceeding the requirements of the California Environmental Quality Act (CEQA). Secondarily, to compensate for impacts that cannot be fully mitigated, these CBAs should secure community benefits that exceed inherent project benefits and support the community's objectives, especially as identified in the Community Profile. Neighborhood-serving retail uses that fill critical needs are exempt from this policy.

The following change is recommended in response to a comment letter received on February 12, 2024, from the Western States Petroleum Association, and a comment letter received on April 22, 2024, from Holland and Knight on behalf of the Committee for Industrial Safety.

Page 3-6/Action SC-A1.1

Partner with the stakeholders identified in Policy SC-P1.1 to develop and implement a plan to transition from ~~petroleum refining and other~~ highly polluting industries to renewable, sustainable, and clean industries that provide living-wage jobs. The plan should address site remediation responsibilities along with timelines and strategies to improve health, safety, infrastructure, job opportunities, and revenue opportunities during the transition toward a net-zero-emission economy, paying special attention to developing new opportunities for

Impacted Communities to realize economic, health, educational, and other benefits, without placing a disproportionate economic burden on those with the least means.

The following changes are recommended by staff based on new information or to clarify content.

Page 3-6/Action SC-A1.2

~~(c) Require preparation of a plan to prevent and remediate any contaminant releases, along with bonds or other financial assurances that guarantee remediation plans are implemented, for projects in areas subject to sea level rise or tsunami inundation.~~ *This concept is addressed in Policy HS-P10.3.*

The following change is recommended in response to a comment letter received on April 22, 2024, from Holland and Knight on behalf of the Committee for Industrial Safety and based on new information or to clarify content.

Pages 3-6 to 3-7/Action SC-A1.3

With input from residents of Impacted Communities, amend County Ordinance Code Title 8 – Zoning to create an Impacted Communities Overlay Zone that applies to areas within and adjacent to Impacted Communities, ~~and establishes requirements for discretionary permits for nonresidential developments of~~ Heavy industrial projects and commercial and light industrial projects resulting in 25,000 square feet or more of gross habitable floor area within ~~. T~~the overlay zone will ~~include additional~~ be required to satisfy additional discretionary permit ~~project~~ findings that promote environmental justice, health, ~~and~~ safety, and economic prosperity. Projects able to satisfy the required findings will:

(a) Provide benefits that support the community objectives, such as those identified in the Community Profile.
(b) Provide economic benefits, including jobs, for residents of the community.
(c) Avoid unwelcome permanent displacement of existing residents or businesses ~~in the community~~.
(d) Support community resiliency, cohesion, and safety.
(e) Positively impact health and quality of life within the community.

Create guidance for demonstrating consistency with these findings ~~A~~as part of the process to develop this ordinance~~, create guidance for demonstrating consistency with these findings~~.

The following changes are recommended by staff based on new information or to clarify content.

Page 3-12/Action SC-A2.1

Study the feasibility of implementing an amortization process to relocate or eliminate non-conforming land uses, with a focus on public nuisances and uses that pose threats to public health and safety.

Page 3-13/Goal SC-3

Move Action SC-A3.1 to instead be Policy SC-P3.4: Welcome establishment of medical clinics, behavioral health facilities, and pharmacies in Impacted Communities. *Renumber the remaining actions accordingly.*

Page 3-14/Policy SC-P4.3

Encourage urban agriculture, including urban farms and community gardens with collectively shared and managed plots, and demonstration and educational gardens operated by community organizations and

educational institutions. Allow associated, limited on-site sales, processing ~~facilities~~ of value-added products, and complementary agricultural activities when compatible with adjacent uses.

The following change is recommended in response to a comment letter received on April 4, 2024, from the Alameda County Water District.

Page 3-15/Policy SC-P4.4

Support programs administered by water or wastewater service providers that increase the availability of recycled water for urban agriculture and landscaping through self-fill stations and similar facilities.

The following change is recommended by staff based on new information or to clarify content.

Page 3-16/Action SC-A5.5

Study the feasibility of ~~restricting~~ preventing fast-food restaurants from locating near schools, parks, and other places where children normally gather.

The following new policy is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 3-19/Goal SC-6

New Policy SC-P6.4: Support voluntary removal of natural gas infrastructure and appliances from homes and replacement with electric appliances.

The following changes are recommended by staff based on new information or to clarify content.

Page 3-20/Action SC-A7.1

Amend County Ordinance Code Title 8 – Zoning to establish a public art requirement for new development ~~and funding mechanisms to create and maintain public art~~.

Page 3-21/Header edit

Economic Vitality and Empowerment

The following change is recommended in response to a comment letter received on March 11, 2024, from the Contra Costa Building and Construction Trades Council.

Page 3-24/Action SC-A8.1

Establish a First Source Hiring Program ~~requiring~~ encouraging developers, contractors, and employers to make good-faith efforts toward employing the local ~~construction~~ workforce to construct and operate their facilities, with emphasis on residents of Impacted Communities and those who are economically disadvantaged.

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Pages 3-24 to 3-25/Action SC-A8.2

Partner with school districts, community colleges, community organizations, large employers, trade associations, unions, and job training centers to support enhanced job-skills training, recruitment programs and services, and childcare services to support the county's workforce, especially workers in Impacted Communities. Work with experienced groups to ensure that programs will be properly staffed and funded. Training and intervention strategies should reduce barriers to employment for youth, formerly incarcerated residents, and residents with limited English proficiency, and should support a just transition from a fossil-fuel reliant economy by re-training displaced workers with skills for living-wage jobs in new, environmentally sustainable industries.

The following change is recommended in response to a comment letter received on April 22, 2024, from Holland and Knight on behalf of the Committee for Industrial Safety.

Page 3-25/Business Innovation

Enhancing Contra Costa County's success as an economic hub depends on retaining, supporting, and attracting a diverse range of businesses that will sustain the local economy despite changing market forces. Petroleum refineries have been ~~S~~some of the largest employers and strongest economic drivers in the ~~unincorporated~~ county ~~have traditionally been in the petroleum refining industry,~~ for over 100 years. ~~but~~ While demand for refined products remains significant and will persist until replacement technologies exist for current uses, the long-term future of these ~~large~~ facilities is uncertain, and two of the four Contra Costa refineries have ~~begun~~ transitioned~~ing~~ their operations as global and national energy trends shift toward carbon-free and renewable energy sources. Going forward, the county's economy should be centered on sustainable, clean, and green businesses and industries that provide living-wage jobs while protecting community health and the environment.

The following change is recommended by staff based on new information or to clarify content.

Page 3-27/Policy SC-P9.2

Position Contra Costa County to be a hub of production and employment for industries that spur economic growth and innovation in the transition toward a zero-emission economy.

The following new action is recommended by staff based on new information or to clarify content.

Page 3-28/Goal SC-9

New Action SC-A9.3: Nominate the Phillips 66 San Francisco (Rodeo) Refinery and surrounding industrial areas, including the site of the former Phillips 66 Carbon Plant in Franklin Canyon, as a Priority Production Area. *Renumber the subsequent actions accordingly.*

The following change is recommended by staff based on new information or to clarify content.

Page 3-28/Action SC-A9.3

Evaluate commercial and industrial regulations and permitting practices on an ongoing basis to ensure that they:

(a) Address contemporary uses and activities.
(b) Promote compatibility between new and ~~legacy~~ existing uses.
(c) Avoid creating unnecessary barriers that hinder economic ~~expansion~~ prosperity, investment, and sustainable growth.

STRONGER COMMUNITIES ELEMENT: COMMUNITY PROFILES

ALL PROFILES

The following global changes are recommended by staff for each Community Profile to clarify content.

Under the "Major Vulnerabilities" heading "single-access roads" should be hyphenated.

All parenthetical references to the existing General Plan and Richmond Quality of Life Plan should be removed. For example: "Encourage ~~commercial uses to be~~ neighborhood-scale ~~and~~commercial uses that serve the needs of the community. Discourage large-scale commercial uses catering to a more regional customer base.~~ (3-117, 3-123)~~"

The first sentence in the "Planned Land Use" section should be revised as follows: "Land use designations for [COMMUNITY NAME] are shown on Figure LU-1, General Plan Land Use Map, and ~~are~~ defined in Table LU-1 in the Land Use Element.

ALAMO AND CASTLE HILL

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

The Alamo and Castle Hill communities are located between Walnut Creek and Danville~~A~~, with a portion of Castle Hill within Walnut Creek's Sphere of Influence. They ~~communities~~ are ~~renowned~~known for their comfortable residential neighborhoods, wooded hillsides, excellent schools, well-maintained parks, and strong sense of community. ~~A portion of Castle Hill is within the Sphere of Influence of the City of Walnut Creek.~~ Alamo and Castle Hill are mostly comprised of single-family ranch-style homes on relatively large lots. However, Alamo also includes multiple-family ~~housing~~homes along Danville Boulevard south of Stone Valley Road and estates on large rural tracts.

Planned Land Use

Alamo contains an area along Danville Boulevard designated Mixed-Use Community-Specific Density, which overlaps a well-established commercial core comprised of existing uses that serve many residents' daily needs. The commercial viability of this mixed-use area is to be maintained while allowing for development of higher-density residential uses that provide a mix of housing options. Over time, ~~more diverse~~a variety of housing types may be developed, diversifying the housing stock and accommodating housing needs at different stages of life.

Guiding Principles

1. Multiple-family ~~units~~homes should generally be located within one mile of ~~the Downtown~~ Alamo's commercial core to provide residents access to transit, commercial services, and the Iron Horse Trail.

Policies

1. Preserve the ~~Downtown~~ Alamo mixed-use area's role as a business district serving nearby neighborhoods. Support retention of active commercial uses and local-serving businesses while promoting new residential development.

5. Encourage ~~commercial uses to be~~ neighborhood-scale ~~and~~commercial uses that serve the needs of the community. Discourage large-scale commercial uses catering to a more regional customer base. ~~(3-117, 3-123)~~

The following change is recommended in response to a comment letter received on March 26, 2024, from the Alamo Improvement Association as well as to clarify context.

Policies

6. Maintain Danville Boulevard and Stone Valley Road as two-lane roadways outside of Alamo's business district. Support ~~infrastructure and roadway improvements, including potential~~projects and strategies that improve safety and traffic flow, such as turn lanes ~~and other strategies to improve traffic flow~~.

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Policies

10. Require ~~new~~ commercial, multiple-family residential, and mixed-use projects along or near the west side of Danville Boulevard to provide unobstructed bicycle/pedestrian paths and public access to the Iron Horse Trail whenever feasible.

11. Require commercial, multiple-family residential, and mixed-use projects in ~~the Downtown~~ Alamo's commercial core to enhance the streetscape; emphasize pedestrian orientation, safety, and amenity; and provide outdoor civic space for gathering and entertainment.

Actions

1. Assist with a community-led process to create design guidelines and standards for new development that complement the County's Objective Design and Development Standards and aim to further enhance community character and preserve historic landmarks.

~~3. Proactively address hazards on County-owned land, including removing dead trees, trimming healthy trees, preserving creeks and natural resources, and encouraging planting of native trees.~~

5. Assist ~~a~~with community-led processes to develop congestion management plans for problem areas, including areas near schools and along local streets that are used for cut-through traffic. ~~The planning process should e~~Engage the Sherriff's Office in the planning process to promote effective traffic enforcement.

ALHAMBRA VALLEY, RELIEZ VALLEY, AND BRIONES

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Alhambra Valley, Reliez Valley, and Briones are small communities that value their ~~close~~ proximity to open space, rolling hills, wildlife, and ~~seasonal~~ creeks. The three communities are situated in central Contra Costa County and border Briones Regional Park and watershed lands owned by East Bay Municipal Utility District ~~land~~. Portions of Alhambra Valley and Reliez Valley are in the Spheres of Influence of the cities of Martinez and Pleasant Hill, respectively. Land uses primarily consist of ranches, small-scale agriculture, and low- or very-low-density housing.

Given the relatively isolated location, residents are concerned about access to emergency services and safety. Timely ~~R~~roadway maintenance is essential, as ~~collapses have occurred and there are many unmet road repair needs, which must be addressed given the heightened need for~~ emergency access is crucial in a high-fire-risk area. The communities are ~~proud of~~appreciate Fire Station #19 and ~~excited about its recent reopening~~the services it provides. ~~However, r~~Residents are still concerned, however, about the lack of telecommunication services and communication reliability during an emergency.

Major Vulnerabilities

Agricultural operations in Briones and Alhambra Valley are vulnerable to damage from agricultural pests and diseases.

Planned Land Use

Each community ~~has been~~is planned to maintain existing low- ~~or~~and very-low--density residential uses~~,~~ surrounded by rural agricultural lands, resource conservation, and park~~s~~ and recreation areas. There are no commercial areas planned in Alhambra Valley, Reliez Valley, or Briones. ~~The Land Use Map envisions that~~As most of the land in these communities is outside the Urban Limit Line, ~~new development will either enhance and diversify existing agricultural uses or serve and accommodate the community's existing population~~there will not be a substantial increase in density or introduction of urban uses.

Guiding Principles

3. The diversity of existing agricultural uses in the region, ~~including~~from vineyards to ranching, should be supported.

Policies

1. Continue adhering to the Briones Hills Agricultural Preservation Area compact, which states that the surrounding jurisdictions (Contra Costa County and the cities of Martinez, Pleasant Hill, Walnut Creek, Lafayette, Orinda, Richmond, Pinole, and Hercules) voluntarily agree not to annex any lands within the 64-square-mile area for the purposes of allowing urban development (see Figure LU-5). ~~This rural area includes large properties owned by the East Bay Municipal Utility District and East Bay Regional Park District, which respectively are designated Resource Conservation and Parks and Recreation on Figure LU-1, General Plan Land Use Map. The remaining properties are used primarily for grazing cattle and are designated Agricultural Lands.~~

2. Require new development to be consistent with the ~~community's~~communities' rural character in terms of massing and scale.

3. ~~Prioritize roadway infrastructure maintenance and improvement, especially repair of collapsed roadways.~~Ensure roads are adequately maintained to provide for emergency access and evacuation.

4. Support ~~and promote the~~ expansion of transportation services, affordable housing, and health resources for the communities' growing senior population.

5. Support and encourage ~~increased~~establishment of reliable community-wide internet access and telecommunication services.

6. Encourage the Contra Costa County Fire Protection District to ~~M~~maintain ~~Fire Station 19 and~~ adequate fire protection services, particularly to protect from wildfire hazards.

7. Support efforts to have portions of Alhambra Valley/Briones recognized as an American Viticultural Area. (New Policy)

BAY POINT

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Originally bordered by a large swath of tule marsh, Bay Point was settled for ranching in the 1800s. It became a lumber manufacturing and distribution port in the early 1900s. The area's prime location along the Southern Pacific Company's transcontinental railroad tracks and the deep water of Suisun Bay facilitated shipment of raw materials and products by ~~both~~ land and water, spurring quick economic growth in the community.

Today, most of the community consists of single- and multiple-family ~~residential uses~~homes. While there are some commercial uses in Bay Point, primarily along the major thoroughfares of Willow Pass Road and Bailey Road, ~~local~~ neighborhood-serving amenities are limited. The Bay Point ~~waterfront~~shoreline, meanwhile, has mostly reverted to a fairly natural state, ~~retained its~~though a marina and some industrial ~~character~~uses remain.

In 1993, the community voted to be renamed from "West Pittsburg" to "Bay Point" to solidify its identity as separate from the City of Pittsburg to the east, though the community remains within Pittsburg's Sphere of Influence.

The ~~nearby~~Pittsburg/Bay Point BART ~~s~~Station is an important node for the community, as well as a key development opportunity. BART provides many residents with an essential regional transportation link to jobs in Concord, Walnut Creek, and beyond.

Major Vulnerabilities

The Amtrak line, neighborhoods connected by single-access roads, the library, and ~~the~~ fire station are vulnerable to coastal flooding.

The Amtrak line, neighborhoods connected by single-access roads, the library, Pittsburg/Bay Point BART ~~stop~~, and commercial buildings are vulnerable to sea level rise.

Impacted Community

This law is based on the understanding that some communities have experienced a combination of historic discrimination, ~~negligence~~ neglect, and political and economic disempowerment.

While there are multiple Census tracts that make up Bay Point, this chart presents only the most-impacted Census tract in ~~Bay Point~~ the community.

Water quality has long been a concern among Bay Point residents. In the last decade, relatively high levels of disinfection byproducts were identified in the drinking water. After strong community advocacy, the local private water company began purchasing treated water, and today the water company is compliant with all water quality standards. ~~However, residents still cite concerns about bad tastes and odor in the water.~~

Planned Land Use

Bay Point includes a variety of land uses. Most of the community is planned for continued residential use~~s~~ at ~~a variety of~~various densities~~,~~. Over 200 acres toward the center of the community are designated for industry to encourage job-generating uses to locate here. Most of the land along the waterfront north of the railroad tracks is designated for

protection, though McAvoy Harbor is designated for commercial recreation and medium-density residential development.~~surrounded primarily by park, conservation, public, and industrial uses.~~ Hillside areas defining the west end of the community will be preserved through Public and Semi-Public, Resource Conservation, Parks and Recreation, and Agricultural Lands designations.

~~The Land Use Map envisions~~ Willow Pass Road and ~~the~~ areas ~~around~~near the Pittsburg/Bay Point BART Station are envisioned as transitioning into ~~a~~ denser and more ~~vital~~vibrant community nodes. This ~~vision~~ will be accomplished by creating three distinct mixed-use areas, each with a ~~slightly~~ different character. The three mixed-use areas share a common set of design principles intended to create a more walkable, pedestrian-friendly environment. Key principles include allowing varied setbacks, encouraging new buildings to be located close to the street frontage, and locating ~~surface~~ parking to the rear of the buildings rather than in ~~the~~ front. The text to the right provides a summary of the three mixed-use areas and the vision for each.

Willow Pass Road Corridor

The mixed-use area along Willow Pass Road is envisioned as a unified, well-designed corridor~~, with new mixed-use development and improved services~~ that acts as the heart of the community. ~~Public and private improvements in this area will stimulate reinvestment.~~ The area ~~will~~should incorporate a range of residential, neighborhood ~~shopping~~commercial, ~~residential~~entertainment, ~~and office~~and civic uses~~, with parking located behind commercial uses along Willow Pass Road~~. Landscaping, signage, public art, and other amenities will establish a sense of place and enhance the pedestrian experience. Because the corridor is nearly two miles long, development of smaller nodes within the node is encouraged.

Bailey Road Urban Center

This mixed-use area north of the Highway 4/Bailey Road interchange aims to create a ~~more~~ unified and vibrant urban center offering a mix of uses at a compact and walkable scale. Multiple-family residential development proximate to employment uses and services is highly ~~encouraged~~desired. This area should develop into a pedestrian-oriented district serving residents who live nearby, with access to quality local and regional transportation.

Pittsburg/Bay Point BART Station Area

This mixed-use area south of the Highway 4/Bailey Road intersection is planned for dense residential development that takes advantage of the area's proximity to the BART Station and Ambrose Park. Limited commercial uses are secondary to residential development and should provide goods and services to commuters, neighborhood residents, and visitors to Ambrose Park. The Pittsburg/Bay Point BART Station Area Specific Plan (2002) ~~is still~~remains in effect and provides more detailed guidance for this area.

Guiding Principles

2. The entire community should enjoy streetscapes and open spaces that are free from abandoned cars, debris, and litter, with ample street lighting to improve visibility and safety when walking at night.

7. Bay Point's waterfront north of the railroad tracks should be developed with water recreation and commercial uses while ensuring greater resilience to near- and long-term hazards associated with sea-level rise.

8. Park and recreation facilities should be made safe and inviting to residents and families through quality amenities and ongoing maintenance. The ARPD should have the funding it needs to enhance park and recreation services~~, including improving the community center and Ambrose and Lynbrook Parks and establishing a new community-oriented park, potentially in Shore Acres~~.

9. ~~The a~~Agencies that provide community services should coordinate efforts to maximize effectiveness and reach all those who need their services.

Policies

1. Ensure ~~that land use and~~new development ~~projects will~~does not create negative impacts such as increased toxic exposure, a net loss of affordable housing, or ~~the~~permanent displacement of residents and local legacy businesses that are valued by the community.

2. Coordinate with the Housing Authority of Contra Costa County, affordable housing developers, and other organizations to transition vacant and underutilized land into affordable rental and ownership housing that serves Bay Point's diverse population~~, including single people, couples, families, youth, seniors, and people with disabilities~~.

4. ~~Proactively enforce County codes to s~~Support community beautification and safety~~, curb illegal dumping, improve trash collection, and remove graffiti. Encourage improved community appearance~~ through graffiti removal, improved trash collection litter reduction, street and sidewalk maintenance, abatement of illegal dumping, and code enforcement.

6. Encourage development of neighborhood-oriented shopping and services~~ to be developed~~, especially within walking distance of housing.

~~7. Actively seek and incentivize commercial development, including grocery stores, on vacant lots near the BART station while avoiding concentrating all development along Willow Pass Road~~.

8. Encourage assembly of parcels in medium~~-~~ ~~or~~and higher~~-~~-density residential areas to allow for higher-quality, denser residential development~~, including adequate infrastructure for drainage and traffic~~.

9. Minimize the number of streets and driveways intersecting or entering Willow Pass Road by using secondary roads, assembling frontage parcels, using shared access on abutting properties, and~~/or~~ other approaches.

~~12.Engage with schools, non-profit organizations, and faith-based organizations to recognize and work with at-risk youth to support their meaningful growth.~~

~~13.Support healthy relationships between the community and law enforcement.~~

~~15.Encourage existing liquor stores, convenience stores, and ethnic markets to stock fresh produce and other healthy foods.~~

Actions

1. ~~Clean up major~~Implement strategies to curb illegal dumping, ~~sites~~particularly at Port Chicago Highway and Driftwood Drive, and along Pullman Avenue~~ and pursue stricter enforcement with higher penalties and improved regulation~~.

2. Conduct education and outreach to inform residents about proper waste disposal opportunities beyond curbside trash and recycling collection. ~~Promote vehicle donation opportunities for unwanted vehicles.~~

3. Prepare and implement streetscape plans for Willow Pass Road, Bailey Road, and other major streets that include protected bike lanes, speed bumps, stop signs, ~~cameras,~~ upgraded sidewalks (including widening and closing gaps), street trees, and landscaping to slow traffic and enhance transit corridors. Streetscape plans should also address on-street parking, traffic movements, and transit facilities. ~~If appropriate, r~~Revise precise alignment plans ~~for consistency with~~to facilitate the streetscape plans wherever necessary.

4. Install pedestrian~~-scale~~ lighting throughout the community to enhance safety and deter crime.

5. Work with BART, Tri-Delta Transit, and County Connection to:

a. Improve ~~the~~ coordination of bus and BART arrival and departure times.

~~c. Extend first- and last-mile services with micro-mobility infrastructure for BART commuters.~~

6. When coordinating with the ARPD, highlight the following goals identified by the community:

~~c. Locate facilities to ensure visibility along public roadways where appropriate.~~

c. Improve the community center and Ambrose and Lynbrook Parks.

d. Establish a new community-oriented park, potentially in Shore Acres.

d. Provide clear access points to their facilities.

g. Install more lighting to improve visibility and safety.

~~7. Use the County's outreach platforms to promote available park and recreation services and programs, based on information provided by the ARPD.~~

9. Work with the community to ~~C~~create a mural or public art program to provide a positive alternative and deterrent to graffiti.

~~10.Conduct outreach about the negative effects of old pipes and water fixtures on water quality in older homes.~~

BETHEL ISLAND

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

The community may support limited job-generating uses, ~~also~~but seeks to retain and enhance local agricultural vibrancy and character. ~~The community is strongly opposed to development of heavy industrial uses but is amenable to a limited amount of light industry.~~

Planned Land Use

The majority of Bethel Island is planned to preserve its rural ~~open space~~agricultural character ~~and~~while supporting and enhancing~~e~~ local tourism businesses and water-oriented recreation. Most of the area is designated ~~for a~~Agricultural Lands, ~~c~~Commercial ~~r~~Recreation, and ~~r~~Resource ~~c~~Conservation ~~uses~~. The commercial core of Bethel Island is located along Bethel Island Road and supports public, recreation, and residential uses. This core is envisioned to expand east along Gateway Road to allow for more retail uses, increased parking, and community events, enhancing community character and vibrancy. The perimeter of the island will continue to host most of the community's ~~residential neighborhoods~~residences.

Guiding Principles

3. To maintain a safe community, public services such as the Contra Costa County Fire Protection District and Sheriff's Office should be supported and enhanced.

Policies

3. Encourage rehabilitation of distressed properties, including by improving aging structures and reducing vegetation overgrowth, ~~both~~ on land and along waterways.

4. To the extent permitted by State law, limit new residential development to already-approved development and one dwelling unit per legal parcel.

5. ~~Do not approve~~Deny requests for General Plan ~~A~~amendments that would increase residential density unless at least the following are accomplished:

b. ~~The l~~Levee improvement plans are approved by the Bethel Island Municipal Improvement District (BIMID) and ~~the~~ US Army Corps of Engineers.

6. Prohibit levee breaches unless the entire perimeter levee is improved to US Army Corps of Engineers standards.

7. Require that any new internal levees meet US Army Corps of Engineers standards.

8. Require ~~that~~ new construction to be set back from levee centerlines a minimum of 100 feet unless adequate substantiation for reduction of the setback is approved by Reclamation District 799 or BIMID.

9. Require ~~that~~ any new construction that is not protected by certified levees to meet~~s~~ FEMA flood protection standards.

~~10. Establish Bethel Island Road between Dutch Slough and Gateway Road, and Gateway Road between Bethel Island Road and Piper Road, as the community's commercial core.~~

The following changes are recommended to Action 2, which would be moved to the Policies section as Policy 10, in response to a comment received via Konveio on January 24, 2024, from Dan Muelrath, Diablo Water District.

~~Action 2~~Policy 10. ~~Encourage the~~Support Diablo Water District's efforts to ~~examine the feasibility of annexing~~consolidate independent water mutuals on Bethel Island ~~into their service area to improve access to a reliable source of water for fire protection services and general consumption~~and extend service island-wide. *(New Policy moved from Action 2.)*

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with Countywide goals, policies, and actions.

11. Encourage establishment and growth of locally--serving businesses that fulfill the needs of Bethel Island residents.

13. ~~Prioritize~~Coordinate with the City of Oakley to implement roadway improvements ~~to~~that reduce traffic congestion on Bethel Island and directly connected public roads. Incorporate pedestrian, bicycle, and stormwater infrastructure improvements ~~when feasible~~ to improve safety and facilitate mobility throughout the island and onto the mainland.

Actions

~~2. Encourage the Diablo Water District to examine the feasibility of annexing Bethel Island into their service area to improve access to a reliable source of water for fire protection services and general consumption.~~ *(Revise Action 2 and move to be Policy 10.)*

3. Work with the California Department of Boating and Waterways to ~~i~~improve signage along waterways to minimize boat wakes and reduce accidents.

4. Work with the community to ~~Explore~~determine the feasibility of establishing a centralized parking area in the commercial core.

The following new action is recommended in response to a comment received at the Bethel Island MAC meeting.

5. Study the feasibility of providing additional evacuation options, including by boat.

BYRON

The following changes are recommended by staff based on new information or to clarify content. Some edits are in response to comments received at the Byron MAC meeting.

Context

Located near the eastern edge of the county, Byron is an agricultural community that prides itself on its rural roots. The area's fertile soil supported its initial settlement as a farming center. In 1878, Byron was the site of a new Southern Pacific railroad line that allowed the community to quickly expand. Early Byron attracted visitors from across the nation to the renowned Byron Hot Springs. This resort featured warm mineral pools and luxury accommodations prior to its closure ~~during~~just prior to World War II. In 1994, the County opened Byron Airport, providing opportunities for general aviation and recreational flight operations.

~~Now an established community, r~~Residents enjoy the area's respite from busy city life, preferring Byron's small-town nature, though some have indicated that increased noise is an issue. Businesses in Byron are generally concentrated in the downtown along Camino Diablo, ~~and the~~ Byron Highway, and Main Street. However, business development and retention has been challenging. The County's Urban Limit Line (ULL) prohibits ~~growth~~intense development outside of Byron's core area, preserving this land for farming and open space. Residents identify the surrounding agricultural land as a part of their community, although a lack of trail connections prevents residents from accessing potential recreational benefits. While growth is constrained by the ULL, traffic through the community to nearby cities has continued to grow, impacting local roads and safety. Key roadway projects, like ~~the~~State Route 239 and the Vasco Road-~~-~~Byron Highway Connector ~~project~~, may improve connections and accommodate increased traffic throughout the area. Community members in Byron are also concerned about housing affordability and homelessness.

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Major Vulnerabilities

~~The~~ Byron Airport is vulnerable to coastal flooding, extreme heat, flooding, and severe storms.

~~The~~ Byron Highway is vulnerable to coastal flooding, flooding, extreme heat, and severe storms.

Planned Land Use

Land use designations for Byron are shown on Figure LU-1, General Plan Land Use Map, and are defined in the Land Use Element. ~~Downtown Byron, which encompasses the triangle-shaped area bounded by Byron Highway, Camino Diablo, and Holway Drive, is designated for MixedUse, allowing business uses that both manufacture and sell goods and services, particularly those that exemplify the historic and agricultural roots of the community. Residential uses will also continue in parts of this downtown area.~~ Most of Main Street is designated Mixed-Use Low Density to promote development of vacant and underutilized lots, ideally with residences above street-level businesses ~~planned primarily for commercial uses that support redevelopment, provide a wide array of services for~~that support residents~~,~~ and boost local tourism. Commercial and ~~other~~ light industrial uses are allowed ~~at~~between Byron Highway's ~~major~~ intersections with Holway Drive and Camino Diablo. ~~Outside~~Around the downtown area and commercial core, but within the ~~Urban Limit Line (~~ULL~~)~~, ~~the Land Use Map indicates continued~~ residential uses will continue at a ~~variety of~~varying densities, ~~as well as~~as along with public and airport-related uses around the Byron Airport to the south.

Beyond the ULL, ~~the map indicates continuation of the~~ agricultural, open space, recreation, and public uses ~~that already exist~~will continue, along with potential development of renewable energy facilities.

Guiding Principles

6. Regional travel should be improved through projects like the Vasco Road--Byron Highway Connector ~~Road project~~.

Policies

1. Encourage ~~business~~commercial development that supports a full range of services for residents and is tailored to Byron's small-town character, ideally celebrating the historic and agricultural roots of the community.

3. ~~Attract small businesses and facilitate~~Support efforts to organize community events downtown.

4. Maintain ~~and~~effective code enforcement and ~~regulations~~implement strategies to curb illegal dumping and littering.

6. Support agriculture, including animal keeping and raising, as an important part of Byron's history and character.

7. Encourage CCTA to prioritize the completion of the Vasco Road--Byron Highway Connector ~~Road project~~.

8. Address traffic conflicts and safety concerns around U-Pick areas, including along Marsh Creek Road, Vasco Road, and Walnut Boulevard, with consideration given to agricultural equipment on roads.

9. Ensure that new development ~~projects~~ does not conflict with potential alignments for the Vasco Road--Byron Highway Connector ~~Road/~~and State Route 239 projects, as shown in Figure TR-3, Roadway Classifications, in the Transportation Element. Work with project applicants avoid placing permanent buildings and structures within the potential alignments.

10. Support community-led efforts to establish a community services district to provide basic services to Byron.

Actions

2. Adopt zoning regulations that provide~~s~~ more flexibility for downtown development, including relaxing parking requirements when street parking is available and expanding allowed uses to include light manufacturing for businesses that ~~both~~ manufacture and sell products on-site.

3. Install sidewalks and bikeways with ~~street trees,~~ signage~~,~~ and crosswalks that connect downtown Byron to Byron Park and Saint Anne Church.

4. Install and ~~M~~maintain street trees in downtown Byron to support walkability and provide a more vibrant ~~downtown~~atmosphere.

5. Study the feasibility and need for traffic calming along Byron's major roadways.

6. Upon completion of the Vasco Road-Byron Highway Connector ~~Road~~, designate a truck route to separate truck traffic from other modes of transportation, including around U-Pick agricultural areas, such as along Marsh Creek Road, Vasco Road, and Walnut Boulevard.

7. Work with local and regional stakeholders, such as East Bay Regional Park District, to develop a trails plan that provides local and regional trail connections for Byron, including trails that connect to local destinations like Byron Hot Springs and trails that provide regional connections to recreational and commute destinations. As part of the planning process, consider potential recreational re-use along railroad rights-of-way as well as strategies to effectively communicate trail information to the public. ~~(3-76)~~

CANYON

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

At the time California became a ~~S~~state, there were more registered voters in Canyon than in other East Bay precincts.

In the 1950s, East Bay Municipal Utility District (EBMUD) acquired much of the land for watershed protection and tore down many homes.

Major Vulnerabilities

Children and seniors are vulnerable to extreme heat, human health hazards, and wildfire.

Policies

4. Support establishment of reliable community-wide internet access and telecommunication services.

Actions

The following new action is recommended in response to a comment received at an open house engagement event.

10. Work with the Central Contra Costa Solid Waste Authority (RecycleSmart) to incorporate Canyon into its service area.

CLYDE

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Clyde is located 3 miles from downtown Concord on the east side of the Port Chicago Highway, north of Highway 4. The community is entirely within the County's Urban Limit Line and the City of Concord's Sphere of Influence. ~~and~~Clyde is also included in the Concord General Plan, ~~al~~though Concord has no plans ~~to~~for annexation ~~Clyde at this time~~.

Clyde's future was imperiled by the 1944 Port Chicago explosion and subsequent decline of the Port Chicago community. Following the closure of the shipyards, Clyde became a residential enclave surrounded by industrial and military uses. While these uses isolated Clyde from Concord and Bay Point, they also contributed to its strong sense of identity. The community added about 70 homes during the 1990s in the Clyde Commons subdivision, but otherwise has remained ~~stable~~static. There are a few small parks, a community center, and roughly 370 homes. County Service Area M-16 maintains Clyde's parks, recreation areas, and landscaping.

Impacted Community

This law is based on the understanding that some communities have experienced a combination of historic discrimination, ~~negligence~~ neglect, and political and economic disempowerment.

Major industrial facilities near Clyde include the ~~Martinez Refinery Company~~Marathon Refinery, ~~the~~ Contra Costa Hazardous Materials disposal facility, and ~~the~~ Military Ocean Terminal – Concord (MOTCO). Residents have raised

concerns about foul odors coming from the refinery along with poor air quality caused by heavy industrial land uses. Also among the top concerns for residents are the lack of affordable housing in the area and the resulting increase in homelessness, lack of access to nearby open space, and poor drainage near Port Chicago, resulting in standing water and associated health risks, including mosquitos.

Planned Land Use

This community is primarily residential, with a handful of light industrial parcels at its southern edge. Most of the community is planned for continued residential use at a density consistent with existing development. ~~This community is primarily residential, with a handful of light industrial parcels at its southern edge. Heavy industrial lands directly west of Clyde are buffered through an open space designation along the west side of Port Chicago Highway.~~A greenway and Port Chicago Highway separate Clyde from light industrial lands immediately to the west. A wide area designated for resource conservation provides additional buffer from heavy industrial uses farther west; ~~T~~this buffer ~~zone~~ is intended to remain undeveloped. Directly east of Clyde are the Contra Costa Canal and large ~~agricultural~~ parcels owned by the United States government and private landowners. These lands, characterized ~~by~~ primarily by undeveloped rolling hills, are planned to remain in public and agricultural use.

Guiding Principles

4. Clyde residents should be safe and healthy while living adjacent to ~~both~~ heavy industry and MOTCO. Risks from industrial or military accidents and exposure to air pollutants and odors should be monitored and mitigated.

Policies

2. Expand access to local and regional parks and recreational facilities, such as the Delta de Anza Regional Trail and ~~future Concord Hills~~Thurgood Marshall Regional Park.

Actions

1. Establish a comprehensive, long-term strategy that coordinates efforts from ~~all~~various regulatory agencies to mitigate the impacts of surrounding uses on the community, both acute and long-term.

3. Coordinate with East Bay Regional Park District and Contra Costa Water District to enhance Clyde's bicycle and pedestrian connections to local and regional trails and open spaces. This ~~should~~may include a bikeway along Port Chicago Highway connecting to the countywide bicycle network or a bicycle and pedestrian path along the Contra Costa Canal that provides a future connection to Thurgood Marshall Regional Park.

4. Work ~~with the Public Works Department~~ to improve maintenance of County parks in the vicinity of Clyde.

5. Encourage tree planting~~,~~ and beautification projects~~, and a bicycle and pedestrian path along the Contra Costa Canal, including a future connection to Concord Hills Regional Park~~.

CONTRA COSTA CENTRE

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Situated between Pleasant Hill, Walnut Creek, and Concord, and divided among the Spheres of Influence of each, Contra Costa Centre is a bustling transit center adjacent to the Pleasant Hill/Contra Costa Centre BART station. The community has a diverse mix of land uses ranging from low-density single-family homes to very high-density multi-family ~~uses~~homes and BART-oriented mixed-~~-~~use. The community's vision is to be a cutting edge, mixed-use

neighborhood that serves all types of households and provides convenient services, safe outdoor public spaces, and multiple transportation choices. In particular, residents support more transit-oriented infill development that is concentrated and sustainable, addressing the growing need for regional transit. The community enjoys living within walking distance of restaurants and outdoor gathering spaces ~~or~~and parks, and would like its walkable, mixed-use character to be enhanced.

The Iron Horse Trail runs north-south through Contra Costa Centre and provides opportunities for high-quality outdoor recreation. Residents use this trail for a ~~wide~~ variety of trips ranging from active commutes to family outings. Connecting parks, schools, and transit with a network of trails is a high priority for Contra Costa Centre residents. ~~In addition, t~~Traffic safety is also a primary concern. Residents support changing the streetscape to slow traffic while enhancing transportation options.

Planned Land Use

Land use designations for Contra Costa Centre are shown on Figure LU-1, General Plan Land Use Map, and are defined in the Land Use Element. Contra Costa Centre aims to be a model for mixed-use, transit-oriented neighborhoods, while maintaining and enhancing its identity as a safe, family-~~-~~friendly, walkable community. ~~An~~The new and expanded ~~m~~Mixed-~~u~~Use High Density ~~area~~designation ~~will attract~~provides more opportunities for innovative infill development and further improves connectivity to BART~~,~~ and nearby trails~~, and the community's multiple uses~~. ~~Beyond the mixed-use area~~, ~~the map indicates continuation of r~~Residential uses will continue at ~~a variety of~~varying densities beyond the mixed-use area~~, along with new transit-oriented infill development~~.

Guiding Principles

1. Residents of Contra Costa Centre enjoy convenient access to public transit through the BART ~~s~~Station and numerous bus ~~lines~~routes. This access to public transit provides an easy alternative to automobile travel and access to the rest of the Bay Area from within their own neighborhood.

Policies

~~1. Support innovative mixed-use projects.~~

~~2. Support density increases along major thoroughfares.~~

3. Expand and improve bicycle network connectivity to increase safety and access to public transit and minimize collisions with automobiles.

4. Prioritize local-serving retail and community-focused land uses, such as restaurants and farmers' markets.

~~5. Require new development to provide walkable, pedestrian-scale streetscapes.~~

Policy 6~~Action 2~~. ~~Facilitate~~Encourage installation of facilities that support sustainability,~~le~~ ~~infrastructure~~ such as zero-emission vehicle charging and fueling infrastructure, bike repair stations, and other green amenities~~ as they become available~~. *(Revise Action 2 as shown and move to be Policy 6.)*

8. Promote a station area appearance ~~which will~~that projects a positive image and ~~have~~has high regional and local identity.

Actions

1. ~~Improve~~Evaluate traffic signal operations at the intersection of Las Juntas Road and Oak Road and correct any identified deficiencies.

~~2. Facilitate installation of sustainable infrastructure such as zero-emission vehicle charging and fueling infrastructure, bike repair stations, and other green amenities as they become available.~~ *(Revise Action 2 and move to be Policy 6.)*

2. Update the Pleasant Hill BART/Contra Costa Centre Specific Plan and consider expanding the Specific Plan area to include all land within one-half mile of the BART property. *(New Action)*

CROCKETT

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Crockett is located on the south side of the Carquinez Bridge, at the mouth of the Carquinez Strait ~~just east of San Pablo Bay~~. The town has a colorful history and eclectic character. It is best known as the home of the C&H Sugar ~~r~~Refinery, which has been in operation since 1906. Crockett was a "company town" during the refinery's boom years in the early and mid-1900s. Today, the town is home to about 3,000 residents. Its picturesque waterfront setting and relative affordability have attracted a large population of artists. Crockett is home to ~~two~~ museums, two regional parks, a middle school and high school, and a historic downtown business district ~~along Pomona Street and 2nd Avenue~~. In hillside residential neighborhoods, quaint homes on small lots boast sweeping views of the strait. ~~In addition to the C&H Sugar refinery, t~~The community is also close to and affected by heavy industrial uses west of Interstate 80, including the Phillips 66 Refinery and NuStar Energy storage facility.

Major Vulnerabilities

People and facilities throughout Crockett face significant risks of wildfire, including threats of injury, property loss, and high air pollution from smoke.

Households in poverty are among the most vulnerable to seismic hazards.

Impacted Community

This law is based on the understanding that some communities have experienced a combination of historic discrimination, ~~negligence~~ neglect, and political and economic disempowerment.

While there are multiple Census tracts that make up Crockett, this chart presents only the most-impacted Census tract in ~~Crockett~~ the community.

Some of the factors that contribute to Crockett's identification as an Impacted Community relate to its industrial roots – ~~both~~ past and present. The Selby Smelting and Lead Company, operated as a metal smelting and refining plant into the 1970s, polluted land and accompanying groundwater ~~north of the bridge~~ with slag that contains arsenic, lead, cadmium, and other compounds. Remedial efforts in previous decades protected residents from direct site exposure but did not fully prevent slag from leaching into ~~the~~San Pablo ~~b~~Bay. Full remediation plans, overseen by the California Department of Toxic Substances Control, are underway to protect groundwater, preserve aquatic habitats, and prevent human exposure to these toxic substances.

Near the Selby site, NuStar Energy leases land previously owned by the Wickland Oil Company, where petroleum products were released ~~at the site~~ through the 1980s. The site currently stores petroleum products from nearby refineries before transfer to gas stations and other consumers. Fires at the storage facility in 2019 required Crockett residents to "shelter in place" and put the community at risk of evacuation and toxic airborne particulates.

Planned Land Use

Land use designations for Crockett are shown on Figure LU-1, General Plan Land Use Map, and are defined in the Land Use Element. The heart of Crockett is the downtown business district along and north of Pomona Street~~, from 1st Avenue to~~This area wraps around John Swett High School~~, encompassing the library to the north,~~ and connects~~ing~~ to a secondary business district extending east along Loring Avenue facing the waterfront. These areas are ~~intended for~~designated ~~m~~Mixed-~~u~~Use Community-Specific Density~~projects to facilitate the creation of a town center, retain the integrity of existing development, and~~ in recognition~~ze~~ of the historic mix of ground floor commercial uses, upper story apartments, and small multiple-family residential, office, and civic buildings. Residential neighborhoods are planned for ~~a~~densities~~y~~ ranging~~e~~ from ~~5~~3 to ~~36~~0 units per net acre, which is consistent with the existing development pattern. ~~with higher d~~Density ~~uses located~~is highest adjacent to the ~~M~~mixed-~~U~~use ~~designation~~areas ~~to support the business district~~and decreases as distance from downtown and elevation increase. New development is planned to ~~continue the existing~~follow this development pattern~~ that mixes residential and open space uses~~. Areas ~~to the west~~ around the base of the Carquinez Bridge are ~~planned for~~designated ~~l~~Light ~~i~~Industry~~ial~~ and ~~c~~Commercial ~~r~~Recreation ~~uses~~in recognition of existing uses and to revitalize the marina area and improve access to the waterfront.

Guiding Principles

7. Public facilities and amenities in Crockett, including regional parkland, ~~community~~local parks and open spaces, schools, and the Crockett Community Center, should be preserved and enhanced. Open spaces should be inviting, clear of trash and debris, support community health and wellness, and serve as classrooms for outdoor education.

Policies

1. In mixed-use areas, ~~preserve adequate square footage of commercial uses to meet the daily needs of the community. S~~support development of a thriving and diverse local economy with ~~thriving small and local-serving~~neighborhood-scale businesses to serve the daily needs of the community while promoting new residential development.

2. ~~Maintain~~Respect Crockett's historic context and maintain its unique character while removing barriers to economic vitality, making the housing stock more resilient and sustainable, and creating new and diverse housing opportunities.

3. Coordinate with the C&H Sugar ~~r~~Refinery to ensure that plans for future use of its properties are consistent with the community's vision for long-term growth.

4. ~~Encourage~~Support~~ improved~~ community ~~appearance~~beautification and safety through graffiti removal, litter reduction, street and sidewalk maintenance, abatement of illegal dumping, and effective code enforcement.

~~7. Consider height and density increases downtown, provided historic context is respected.~~

8. ~~Exempt adaptive reuse or re-tenanting of older downtown buildings from compliance with off-street parking requirements when appropriate.~~Acknowledge that Crockett's historic development pattern may preclude compliance with various zoning regulations, such as setback and off-street parking requirements, and enforce such regulations accordingly.

9. Support efforts to ~~E~~elevate Crockett's role in the Bay Area as a regional hub for arts and culture, and strongly encourage galleries, artists housing, performance space, special events, and other activities that support the arts as an important part of local identity.

10. ~~Generally preserve~~Maintain public views of Carquinez Strait, San ~~Francisco~~Pablo Bay, and other defining natural elements of the local landscape to the greatest extent possible. Encourage new construction that enriches scenic quality of the community.

12.Support ~~the~~ long-term preservation of hillsides, ridgelines, and canyons around Crockett, which are essential to the community's scenic beauty and character and serve as green infrastructure that supports stormwater management, water quality, and climate change strategies. Prohibit extreme topographic modification, such as filling in canyons and removing hilltops.

~~13. Encourage clustering and planned unit development on hillsides as a means of preserving open space.~~

14. ~~Work~~Partner with East Bay Regional Park District (EBRPD) and other large landowners to improve non-motorized trails in the Crockett area, including a potential bike ~~lanes~~trail to ~~Rodeo and~~ Port Costa, and provide better access for hikers from Crockett to the Bull Valley Staging Area and Carquinez Strait Regional Shoreline Park.

Actions

1. Assist a community-led process to develop design guidelines for Crockett that complement the County's Objective Design and Development Standards and are tailored to the unique setting, historic fabric, lot patterns, design character, and mix of uses in the community.

2. Update the Historic Resources Inventory to ~~add structures that may not have been considered historic at the time of the last inventory~~include Crockett's historically significant buildings and sites. Include information on nearby legacy communities such as Selby and Tormey.

3. Work with the community to ~~D~~develop an economic development strategy aimed at attracting retail, restaurants, grocers, services, and locally-~~-~~owned and independent businesses.

4. ~~Improve waterfront access, including access to the shoreline from Crockett and lateral access along the shoreline itself.~~ Work with the State Lands Commission, EBRPD, and ~~other agencies~~Union Pacific Railroad to improve waterfront access, including lateral access along the shoreline itself, provide new amenities along the shoreline, improve pedestrian and bicycle crossings of the railroad, and encourage water-oriented business and commercial activities that enhance Crockett's identity as a waterfront community.

5. Work with the community to ~~D~~develop a communitywide parking management plan that addresses downtown parking and residential street parking.

6. Close sidewalk gaps ~~and improve pedestrian mobility~~ throughout downtown and around schools.

7. Maintain truck routes to limit industrial traffic on Crockett streets and enable safer, more efficient road operations.

8. Work with the West Contra Costa Transit Authority, Caltrans, and Amtrak to improve transit connections between Crockett and other communities, potentially including a rail stop on the Amtrak/Capitol Corridor. ~~In addition, encourage transit agencies to improve transit signage and waiting areas.~~

9. Study the feasibility of providing bicycle lanes between Crockett and Rodeo.

DIABLO

The following changes are recommended by staff based on new information.

Context

In ~~2022~~2024, the ~~median~~ average home price in Diablo was $3.18 ~~$2.65~~ million, making it among the ~~41st~~ most expensive ZIP codes in the United States and ~~the most expensive in~~ the East Bay.

The following changes are recommended in response to a comment letter received on November 21, 2023, comments from the Diablo Historic Preservation Committee via Diablo Community Services District.

Context

Diablo began as the Oakwood Park Stock Farm, a ranch owned by California's "Big Four" (~~i.e., influential men~~Leland Stanford, Charles Crocker, Mark Hopkins, and Collis P. Huntington, with a fifth partner, David Colton, who built the Central Pacific Railroad) in the late 1800s. Robert Noble Burgess purchased the property in 1912 from David Colton and transformed ~~it into a swank summer resort~~the Farm into a family-oriented, parklike community of summer homes.

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Planned Land Use

Diablo is planned to preserve ~~and continue~~ its rural character ~~and~~with continued residential use at ~~a~~ densities~~y~~ consistent with existing development. The large area designated Commercial Recreation supports continued operation of the Diablo Country Club, while the area designated Public and Semi-Public supports the Athenian School. The County's Urban Limit Line, along with Agricultural Lands, Parks and Recreation, and Resource Conservation land use designations protect lands under the County's jurisdiction on the north and east sides of the community.

Policies

2. Coordinate with the community to ~~i~~increase opportunities for ~~community~~ input into planning processes and projects, especially related to historic designations and regulations.

Actions

1. Work with the Town of Danville to ~~A~~address issues with traffic and speeding along Diablo Road.

2. Coordinate with local agencies to establish a plan for responding to natural disasters, ~~such as~~especially wildfires and earthquakes, that may include~~ing~~ a shelter-~~-~~in-~~-~~place plan for the community.

DISCOVERY BAY

The following recommendation is made in response to a comment received at the Discovery Bay MAC meeting.

Throughout Profile

Change "~~canals~~" to "bays" throughout profile.

The following changes are recommended by staff based on new information or to clarify content.

Context

Discovery Bay is a relatively new community in eastern Contra Costa County, created as a planned community in 1964 on agricultural land previously known as the "Byron Tract." The original development was envisioned as a recreational community, with a network of excavated canals and residential lots connected to Delta waterways. In the 1990s the County approved "Discovery Bay West," a 2,000-home project built around a new elementary school and four artificial lakes. Newer subdivisions have further expanded the community.~~Neighborhood-serving amenities also were planned and created.~~

The following changes are recommended in response to a comment letter received on November 27, 2023, from the Discovery Bay Community Services District.

Context

Today, Discovery Bay has grown into a full-service town with a community services district (CSD) that coordinates water, sewer, and recreation services. The CSD also fulfills the role of a municipal advisory council and advises the County on planning, infrastructure, public safety, and other policy matters.

Major Vulnerabilities

~~The Discovery Bay Fire Station and East Contra Costa Fire Protection District buildings are vulnerable to coastal flooding.~~

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Major Vulnerabilities

~~The~~ Discovery Bay Elementary School, All God's Children Christian School, and Timber Point Elementary School are vulnerable to coastal flooding either now or under future sea level rise scenarios.

Planned Land Use

Land use designations for Discovery Bay are shown on Figure LU-1, General Plan Land Use Map, and ~~are~~ defined in the Land Use Element. Discovery Bay has been planned to maintain the existing pattern of residential land uses along the ~~canals~~bays, with pockets of commercial ~~and office~~ uses along Discovery Bay Boulevard and Highway 4. While the former Cecchini property is designated Agricultural Lands, it is inside the County's Urban Limit Line (ULL) and may be redesignated to allow urban uses in the future. The area designated Mixed-Use Community-Specific Density at Discovery Bay Boulevard above Sand Point Road/Willow Lake Road is intended to facilitate ~~the~~ creation of a town center and encourage ~~the~~ development of a variety of uses that would complement and ~~catalyze further utilization of~~energize existing commercial ~~and office~~ areas.

Policies

1. In mixed-use areas, ~~attract and retain commercial uses to serve the daily needs of the community. S~~support ~~the~~ development and retention of new commercial uses and local-serving businesses to meet the daily needs of the community while promoting new residential development.

2. Coordinate with East Bay Regional Park District to ~~E~~enhance access and connections to regional parks and open space.

3. ~~Promote and e~~Encourage ~~the~~ development of job-generating uses.

4. Require development of the southern portion of the former Cecchini Ranch property to include a fire station, sports fields, and substantial acreage set aside as light industrial/flex space to accommodate job-generating uses.

5. Support ~~establishment~~development of a senior housing project in the vicinity of Point of Timber Road.

Actions

~~3. Add a sports field complex, possibly on the east side of Discovery Bay.~~

The following changes are recommended in response to a comment received at the Discovery Bay MAC meeting.

4. Work with the Town of Discovery Bay CSD to determine the feasibility of ~~Provide~~providing bathrooms ~~and better maintenance~~ at Slifer Park~~ and consider transitioning ownership to the Community Services District~~.

The following changes are recommended by staff based on new information or to clarify content.

Actions

5. Move the approximately 520.7-acre northern portion of the former Cecchini Ranch, which is under an agricultural conservation easement, outside ~~of~~ the ~~Urban Limit Line~~ULL.

EAST RICHMOND HEIGHTS

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Situated in the Berkeley Hills ~~north of~~near El Cerrito and Richmond, and within the Spheres of Influence of both ~~in the Berkeley Hills~~, East Richmond Heights is a primarily residential community of about 3,600 residents. Adjacent open space in Wildcat Canyon provides respite and outdoor recreation ~~for residents~~. Given East Richmond Heights' location, the community has panoramic views of San Francisco Bay, Mount Tamalpais, and beyond. Residents cite access to open space and views as important community assets that should be preserved for generations to come. East Richmond Heights is also home to two schools, Crestmont School and Mira Vista Elementary School, which contribute to the area's family-oriented character. Interstate 80~~, located about a ½ mile to the west,~~ and the El Cerrito Del Norte BART Station provide~~s~~ regional transportation access, and Arlington Boulevard serves as the major north-south thoroughfare.

Despite the small-town community feel, residents are concerned about safety and formed the East Richmond Heights Neighborhood Watch team to prevent crime, enhance emergency preparedness, and improve neighborhood communication. ~~In addition, r~~Residents would like more street lighting and new and expanded community facilities and events. Residents are also concerned about fire hazards from vegetation in Wildcat Canyon Regional Park and throughout the neighborhood, particularly from dead, standing trees. The community would like to enhance fire protection services and evacuation preparedness to ensure resident safety in the event of a natural disaster

Major Vulnerabilities

Public safety and emergency medical response are vulnerable to ~~flooding~~earthquakes, landslides, severe storms, and wildfire.

Change the title of the "~~Landslides~~" figure to "Seismic Hazards."

Planned Land Use

The community has two existing small commercial pockets~~, which~~that are intended to support neighborhood-serving businesses. The ~~area~~Adams Middle School site, designated Mixed-Use Low Density, is envisioned to attract neighborhood-serving commercial and service~~s~~ uses, affordable housing, and alternative dwelling types, while supporting and encouraging more community events

Policies

1. Prioritize mitigation of wildfire and earthquake exposure ~~W~~when reviewing new development proposals~~, consider the need for mitigation of wildfire and earthquake exposure as appropriate~~.

3. When reviewing new development proposals, ensure views of scenic natural features (e.g., San Francisco Bay, distant mountains) and the developed environment (e.g., bridges, San Francisco skyline) are substantially preserved.

4. ~~Ensure that~~Condition new ~~construction~~development projects ~~and home renovation activities~~to minimize impacts on neighbors and local roads, which may be compounded by existing small lots and narrow, winding roadways.

6. Promote local-serving commercial ~~establishments~~uses to encourage ~~local~~small business growth, create retail shopping near residents, and provide opportunities for residents to conduct business within their own community.

~~7. Improve local drainage infrastructure and encourage improvements to local wastewater infrastructure.~~

8. ~~Recognize~~Emphasize affordable housing as a community asset and encourage alternative dwelling types such as ~~accessory dwellings and~~ co-housing.

9. Consider the impacts of each project, individually and cumulatively, on emergency access and response to the neighborhood and immediate project area. New projects should not negatively impact access or response by emergency service providers. *(New Policy)*

10. Determine on a project-by-project basis whether a traffic impact analysis is warranted, considering factors beyond peak-hour trip generation, such as individual and cumulative impacts on pedestrian safety and neighborhood-scale evacuation plans. *(New Policy)*

11. For new developments, encourage building scale, massing, architectural style, and materials to provide harmonious scale transitions and blend with the surrounding existing residential neighborhood. *(New Policy)*

12. Encourage a mix of unit types and densities in new housing projects to diversify the housing stock and better serve residents of all ages, incomes, and abilities. To achieve the required density, encourage development of greater numbers of smaller-scaled buildings that are harmonious with surrounding areas and contain fewer units per building, instead of large-scale buildings containing higher numbers of units. *(New Policy)*

13. Provide pedestrian-friendly streetscape improvements with large-canopied street trees, open spaces, ground cover, and flowering plants where opportunities exist. *(New Policy)*

14. Encourage new development on large parcels, such as the Adams Middle School site, to closely follow the natural slope of the site with grading and building forms and heights. *(New Policy)*

15. Encourage seamless integration of new development on large parcels into the surrounding street pattern and evaluate opportunities to reestablish historic street patterns. For example, Loring Avenue and Rosalind Avenue, which are shown as through streets on historic Assessor's maps, were interrupted by consolidation of the Adams Middle School site and may be appropriate for extension. *(New Policy)*

Actions

1. ~~Coordinate with public safety and health agencies~~Work with East Bay Municipal Utility District and Contra Costa County Fire Protection District to ~~install~~determine whether additional fire hydrants are necessary within the community.

2. ~~Improve~~ Upgrade pedestrian ~~safety~~ and roadway infrastructure ~~by performing routine pavement management and maintenance, installing continuous street lighting, illuminating pedestrian crossings, adding ADA compliant amenities, and delineating on-street parking spaces~~ along ~~major roads~~Arlington Boulevard and in the North Arlington neighborhood, with emphasis on improving pedestrian safety.

3. ~~Explore~~Study the ~~possibility~~feasibility of constructing a community library.

4. Conduct community workshop(s) to explore options for ~~Assist a community-led process to coordinate with the Richmond Unified School District on a plan for the~~ future development at the ~~of~~ Adams Middle School site. Concepts and direction developed at the workshop(s) would provide community preferences and guidance to the County, local officials, property owner, prospective developer, and design team. The site should be a model for sustainable, green development that meets the housing (including workforce housing), retail, recreational, and service needs of the community while mitigating impacts to ~~existing neighborhoods~~ the surrounding area. Such workshops should also be conducted for projects requiring General Plan amendments or rezonings in East Richmond Heights.~~.~~

5. ~~Should the Mira Vista Elementary School property ever be redeveloped with a non-public use, r~~Redesignate the western, downslope portion of the Mira Vista Elementary School property, between Zinn Street and ~~Sierra~~Hazel Avenue, to Parks and Recreation should it ever be redeveloped with a non-public use.

EL SOBRANTE

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with Countywide goals, policies, and actions.

Important natural features such as San Pablo Ridge, Sobrante Ridge, San Pablo Creek, open hillsides, and oak woodlands provide visual beauty, plant and animal habitat, and opportunities for recreation.

El Sobrante is oriented along ~~several~~three major thoroughfares. San Pablo Dam Road, the backbone of the community, extends from Interstate 80 east and south toward San Pablo Reservoir and Orinda and is home to many of El Sobrante's ~~businesses and~~ commercial uses. Appian Way is a commercial and residential corridor that extends north/northeast from San Pablo Dam Road to Interstate 80 in Pinole, ~~including~~passing through the "triangle" area ~~around~~at the intersection ~~of Appian Way and~~with Valley View Road. Valley View Road is a residential corridor that extends southeast from the "triangle" to San Pablo Dam Road, passing De Anza High School. Most of the community is accessed via these three roads.~~Important natural features such as San Pablo Creek, open hillsides, and oak woodlands provide visual beauty, plant and animal habitat, and opportunities for recreation and green infrastructure.~~

Several plans have been developed for El Sobrante ~~in the past two decades~~over the years and remain generally applicable today, including a 2001 Transportation and Land Use Plan for the downtown business district (along San Pablo Dam Road and Appian Way) and P-1 Zoning and Design Guidelines adopted in 2013.

Major Vulnerabilities

The community is vulnerable to dam-related flooding ~~from the~~if San Pablo Dam~~, if the dam~~ were to be ~~harmed~~compromised by landslides or seismic hazards. ~~However,~~ San Pablo Dam ~~has recently been~~was upgraded in 2010 to reduce the risk of ~~dam~~ failure, decreasing the potential for dam-related flooding.

Planned Land Use

Areas along San Pablo Dam Road and Appian Way that serve as downtown El Sobrante are designated Mixed~~-~~-Use Low Density and Mixed-Use Community-Specific Density, recognizing the existing mix of multiple-family residential and commercial properties, as well as the desire for new projects that combine these uses, either vertically or horizontally. As noted in the following section, zoning regulations provide more prescriptive design standards for the

downtown areas. The ~~Land Use Map also~~Public and Semi-Public designation identifies community assets~~ with a designation for public uses~~, including Juan Crespi Middle School, Harbour Way Elementary School, De Anza High School, and the El Sobrante Library, as well as utilities such as an East Bay Municipal Utility District ~~(EBMUD)~~ water filtration plant.

Downtown El Sobrante Planned Land Uses

The Downtown El Sobrante P-1 Zoning and Design Guidelines should be consulted for more specific direction ~~and is considered the governing document for~~related to long-range planning decisions in this area.

Mixed-use development is strongly encouraged, although all three districts allow projects that are entirely commercial or residential. Interesting and innovative architecture is encouraged throughout each mixed-use area, but it should be harmonious in scale so that ~~the~~ each area is perceived and functions as a cohesive district.

San Pablo Dam Road Mixed-Use Area

The ~~third~~ mixed-use area in downtown El Sobrante applies to San Pablo Dam Road between El Portal and Appian Way. This is the core of the downtown area. The intent is to create a more unified and vibrant district by creating a town square, improving San Pablo Dam Road, and encouraging new multiple-family residential, offices, retail, and mixed-use projects. The town square is envisioned on the Mechanics Bank property on the south side of the block between Hillcrest Avenue and Pitt Way. Consolidation of existing small parcels is encouraged to create more viable development sites. ~~A 50-foot height limit applies to parcels within this zone, provided that t~~The mass, height, and shape of buildings should preserve views and ~~are~~be compatible with community character. ~~The vision for this area also includes improvements to San Pablo Dam Road.~~ Potential improvements to San Pablo Dam Road include new bike lanes ~~or a~~ (possibly separated)~~ bike lane~~, wider sidewalks, ~~more off-street parking,~~ new pedestrian crossings, and more attractive and coordinated signage.

Appian Way Mixed-Use Area

The Appian Way Mixed-Use Area is intended to facilitate ~~the~~ development of the Appian Way corridor as a unified, well-designed, walkable neighborhood, including new mixed-use development and improved services, shopping, offices, and restaurants. Neighborhood-scale commercial uses are allowed on all parcels. Residential-only projects and mixed residential-commercial projects are permitted but not required, and residential uses may be integrated into existing commercial developments. ~~A 27- foot height limit applies, with an 8-foot height bonus for mixed-use projects or projects eligible for a density bonus (subject to specific findings set forth in the P-1 Zoning Plan).~~

Triangle Mixed-Use Area

The El Sobrante "~~t~~Triangle" is formed by the intersection of Valley View Road, Appian Way, and Sobrante Avenue. Like the Appian Way Mixed-Use Area, this area is ~~also~~ envisioned as a distinct neighborhood retail district~~ with opportunities for mixed-use infill projects~~. ~~The a~~Allowable uses are similar to those in the Appian Way area. ~~Projects that incorporate housing as part of a m~~Mixed-use projects are preferred~~encouraged, provided that safe walking and recreational opportunities can be made available.~~, though ~~P~~projects that are entirely commercial are permitted on all parcels, subject to P-1 standards and use limitations. ~~The triangle area is subject to the same density and floor area ratio standards as the Appian Way Mixed-Use Area, with a 27-foot height limit and the potential for an 8-foot height bonus for mixed-use projects.~~ The same building design, streetscape, and parking guidelines that apply in the Appian Way area apply in the Triangle area. ~~The triangle block itself is designated for general commercial uses and is not considered an appropriate location for housing.~~ The Triangle differs from the Appian Way area in that it is far more compact and offers an opportunity to create a walkable activity node that anchors the northern end of the community.

Note: In the "Mixed-Use Areas" map on page 4, staff recommends that the legend order be revised, first showing the San Pablo Dam Road Mixed-Use Area, followed by the Appian Way Mixed-Use Area, and then the Triangle Mixed-Use Area.

Guiding Principles

1. El Sobrante should remain independent and eclectic, with common-sense land use regulations that respond to the community's varied development and building patterns.

7. Because the cities of Richmond and Pinole surround El Sobrante on three sides, coordination ~~with the City of Richmond and City of Pinole~~ is essential~~,~~ and the County should work proactively to address the effects of decisions by Richmond~~'s~~ and Pinole~~'s decisions~~ on the quality of life in El Sobrante.

17. Local businesses should act as gathering places for residents and contribute to El Sobrante's sense of community and cultural diversity.

Policies

1. In mixed-use areas, ~~preserve adequate square footage~~support development and retention of commercial uses and local-serving businesses in mixed-use areas to meet the daily needs of the community~~. Support the retention of active commercial uses and local-serving businesses~~ while promoting new residential development.

2. Continue ~~to~~ improving~~e~~ downtown El Sobrante to create a stronger sense of this area as a town center and destination for residents, using the Downtown El Sobrante Planned Unit Development (P-1) Zoning and Design Guidelines to guide land use and development decisions~~ in this area~~.

3. Encourage ~~and prioritize~~development of small and locally-~~-~~owned businesses, ~~including~~especially markets offering healthier food choices. ~~Local businesses should provide gathering places for residents and contribute to El Sobrante's sense of community and cultural diversity. (3-170)~~

~~5. Consider the effects of new development on aging infrastructure and, where appropriate, require infrastructure improvements as a condition of approval.~~

7. Increase ~~neighborhood~~local park acreage, including ~~requiring~~pocket parks within new development~~,~~ and preserv~~eing~~ open space along San Pablo Creek~~, and encouraging the Public Works Department to acquire land using development fees and other sources. Funding for ongoing maintenance should be identified when parks are created~~. ~~(3-175)~~

8. Encourage new commercial and mixed-use projects to ~~I~~incorporate safe, well-maintained open ~~spaces and~~areas or gathering places~~ in new commercial and mixed-use development projects where feasible~~. ~~In addition,~~

New Policy 9 (split from Policy 8). Encourage multiple-family residential ~~development should~~projects to provide on-site recreational facilities for ~~occupants~~residents.~~ and contribute toward the development of parks and recreational facilities that serve the community at large.~~ *(New Policy)*

9. Partner with East Bay Regional Park District to ~~M~~maintain~~,~~ and ~~where feasible~~ improve~~,~~ access to regional open spaces and parks on the perimeter of El Sobrante~~, including new trails and existing fire trails with the potential for recreational use~~.

10. Partner with community organizations to ~~C~~conserve and restore portions of San Pablo Creek as a community open space, natural resource, and visual amenity~~. In addition,~~ and conserve the natural elements of other local creeks, such as Appian Creek and Wilkie Creek.

11. Encourage the City of Richmond to preserve the visual character and natural qualities of San Pablo Ridge, the hillside area that defines the southern ~~and western~~ edge of El Sobrante, by supporting land use decisions that ~~maintain trail access to Wildcat Canyon Park and preserve~~protect areas above the 400-foot elevation contour as open space and maintain trail access to Wildcat Canyon Regional Park.

13. ~~Prohibit~~Deny applications for entitlements to establish new automotive uses (body repair, oil change, etc.) in El Sobrante.

Actions

3. ~~Undertake~~Improve drainage ~~improvements~~infrastructure to reduce local flooding problems, especially along portions of Appian Way and San Pablo Dam Road that still have open roadside ditches. ~~To the extent feasible, incorporate "green streets" principles in the design of such projects.~~

5. Work with ~~AC Transit and other local~~ public transit agencies to improve local service, restore BART feeder lines, and better connect El Sobrante to regional transit and community services such as hospitals.

~~7. Pursue construction of a new collector street connecting Pitt Way to Hillcrest Road.~~

~~12. Work with AC Transit and other local public transit agencies to improve local service, restore BART feeder lines, and better connect El Sobrante to regional transit and community services such as hospitals.~~

13. Continue ~~to explore~~assessing the feasibility of a creek-side boardwalk and park along publicly owned segments of San Pablo Creek.

KENSINGTON

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Situated near the University of California and within El Cerrito's Sphere of Influence, Kensington has been a desirable neighborhood for academics, students, urban professionals, and families for decades. Kensington residents enjoy the community's panoramic views, mature trees, hillsides, walkable scale, and easy access to transit and regional parks. Although there is very limited potential for growth, ~~many of the homes date from the 1930s and 40s and~~ there is significant construction activity to upgrade and expand existing homes, ~~those homes~~most of which date from the 1940s and earlier.

Kensington is ~~oriented~~located along Arlington Avenue ("the Arlington"), a winding thoroughfare that connects to Berkeley on the south and El Cerrito on the north. There is a small commercial district ~~located~~ on the Arlington just north of the Berkeley city limit. A second commercial district is ~~located~~ on Colusa Circle in the lower part of Kensington, near the border with El Cerrito. ~~Although a~~Almost all ~~of~~ the homes in Kensington are single-family~~.~~ and densities for that style of development are relatively high.

Major Vulnerabilities

Sunset View Cemetery, Tilden Regional Park, Kensington Park, and general outdoor recreation are vulnerable to drought, landslides, severe weather, and wildfire.

Planned Land Use

Land use designations for Kensington are shown on Figure LU-1, General Plan Land Use Map, and are defined in the Land Use Element. Kensington is planned for continued residential use at a density consistent with existing development, with small pockets of mixed use, commercial and office uses, public/institutional uses, and abundant parks and recreational land. Kensington's two small commercial areas will continue to serve as the primary centers of local business for Kensington residents. The commercial areas ~~along~~at Colusa ~~Avenue~~Circle ~~and Arlington Avenue are~~is intended to maintain the community-serving uses already in place while accommodating mixed-use development on vacant and underutilized parcels. Kensington's proximity to Tilden and Wildcat Canyon Regional Parks provides premier outdoor recreational opportunities for residents. As such, wide swaths of land beyond the developed area continue to be designated for public/semi-public and park and recreation uses.

Guiding Principles

4. To remain a safe and complete community, enhancements to the existing public services and facilities, such as the Kensington Fire Protection District and Police Department ~~facility~~facilities, Kensington Library and Community Center, the pedestrian path network, and local schools, should be supported.

6. A variety of housing types, including small multiple-family developments, duplexes, and accessory dwelling units ~~(ADUs)~~, should be encouraged to diversify the housing stock and better serve residents of all ages and abilities.

7. New housing should be compatible with the existing ~~low- to medium-density~~community character and be designed to minimize negative impacts on roads, emergency response capacity, and infrastructure.

Policies

1. Prioritize mitigation of wildfire and earthquake exposure ~~W~~when reviewing new development proposals~~, prioritize the need for mitigation of wildfire and earthquake exposure~~.

3. When reviewing new development proposals, ensure views of scenic natural features (e.g., San Francisco Bay, distant mountains) and the developed environment (e.g., bridges, San Francisco skyline) are substantially preserved.

5. Prioritize approval of projects that incorporate community-serving medical facilities and services.

~~6. Improve public safety facilities and emergency medical services to meet community needs.~~

~~Action 6~~Policy 7. Support ~~the~~ replacement ~~or updating~~ of police and fire facilities with ~~new or modernized~~modern facilities that meet Kensington's long-term needs. *(New Policy moved from Action 6 and revised as shown.)*

7. ~~Ensure that~~Condition new ~~construction and home renovation activities~~development projects to minimize impacts on neighbors and local roads, which may be compounded by existing small lots and narrow, winding roadways.

~~8. Accommodate new accessory dwelling units while minimizing their potential effects on street parking and emergency vehicle access.~~

Actions

1. Improve pedestrian safety and roadway infrastructure with features such as designated paths, ~~ongoing maintenance,~~ illuminated crossings, stop signs, traffic calming measures, on-street parking spaces along Arlington Avenue and Colusa Circle, and ADA facilities.

~~3. Explore financial assistance programs to help residents maintain and upgrade their homes and implement seismic safety improvements.~~

4. Review ~~the view protection~~County ~~o~~Ordinance Code Chapters 84-74 – Kensington Combining District and 816-2 – Tree Obstruction of Views Combining District and amend as necessary to ensure ~~that it addresses~~ issues ~~such as~~related to view blockage by trees and vegetation are addressed.

5. ~~Develop programs to maintain and improve~~Explore options for funding maintenance and improvement of Kensington's public pedestrian path system.

~~6. Support the replacement or updating of police and fire facilities with new or modernized facilities that meet Kensington's long-term needs.~~ *(Revise Action 6 and move to be Policy 7.)*

KNIGHTSEN

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

~~The~~Construction of the first buildings ~~soon followed~~, ~~with the construction of~~ a station house, railroad station, grocery store, and post office, soon followed; the Knightsen Farm Bureau was established in 1918. The community is listed in the County's Historic Resources Inventory.

Knightsen has been proactive in addressing its service and utility needs, starting in 1920 with ~~the~~ establishment of the Knightsen Irrigation District, which was quickly absorbed by the East Contra Costa Irrigation District. From 2005-2023 the Knightsen Town Community Services District worked to enhance flood control and improve water quality, both topics of significant concern given Knightsen's position in a low elevation area that receives substantial runoff. Today, residents remain concerned about water quality and water service, and they would like increased code enforcement ~~in~~to support ~~of the~~ community~~'s~~ health and safety.

Major Vulnerabilities

Delta Road, Sellers Road, and the ~~Union Pacific~~Burlington Northern Santa Fe ~~r~~Railroad~~way~~ are vulnerable to extreme heat, flooding, and severe storms.

Planned Land Use

Most residences are constructed on agricultural parcels. Residential ~~use is predominantly very low~~ density~~,~~ ~~slightly~~ increase~~s~~~~ing~~ as it approaches the community's commercial core ~~of the community~~ within the Urban Limit Line. The existing commercial core will be retained to attract ~~community~~locally-serving businesses and ~~revitalize and beautify the central area~~serve as the heart of the community.

Guiding Principles

3. Development should embrace and be compatible with the community's historic, rural character.

Policies

2. Encourage re-use and rehabilitation of historic buildings~~ and provide landscaping and street lighting to beautify the commercial area~~.

~~Action 4~~Policy 3. Provide ~~wider~~adequate sidewalks and ~~more~~ shoulder space ~~along roads~~ to protect pedestrians and accommodate horses. *((New Policy moved from Action 4 and revised as shown.)*

4. Facilitate community events ~~downtown~~in the commercial core.

7. Continue improving ~~services related to~~ code enforcement and public health and safety services.

Actions

1. ~~Plant~~Install and maintain street trees and ~~install~~ street lighting ~~downtown~~in the commercial core to support walkability and beautify the area.

~~4. Provide wider sidewalks and more shoulder space along roads to protect pedestrians and accommodate horses.~~ *(Revise Action 4 and move to be Policy 3.)*

5. Implement measures to slow ~~down~~ traffic and limit traffic impacts from local agritourism.

MONTALVIN MANOR, TARA HILLS, BAYVIEW, ROLLINGWOOD

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Situated ~~along San Pablo Avenue~~near the cities of San Pablo and Pinole, and within the Spheres of Influence of both ~~in the northwestern part of the county~~, these four communities are made up of single-family neighborhoods with some multiple-family homes and small commercial ~~storefronts~~areas.

The historic Union Pacific Railroad runs along this shoreline, creating challenges for safe and convenient access to ~~the~~San Pablo ~~b~~Bay.

Interstate 80 skirts the eastern edge of Tara Hills, and traffic congestion and related air pollution during peak commute hours ~~cause problems for~~impact residents. Surface streets can be severely congested, and pedestrian and bicycle infrastructure is limited, impeding access to local amenities. Many of the neighborhood-serving commercial spaces in these ~~community~~communities have become vacant over time, limiting local service options and attracting illegal dumping.

Impacted Community

This law is based on the understanding that some communities have experienced a combination of historic discrimination, ~~negligence~~ neglect, and political and economic disempowerment.

~~With the recent closure of a nearby medical center, r~~Residents must travel ~~farther~~to Richmond on congested roads to ~~receive care~~reach the nearest hospital.

Planned Land Use

The area designated Mixed-Use Community Specific Density at the intersection of San Pablo Avenue and Tara Hills Drive is intended to serve as a town center and commercial core planned for a range of neighborhood shopping, residential, and office uses that will stimulate improvements and reinvestment. ~~Ideally, this mixed-use area will also serve as a central community gathering place.~~

Montalvin Manor~~, Tara Hills,~~ and Bayview ~~wrap around~~border the shoreline of San Pablo Bay, providing residents with beautiful views and valued access to nature. As such, access to shoreline and trail connections will be preserved through ~~resource conservation and~~the ~~p~~Park and ~~r~~Recreation land use designation~~s~~.

Guiding Principles

4. Water-oriented recreation uses along the shoreline should be encouraged, and shoreline access should be improved.

~~6. Young residents of these communities should be nurtured with high-quality youth programming.~~

13. Residents should feel safe in their communities with quality ~~police protection~~law enforcement services and a built environment that deters crime.

Policies

1. ~~In the mixed-use area at~~Require the intersection of San Pablo Avenue and Tara Hills Drive~~,~~ to be developed as a town center that includes a community gathering space and incorporates unified design elements to provide a sense of identity. ~~attract and retain~~Encourage high-quality neighborhood-serving ~~commercial and office uses.~~businesses ~~Support the development of new commercial uses and local-serving businesses while promoting new~~and a mix of residential ~~development~~unit types.

2. Prioritize ~~the~~ preservation of scenic views and access to natural lands, open spaces, and trails.

3. Require new development to protect on-site habitat areas ~~and create additional parks~~whenever possible.

~~4~~2. Encourage development of neighborhood-scale commercial uses ~~to be at a neighborhood scale and serve the needs of~~throughout the four communities~~y~~. *(Renumber to be Policy 2.)*

~~5. Encourage and attract high-quality, health-conscious, neighborhood-serving stores and restaurants, especially at the shopping center at the intersection of San Pablo Avenue and Tara Hills Drive.~~

6. Require the massing and scale of new development to be consistent with the community's character whenever possible.

~~7. Consider the cumulative impacts on traffic congestion from development and require new development to improve sidewalk connections and provide bicycle infrastructure.~~

8. Address parking problems by implementing parking management strategies~~ and requiring sufficient off-street space when new development is approved.~~

9. ~~Incentivize the development of medical care services or a hospital nearby to improve access to healthcare~~Prioritize approval of projects that incorporate community-serving medical facilities and services.

10. Coordinate with the cities of Richmond, San Pablo, and Pinole on decisions that affect Montalvin Manor, Tara Hills, Bayview, and Rollingwood ~~residents~~.

11. Support ~~Beautify~~beautification the four communities~~y~~, and ~~including the~~ shoreline~~,~~ through physical improvements such as urban greening, ~~as well as increased~~ effective code enforcement ~~and vegetation maintenance~~, and efforts to address graffiti, illegal dumping, and abandoned vehicles.

12. ~~Allow for~~Support urban agriculture uses ~~on vacant lots, in coordination with property owners,~~ to encourage community cohesion and health.

Actions

1. Evaluate the necessity of ~~C~~conducting a ~~traffic~~ study to analyze and address circulation deficiencies, opportunities, and constraints~~. The study should evaluate the high traffic congestion~~ along San Pablo Avenue, ~~Richmond Parkway,~~ Tara Hills Drive, and ~~adjacent surface~~nearby neighborhood streets~~, and identify mitigation, such as improved signal timing and effective left-turn lanes, especially at the intersection of Richmond Parkway and San Pablo Avenue~~.

2. ~~Add resident-friendly~~Provide crosswalks, sidewalks, bike lanes, landscaping, and other essential pedestrian and bicycle infrastructure along ~~major thoroughfares, including~~ San Pablo Avenue~~, Richmond Parkway,~~ and Tara Hills Drive~~, such as crosswalks, sidewalks, bike lanes, a sound barrier, landscaping, and other streetscape improvements~~.

4. Work with local transit providers to increase connections to BART stations~~, especially the El Cerrito Del Norte station,~~ and ~~to~~ construct additional transit stop shelters ~~that improve the safety and comfort of transit users without attracting loitering~~.

~~5. As a high priority, coordinate with County agencies, non-profits, and other organizations to investigate the feasibility of opening an emergency shelter to house residents of all ages that are homeless.~~

~~6. As a high priority, invest in neighborhood beautification, such as through urban greening and clean-up efforts for graffiti, illegal dumping, and abandoned vehicles.~~

~~7. Work with the Association of Bay Area Governments (ABAG) to connect existing open spaces with a contiguous, well-maintained Bay Trail link along the shoreline from Point Wilson to Point Pinole for outdoor recreation and fishing.~~

~~8. Study the feasibility of constructing a bridge over the railroad at Point Wilson to facilitate connections to the water.~~

9. Work with ABAG/MTC and East Bay Regional Park District to ~~I~~improve and increase connections to wildlife habitat, open spaces, and trails along the shoreline and Garrity Creek.

10.Assist a community-led process to ~~increase~~improve youth programming at the Montara Bay Park Community Center and other recreation spaces throughout the four communities.

~~11.Establish a town center and community gathering place at the intersection of San Pablo Avenue and Tara Hills Drive to serve as a gathering space for residents of the four communities. Identify funding sources and strategies to support development of the town center.~~

12. ~~Identify locations and~~Study the feasibility of developing additional opportunities for recreation and access to nature, including a conveniently ~~accessible~~located dog park and ~~a~~ playground.

NORTH RICHMOND

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Due to ~~redlining practices and~~ housing and lending discrimination, Black and other minority workers found it challenging to find housing closer to the ports and railyards, forcing them to relocate to North Richmond. North Richmond became a pocket of affordable, accessible housing for minority households, but with little neighborhood infrastructure. Following the war~~time~~, many residents stayed to work in the petroleum, railroad, and shipping industries in Richmond, and the community continued to grow.

Today, North Richmond is primarily residential south of Wildcat Creek. ~~North of the creek, heavy i~~Industrial uses dominate north of the creek. Housing is relatively affordable compared to the rest of the Bay Area, but the housing stock is aging and many households ~~face~~grapple with high housing cost burdens and poor infrastructure.

North Richmond residents are actively engaged in local planning and advocate for their community through Urban Tilth, the Verde Elementary School, the Watershed Project, and other community organizations and initiatives. Planning is complicated by jurisdictional ~~lines~~boundaries, with part of the neighborhood being within the Richmond city limit. Given its proximity to heavy industrial uses, including the Chevron Richmond Refinery, residents are very concerned about community health, along with other issues like crime and illegal dumping. There are regulations in place to mitigate emissions from new industrial users, and the community ~~is~~has worked~~ing~~ with the Bay Area Air Quality Management District (BAAQMD) ~~to develop an action framework for community air protection~~on the Richmond-North Richmond-San Pablo Community Emissions Reduction Plan. In addition, while there have been ~~recent~~ levee, ~~improvements and~~ streetscape, and sidewalk improvements, community members would like additional roadway infrastructure and transit improvements that ensure safe, equitable, and affordable transportation access for all modes.

Major Vulnerabilities

The West County Wastewater treatment plant and the recycling center in North Richmond ~~is~~ are vulnerable to coastal flooding.

Impacted Community

This law is based on the understanding that some communities have experienced a combination of historic discrimination, ~~negligence~~ neglect, and political and economic disempowerment.

North Richmond experiences high levels of diesel particulate matter due to ~~the oil refinery~~industrial uses, chemical ~~companies~~plants, highways, truck traffic, rail yards, shipping ports, and marine terminals located within and near the community. Exposure to air pollution and chemicals contributes to eye, throat, and nose irritation, along with heart and lung disease. As shown in the chart, North Richmond residents visit the emergency room for asthma conditions at a rate that is among the highest rate in the state. There are frequent violations of air quality rules from facilities in and around North Richmond, and air testing has found unsafe levels of industrial pollutants inside residents' homes.

There are also many hazardous waste facilities and generators that affect North Richmond, including the Chevron Refinery, chemical companies, and Superfund sites. Beyond the acute risks to human and environmental health, these sources also raise concerns about odors~~, vermin,~~ and increased freight traffic.

The community is also burdened by historical and perceived high rates of crime. In addition to safety concerns, outdoor recreation and active transportation are hampered by a lack of ~~trail~~ maintenance and the need for more connected walking and biking infrastructure. Limited access to active recreation and transportation, coupled with

limited access to stores that sell fresh and healthy food, ~~can lead~~contribute to poor health outcomes for local residents.

Planned Land Use

The area south of Wildcat Creek is the heart of the community and is planned for ~~the continuation of~~continued residential use~~s~~ at ~~a range of~~various densities, supported by local-serving commercial development. The mixed-use designations along Fred Jackson Way, Market Avenue, and Chesley Avenue are intended to create a combination of affordable, multiple-family ~~residential units~~homes and ground-level retail, service, and office uses. The former Las Deltas campus is designated Residential Medium-High Density. The 11.38-acre site is an opportunity for innovative development that addresses a range of housing needs. The North Richmond Design Guidelines provide ~~more~~ detailed design guidance ~~for development in this area~~.

Guiding Principles

1. Affordable rental and ownership housing opportunities should be expanded and integrated into market rate developments. A range of housing types should be available to meet extremely-low, very-low, and low-income levels, and existing community members should be prioritized for available housing.

~~4. Sensitive uses, like schools, senior housing, and child-care facilities, should be buffered from heavy industrial uses.~~ *(Revise Guiding Principle 4 and move to be Policy 5.)*

9. North Richmond should be a safe place for people of all abilities to walk, bike, and drive. Speeding and cut-through traffic should be eliminated as much as possible, negative impacts from truck traffic should be mitigated, and conflicts at rail crossings should be addressed, possibly through grade separation~~sed from roadways~~.

Policies

1. Coordinate with the West Contra Costa Unified School District, ~~the~~ City of Richmond, and residents, ~~including~~particularly youth, to enhance existing open spaces, including Shields-Reid Park, Verde Elementary School, and Lucky A's Field, to provide the fullest civic, educational, social, and recreational benefits for the community.

3. Prohibit ~~the~~ construction of large walls or gates that divide the community.

~~Guiding Principle 4~~Policy 5. Buffer s~~S~~ensitive uses~~,~~ like schools, senior housing, and child-care facilities~~, should be buffered~~ from heavy industrial uses. *(Revise Guiding Principle 4 as shown and move to be Policy 5.)*

5. Support ~~C~~continued ~~to monitor~~ air quality monitoring through air quality sensors installed ~~throughout the community~~ as part of the Community Air Protection Program ~~(Assembly Bill 617)~~.

6. Require that new development incorporate green infrastructure solutions to minimize flooding and environmental pollution, such as bioswales, detention or retention ponds, and cisterns that capture rainwater for irrigation.

~~7. Promote the use of native plants in green infrastructure, landscaping, and parks.~~

~~Action 3~~Policy 7. Support efforts to ~~R~~restore creeks with native plants, including possibly planting an urban forest ~~at the eastern end of~~near Wildcat Creek east of Verde Elementary School~~, and develop new amenities, connections, and access points along Wildcat Creek.~~, and ~~C~~consider partnering with local non-profit organizations to maintain vegetation along the creek. *(Revise Action 3 as shown and move to be Policy 7.)*

~~Action~~ Policy 9. Support the Safe Routes to School Program by providing adequate pedestrian and bicycle infrastructure around Verde Elementary. *(Move Action 9 to be Policy 9.)*

10. Support workforce development and wealth-building programs for residents and locally-~~-~~owned businesses, cooperatives, and other uses offering benefits to the community, such as grocery stores, community kitchens, and child~~-~~care facilities. ~~(QOL B.1)~~

~~11. Seek community benefit agreements for new large commercial developments. Such agreements could include requirements for local hiring, apprenticeship and training programs, and funding for school and education programs.~~

The following recommended changes are in response to a comment received on January 10, 2024, via Konveio.

11. Encourage new mixed-use and commercial development that provides neighborhood-scale businesses. *(New Policy)*

13. Encourage residential projects that offer paths to home ownership and exceed the affordability requirements of the County's Inclusionary Housing Ordinance. *(New Policy)*

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Actions

2. ~~Seek Opportunity Zone funding or support community advocacy for~~Study the feasibility of partnering with community organizations to establish a social impact bond~~, with non-profit governance,~~ to ~~develop~~provide funds for renovation of homes, ideally by the local labor force.

~~3. Restore creeks with native plants, including planting an urban forest at the eastern end of Wildcat Creek, and develop new amenities, connections, and access points along Wildcat Creek. Consider partnering with local non-profit organizations to maintain vegetation along the creek. *(Revise Action 3 and move to be Policy 7.)*~~

4. ~~Construct trail~~Work with East Bay Regional Park District to improve connections ~~to~~between the Bay Trail and ~~to residential areas~~community, including ~~the residential areas adjacent to Wildcat Creek~~a potential Wildcat Creek Trail crossing over Richmond Parkway, and install amenities ~~like~~such as educational signs, bathrooms, water fountains, and benches.

~~5. Assist a community-led process to seek funding for a multi-use trail over Richmond Parkway to complete the Wildcat Creek Trail crossing to the marsh.~~

6. Evaluate the effectiveness of ~~I~~installing ~~and monitor security~~ cameras ~~in areas where~~to deter illegal dumping ~~is prevalent~~.

7. Work with the community to ~~P~~prepare and implement a street corridor and gateway beautification plan that celebrates the unique historical identity of North Richmond and instills civic pride and a sense of unity among residents.

8. Update the North Richmond Specific Plan to encompass the entire community and integrate goals and concepts from ~~recent~~ planning efforts~~, including~~ such as the 2019 Quality of Life Plan and ~~the~~ 2018 Priority Resilience Plan developed as part of the Bay Area Resilient by Design Challenge.

~~9. Support the Safe Routes to School Program by providing adequate pedestrian and bicycle infrastructure around Verde Elementary.~~ *(Moved to be Policy 9)*

~~10. Develop a plan for equitable access to active transportation and to address speeding, dangerous intersections, and cut-through traffic on 1st Street and Richmond Parkway~~.

~~11. Install pedestrian and bicycle improvements to increase safety along Fred Jackson Way.~~

12. Designate truck routes ~~that~~to minimize impacts on schools and homes.

~~13. Adopt viable methods to encourage local residents to open businesses in North Richmond, such as proactive outreach to the community, assisting with funding through various tax incentives, streamlining entitlement processes, and revising County ordinances and fees.~~

PACHECO

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Pacheco sits ~~just~~immediately north of Pleasant Hill and east of Martinez ~~and west of Buchanan Field Airport~~ in central Contra Costa County. Portions of Pacheco are within the Spheres of Influence of both cities. It was once a prosperous shipping center for grain exports, but fires, floods, and earthquakes in the mid-19th century resulted in much of its population relocating to Concord. Today it ~~encompasses a variety of uses, including~~includes residential, commercial, office, entertainment, and light ~~industry~~industrial uses. Residents take pride in being part of a neighborly, self-sufficient community with easy access to nature. The community enjoys ~~access~~its proximity to the Iron Horse Trail and Contra Costa Canal Trail, which connect Pacheco to other locations in the region. Residents seek improved connections to these trails and ~~to~~ the Benicia Bridge to increase walking and biking options for commuting and recreation.

The community would also like to reinvigorate its commercial ~~corridors~~core by strengthening businesses along the main thoroughfares.

Impacted Community

This law is based on the understanding that some communities have experienced a combination of historic discrimination, ~~negligence~~ neglect, and political and economic disempowerment.

While there are multiple Census tracts that make up Pacheco, this chart presents only the most-impacted Census tract in ~~Pacheco~~the community.

Pacheco is adjacent to the intersection of Highway 4 and Interstate 680~~, with Interstate 680 bisecting residential parts of the community~~. Due to ~~its~~ proximity to major ~~thoroughfares~~freeways and ~~the~~ Buchanan Field Airport, residents in the eastern part of Pacheco face health risks associated with poor air quality~~,~~ and have higher rates of asthma-induced emergency room visits than people in other parts of the state.

Pacheco residents have raised concerns about increasing traffic congestion along ~~major highways~~Interstate 680 and Highway 4, as well as air quality and noise issues from the airport. They are also concerned about homeless encampments under ~~the highway~~ overpasses in the community. In addition, Pacheco residents have limited access to recreation ~~access~~. While Grayson Creek runs through the community, residents are concerned about the lack of creek maintenance; they would also like better maintenance of Pacheco Creekside Park, along with more ~~trail connections and~~ entrances to the park.

Planned Land Use

Pacheco's residential areas are located on both sides of Interstate 680. Residential uses west of 680 consist of single-family and multiple-family ~~dwellings~~homes, while residences east of 680 consist of mobile homes. No changes are planned for these residential areas. Pacheco's mixed-use and industrial areas begin at the intersection of Pacheco Boulevard and 2nd Avenue South and extend north along Pacheco Boulevard ~~to~~past Highway 4. This corridor is planned to remain the central hub of local business and industry~~ for Pacheco residents~~. Applying the Mixed-Use Community Specific Density designation along the southern portion of Pacheco Boulevard and Aspen Drive is intended to create a town center to revitalize the area and take advantage of the visual quality and access to Grayson Creek. Infill development on vacant and underutilized parcels in this area is encouraged to promote development of community-serving uses and new residential options. Pacheco is proximate to local and regional trails, such as the Pacheco Creekside Park path, Contra Costa Canal Trail, Iron Horse Trail, and Bay Trail over the Benicia Bridge. As such, stretches of land designated ~~for r~~Resource ~~c~~Conservation and ~~p~~Parks and ~~r~~Recreation will be retained to preserve access.

Guiding Principles

3. ~~The~~Pacheco's convenient location should be maximized to support and enhance the diverse business community ~~should be supported and enhanced~~and promote economic development.

Policies

1. Coordinate with the cities of Martinez, Pleasant Hill, and Concord to ~~ensure~~achieve land use ~~conformity~~harmony across jurisdictional boundaries.

3. Encourage ~~the~~ establishment and growth of locally~~-~~-serving businesses that fulfill the needs of residents, as well as larger commercial and light industrial businesses to provide job opportunities to the community.

4. ~~Utilize Pacheco's convenient location to promote economic development along major thoroughfares, especially~~Support development around the intersection of Pacheco Boulevard and Center Avenue as a town center with unified design elements.

6. Work with agencies such as East Bay Regional Park District and Contra Costa Water District to ~~I~~improve connections to local and regional trails, such as the Pacheco Creekside Park path, Contra Costa Canal Trail, Iron Horse Trail, and Bay Trail over the Benicia Bridge.

~~7. Improve road maintenance and reduce traffic congestion on local roads.~~

~~8. This should include encouraging transit providers to expand public transit options and promoting alternative transportation modes.~~

~~9. Improve and maintain stormwater infrastructure to prevent flooding.~~

Actions

1. Identify ~~a~~ suitable locations for additional park facilities, including kid-friendly amenities such as play structures, and an expanded community gathering space.

3. ~~Implement~~Install safe bike routes and infrastructure including painted bike lanes along local roads.

4. Update the Historic Resources Inventory to ~~add~~include Pacheco's historically significant buildings and sites~~structures that may not have been considered historic at the time of the last inventory~~.

PORT COSTA

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Situated among ~~the rolling hills of the East Bay Regional Park District (EBRPD) open space~~ along the Carquinez Strait, Port Costa is a small town of approximately ~~200~~250 people. Originally founded in 1879 as a deep-water shipping port, the community had an important role in the export of wheat and was a stop on the transcontinental railroad. Upon ~~the construction~~completion of a railroad bridge ~~to~~between Martinez and Benicia in 1930, Port Costa diminished in size and regional significance.

Port Costa is fairly isolated, with only two narrow, winding access roads. Carquinez Scenic Drive connects to Crockett and Interstate 80 ~~and Crockett~~ to the west, and McEwen Road connects to Highway 4 ~~and Martinez~~ to the south. The predominant land use is single-family housing, with a small downtown area consisting of a few businesses and a post office near the water and railroad. The railroad is in active use ~~today~~, which ~~inhibits~~impedes public access to the waterfront, a major concern among residents.

Residents act as stewards of the historic assets in Port Costa. They are also passionate about protecting the surrounding open space and preserving a healthy watershed to ensure a sustainable future. ~~Residents are also interested in establishing a bike trail connection from Port Costa to Crockett.~~

Planned Land Use

The mixed-use area at the eastern end of Canyon Lake Drive serves to recognize the area's historic character of residen~~tial~~ces over street~~-~~-level businesses, as well as to encourage and attract additional development that will complement existing businesses and take advantage of visual access to the waterfront. The lands surrounding the community are outside the Urban Limit Line and protected from intense development through Parks and Recreation, Resource Conservation, Agricultural Lands designations.

Guiding Principles

1. Port Costa should be a resilient community that has planned for and is safe from sea-level rise, wildfire hazards, and the acute and long-term risks ~~of~~associated with nearby industrial uses.

4. Public facilities and amenities, including regional parkland, ~~community~~local parks and open spaces, and schools, should be preserved and enhanced. Open spaces should be inviting and clear of trash and debris.

Policies

2. Support ~~the establishment of a regional recreation area in the vicinity of Port Costa which is oriented towards pedestrian use and day use~~continued development of Carquinez Strait Regional Shoreline Park and regional trails, including a potential bike trail connection to Crockett.

3. ~~Limit commercial~~Encourage development ~~to~~of small-scale specialty and neighborhood retail shops~~-~~ and ~~Avoid~~ discourage establishment of automobile-oriented uses.

4. Encourage ~~the~~ preservation, sensitive rehabilitation, and adaptive reuse of Port Costa's older buildings, particularly those ~~that have been~~ identified ~~as local historic places~~in the Historic Resources Inventory. Recognize Port Costa's authentic character and ~~inventory of~~ historic buildings as assets and amenities to attract businesses, visitors, and local investment to the community.

5. Protect and preserve the scenic quality of the shoreline while encouraging water-oriented commercial and recreational activities that enhance Port Costa's identity as a waterfront community.

Actions

1. Assist a community-led process to develop design guidelines that complement the County's Objective Design and Development Standards and are tailored to the unique setting, historic fabric, lot patters, design character, and mix of uses in the community.

2. Update the Historic Resources Inventory to include Port Costa's historically significant buildings and sites~~add structures that may not have been considered historic at the time of the last inventory~~.

3. ~~Improve waterfront access, including access to the shoreline and lateral access along the shoreline itself.~~ Work with the State Lands Commission and Union Pacific Railroad to improve waterfront access, including lateral access along the shoreline itself, provide new amenities along the shoreline, and mitigate ~~the~~limitations on access from the railroad tracks~~, and encourage water-oriented business and commercial activities that enhance Port Costa's identity as a waterfront community~~.

~~4. Establish a scenic waterway designation along the shoreline that protects and preserves its scenic quality, and encourage access for fishing, boating, hiking, cycling, and other recreational activities. (3-142)~~

RODEO

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Congestion on Interstate 80, coupled with the lack of a BART station or ferry ~~stations~~terminal nearby, create circulation constraints at peak commute times.

The Phillips 66 Refinery, established in 1896, occupies over ~~1,000~~1,100 acres in the northern part of Rodeo. ~~In August 2020, Phillips 66 announced a plan to convert t~~The Rodeo Refinery has been converted into a renewable fuels plant. However, ~~M~~many residents remain concerned about potential refinery impacts, such as air quality and safety.

Impacted Community

This law is based on the understanding that some communities have experienced a combination of historic discrimination, ~~negligence~~ neglect, and political and economic disempowerment.

While there are multiple Census tracts that make up Rodeo, this chart presents only the most-impacted Census tract in ~~Rodeo~~ the community.

Past activities at the refinery have impacted community and environmental health. Multiple hazardous waste facilities and incidents have resulted in clean-up sites, impaired water bodies, and air pollution. In the past ~~decade~~15 years,

industrial activities in and around Rodeo businesses have emitted numerous hazardous gases, ignited fires, contaminated soil, and spilled crude oil into San Pablo Bay.

Planned Land Use

The majority of Rodeo is planned for a mixture of residential ~~and commercial land~~ uses at various densities. North of the community, the ~~existing~~ Phillips 66 Refinery and nearby facilities continue~~s~~ to be designated for ~~industry~~industrial use. ~~It is~~They are adjacent to areas designated ~~a~~Agricultural Lands and ~~r~~Resource ~~c~~Conservation ~~areas~~ that serve as a buffer and protect local open space. Rodeo includes a Mixed-Use Community-Specific Density designation along Parker Avenue from Seventh Avenue to the waterfront and along Pacific Avenue. ~~The vision here is to support residential units over street-level businesses. Rodeo also includes a Mixed-Use designation in its downtown and along the waterfront.~~ This is intended to facilitate ~~the~~ creation of a town center, encouraging ~~the~~ revitalization of downtown Rodeo by concentrating ~~commercial~~retail, entertainment, and ~~office~~service uses and developing townhomes, ~~and~~ multiple-family residential buildings, and living units above street-level businesses. The marina is designated Commercial Recreation to promote revitalization there. The Rodeo Waterfront/Downtown Specific Plan ~~(1997)~~ and Rodeo Redevelopment Area Planned Unit Development Zoning Code and Design Guidelines ~~(2005)~~ provide more detailed guidance for this area.

Policies

~~2. Direct all new development towards infill opportunities (i.e., vacant or underutilized parcels rather than open space beyond the developed area).~~

3. Require ~~that~~ new development to adhere to the Rodeo Waterfront/ Downtown Specific Plan goals, policies, and design standards and guidelines, which support a vision for a visually cohesive, economically viable, and people-oriented downtown and waterfront area.

6. Require major new development to provide or contribute to recreational amenities for community enhancement ~~along with adequate parking for residents, employees, visitors, and patrons~~.

~~Action 5~~Policy 7. Support community-led efforts to develop a pool at the site of the ~~old~~former Rodeo Swim Club ~~pool~~. *(Revise Action 5 as shown and move to be Policy 7.)*

7. Promote ~~the~~ development of water-oriented commercial, recreation, mixed-use, and transportation uses ~~at~~along the waterfront.

8. Maximize public access to ~~the~~San Pablo Bay~~, including a waterfront trail~~.

~~Action 6~~Policy 9. Support implementation of a Safe Routes to School Program and provide adequate pedestrian and bicycle infrastructure. *(Move Action 6 to be Policy 9.)*

9. Use distinct signage and streetscape design elements on both sides of Interstate 80 to create a better sense of cohesiveness throughout the community.

11. ~~Work with~~Support efforts by civic organizations to ~~support and enhance~~hold community gatherings, such as food truck events ~~while minimizing competition with local businesses~~.

12. Support beautification and walkability ~~by~~through effective code enforcement~~ing codes related~~and implementation of strategies to curb illegal dumping~~, streets, sidewalks, properties, and building facades~~.

13. Prioritize the safety and health of residents living adjacent to ~~heavy~~ industrial uses.

14. ~~Support agreements between the community and heavy industrial business operators.~~Prioritize approval of projects that incorporate community-serving medical facilities and services.

~~15. Attract and support clean, green industry.~~

16. Continue efforts to avoid and mitigate the effects of industrial traffic on downtown streets.

~~17. Work with the Rodeo-Hercules Fire District to ensure that response time standards for industrial accidents and other emergencies can be met throughout the community.~~

18. Coordinate with the City of Hercules on decisions ~~that~~likely to affect Rodeo residents.

19. Partner with ~~local~~civic organizations to expand opportunities ~~to engage~~for community members to engage in the planning process.

Actions

1. Complete the Implementation Tasks identified in Chapter 5 of the Rodeo Waterfront/ Downtown Specific Plan, including ~~the~~ development of a linear park along the Rodeo Creek Trail and a waterfront promenade. ~~(2-151, 3-155, 3-156, 3-161)~~

~~2. Study potential redevelopment options for the marina area, such as a new public or private marina or other water recreation facility. Based on the results of the study, actively market the site to potential developers and work with partners to pursue grant funding for a public facility.~~

3. Actively seek a developer of a new community market or grocery store, ideally one that reflects the community's ethnic and cultural diversity.

4. Partner with community groups to create a plan to ~~develop~~construct and operate civic facilities, such as a community center, youth center, new senior center, sports center, town plaza, dog park, and~~/or~~ parks and open spaces. ~~As part of this plan, identify funding sources and strategies.~~

~~5. Support community-led efforts to develop a pool at the site of the old Rodeo Swim Club pool.~~ *(Revise Action 5 and move to be Policy 7.)*

~~6. Support implementation of a Safe Routes to School Program and provide adequate pedestrian and bicycle infrastructure.~~ *(Moved Action 6 to be Policy 9.)*

7. Eliminate sidewalk gaps on San Pablo Avenue, Willow Avenue, Pacific Avenue, and Vaqueros Avenue, especially near ~~bus~~transit stops.

8. Improve safety and comfort on the Rodeo Creek Trail by installing pedestrian-scale lighting and other amenities ~~fencing~~, and improving maintenance, especially in the area just north of Seventh Street.

9. ~~Improvements should be coordinated with~~Partner with the community to organize~~d~~ creek clean-ups.

SARANAP AND PARKMEAD

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

They are split between the Spheres of Influence of both cities. Saranap traces its origins to 1911, when it became a stop on the Oakland, Antioch, and Eastern Railroad line between Oakland and Sacramento. The railroad ran along what is now Olympic Boulevard, with the station located at the current intersection with Tice Valley Boulevard. Saranap is named for Sara Naphthaly, mother of railroad vice president Samuel Naphthaly. Parkmead is located southeast of Saranap. Despite their proximity to downtown Walnut Creek, these two communities have retained unique identities valued by their residents.

~~Apartments~~Multi-family homes and ~~commercial~~ businesses were developed along Boulevard Way and ~~on~~ Saranap Avenue near the Interstate 680/Highway 24 interchange. Today, about one-quarter of the housing units in Saranap are apartments and condominiums.

Planned Land Use

Aside from enhanced neighborhood amenities, no changes are planned for the existing lower-~~-~~density residential areas. New development ~~will~~is planned to occur in mixed-use areas along major roads, incorporating a range of neighborhood-serving commercial uses and multiple-family dwellings. Mixed-use projects that incorporate affordable housing are highly encouraged. The mixed-use area along Boulevard Way will create a more unified and vibrant urban center offering medium- to high-~~-~~density housing choices.

Policies

1. In mixed-use areas, preserve adequate square footage of commercial uses to meet the daily needs of the community. Support retention of active commercial uses and ~~local~~neighborhood-serving businesses while promoting new multiple-family residential development, especially affordable units.

2. Maintain public views of Mount Diablo and surrounding scenic ridges to the greatest extent feasible. Protect the undeveloped hillside and ridge south of Olympic Boulevard and west of Tice Valley Boulevard.

~~4. Encourage mixed-use projects consisting of neighborhood-serving commercial uses and multiple-family dwellings, particularly those including affordable housing.~~

7. Discourage roof heights exceeding 40 feet~~, or~~ and architectural features (such as parapets) exceeding 45 feet.

9. ~~Encourage construction~~Require installation of street and sidewalk amenities of a consistent character that foster a cohesive "district" appearance along Boulevard Way.

Actions

1. Evaluate and improve pedestrian and bicycle infrastructure where ~~feasible~~possible, particularly along the full length of Boulevard Way.

2. Identify a location for a ~~neighborhood~~local park or other community facility/space within Saranap that may include a playground, lawn area, dog run/park, picnic area, exercise equipment, and community garden. Require future development projects to contribute their fair share towards its establishment.

3. Reconfigure and enhance the Boulevard Way right-of-way, from its intersection with Saranap Avenue east to the City of Walnut Creek border, as follows:

a. Reduce width to two lanes.

b. Install diagonal parking and Class II or Class III bicycle facilities along both sides.

c. Install traffic-calming devices and crosswalks where ~~appropriate~~necessary.

d. Install parklets.

e. Widen sidewalks.

f. Install street trees, landscaping, decorative streetlights, street furniture, water features, public artwork, and other ~~appropriate~~desired amenities.

VINE HILL AND MOUNTAIN VIEW

The following changes are recommended by staff based on new information, to clarify content, or to remove redundancies with countywide goals, policies, and actions.

Context

Vine Hill and Mountain View are small unincorporated communities located on the northern border of Martinez and within its Sphere of Influence. The communities consist primarily ~~consist~~ of single-family homes ~~with a few~~and pockets of commercial uses along Pacheco Boulevard, Howe Road, and Arthur Road.~~ Interstate 680 runs through Vine Hill and Highway 4 runs just south of the two communities, providing regional access to other parts of the Bay Area. These two communities~~and are situated adjacent to the Martinez Refining~~ery~~ Company and other industrial uses. Interstate 680 runs through Vine Hill and Highway 4 runs just south of the two communities, providing regional access to other parts of the Bay Area. Many residents travel to Martinez or beyond for education, work, services, and amenities. The Burlington Northern Santa Fe Railroad runs east-west through Vine Hill, transporting cargo to and from Bay Area ports. ~~Many residents travel to Martinez or beyond for education, work, services, and other amenities.~~

Residents also cite parking as an ~~prevalent~~ issue in their neighborhoods and would like to increase parking availability near their homes.

Impacted Community

This law is based on the understanding that some communities have experienced a combination of historic discrimination, ~~negligence~~ neglect, and political and economic disempowerment.

Given the communities' close proximity to a refinery~~ies~~ and other heavy industrial and manufacturing operations, residents may be at higher risk of exposure to harmful substances in the air, water, and land. Hazardous waste disposal facilities and domestic landfills, officially termed the Vine Hill Complex, are also located just east of these ~~residential~~ communities~~y~~.

Planned Land Use

Most of the land in these communities~~y~~ is ~~planned~~designated for continued residential, industrial, and ~~open space~~conservation uses, with the commercial pockets also remaining. No major developments or changes are

planned, except ~~in the mixed-use corridor~~ along a portion of Pacheco Boulevard where the Mixed-Use Community-Specific Density designation is applied. This area is envisioned as a community core ~~planned for development that would~~that provides an ~~wide~~ array of uses ~~for~~to support residents while stimulating reinvestment in the community at large.

Policies

1. ~~Prioritize the preservation and restoration of wetlands, wildlife habitat, open spaces, and connections to nature.~~ Maximize opportunities to protect and enhance Vine Hill Creek.

~~2. Prioritize roadway improvements to reduce traffic congestion on Pacheco Boulevard. Incorporate pedestrian, bicycle, and stormwater infrastructure improvements when feasible to improve safety and facilitate mobility throughout the communities.~~

~~3. Improve public transit options and accessibility and promote alternative transportation modes.~~

4. ~~Proactively enforce County codes to s~~Support community beautification and safety. Encourage improved community appearance through graffiti removal, litter reduction, street and sidewalk maintenance, abatement of illegal dumping, and code enforcement.

5. Encourage economic investment~~ along major thoroughfares~~, ~~including~~especially commercial and mixed-use development, along Pacheco Boulevard.

~~6. Incorporate safe, well-maintained open spaces and gathering places in new commercial and mixed-use development projects. In addition, multiple-family residential development should contribute toward the development of parks and recreational facilities that serve the community at large.~~

Actions

1. ~~Install traffic calming to reduce speeding and increase safety for cyclists on Pacheco Boulevard~~ Install improvements along Pacheco Boulevard to enhance pedestrian and bicycle safety, community appearance, and traffic flow.

2. ~~Undertake drainage improvements to reduce~~Address local flooding problems. ~~To the extent feasible, incorporate "green streets" principles in the design of such projects.~~

3. Close sidewalk gaps and improve pedestrian infrastructure, especially in the vicinity of Las Juntas Elementary School.

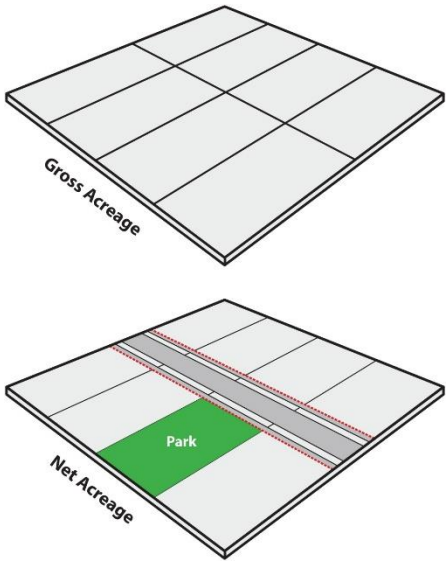
4. Study the feasibility of creating secondary roadway access to and from the portion of Vine Hill east of Interstate 680.

~~5. Provide more frequent curbside waste services, including recycling and organics collection.~~

LAND USE ELEMENT

The following changes are recommended by staff based on new information or to clarify content.

Page 4-2/Land Use Designations and Map (new illustration and text edits)



This illustration shows the difference between gross and net acreage.

Standards for allowed residential density and intensity of nonresidential uses are described below. These standards reference **gross acreage**, which is the acreage of the entire parcel designated for the use, and **net acreage**, which is the area remaining after land is dedicated for rights-of-way, easements, and other public or common uses.

- **Residential densities** are expressed in terms of dwelling units per net acre~~, which is the area remaining after land is dedicated for rights-of-way, easements, and other public or common uses~~. As a rule of thumb, the County assumes net acreage to be 75 percent of the gross for single-family residential projects and 80 percent of the gross for multiple-family residential and mixed-use projects. A project's actual density is calculated during the development review process and must fall within the density range for the applicable land use designation unless State laws, policies within this General Plan, or zoning regulations allow for higher or lower densities.

Page 4-3/65/35 Land Preservation Standard

As of 2023~~3~~4, approximately 28 percent of the land countywide has been designated for urban uses.

Page 4-7/Table LU-1

PARKS and RECREATION | PR: Applied to publicly- and privately-owned parks and similar outdoor spaces. Includes ~~neighborhood and community~~ local parks in urban areas as well as federal, State, and regional parks and historic sites that are managed primarily for conservation purposes and provide active or passive recreational activities. Ancillary amenities such as visitor centers, event spaces, amusements/rides, and eateries that support or enhance the primary recreational use are consistent with this designation.

RESOURCE CONSERVATION | RC: Applied to the watersheds of reservoirs owned by public utilities, mitigation banks, habitat restoration sites, ecologically significant or environmentally sensitive areas that are not within publicly-owned parkland, and hazardous or otherwise constrained areas that are unsuitable for development. Resource management, low-intensity agriculture, low-intensity recreation, and similar activities are consistent with this designation when conducted in a way that is not damaging to the resources being protected. Construction of public and semi-public infrastructure, and one single-family residence on an existing legal lot under private ownership, is consistent with this designation. All types of urban development and subdivisions that increase density are prohibited.

The following changes are recommended by staff in response to a comment letter received on March 26, 2024, from the Alamo Improvement Association.

Page 4-7/Table LU-1

Notes on Mixed-Use Designations

1. Single-use residential and single-use nonresidential projects are allowed in areas with mixed-use designations; however, policies elsewhere in this General Plan may encourage or require mixed-use projects at specific locations.

2. The densities stated in each mixed-use designation apply only when a project includes a residential component; they do not compel residential development in otherwise nonresidential projects.

3. The FAR for each mixed-use designation is inclusive of residential and nonresidential development; density and FAR are not additive.

~~3~~4. Mixed-use projects may be horizontal, meaning residential and nonresidential uses exist on the same site, or vertical, meaning residential and non-residential uses exist in the same building.

Page 4-11/Urban Limit Line

Because the 65/35 Standard limits urban land use designations to no more than 35 percent of the county's total land area, the County and cities must work cooperatively to ~~maintain~~ ensure that over 60,000 acres within the ULLs/UGBs remain under non-urban land use designations. Fortunately, a significant portion of this acreage already is permanently protected as local parks, regional parks and open spaces, reservoirs, and other public facilities. Examples of protected lands within the ULLs/UGBs include several regional parks within Richmond's city limits (4,000 acres), Lafayette Reservoir and its surrounding recreation area (900 acres), Thurgood Marshall Regional Park (2,500 acres), Lime Ridge Open Space (1,200 acres), and Big Break Regional Shoreline (1,600 acres).

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 4-15/Action LU-A1.2

~~Periodically update~~ Review County Ordinance Code Titles 7 – Building Regulations, 8 – Zoning, 9 – Subdivisions, and 10 – Public Works and Flood Control at least once every five years and update as necessary to maintain consistency with State law and newly adopted or revised planning documents (General Plan, Specific Plans, etc.); address emerging issues; and respond to economic, technological, and social trends.

The following new action is recommended by staff in response to a comment letter received on March 26, 2024, from the Alamo Improvement Association.

Page 4-15/Goal LU-1

New Action LU-A1.4 Quantify the acreage designated for urban land uses at least once every five years to ensure continued compliance with the 65/35 Land Preservation Standard.

The following changes are recommended by staff based on new information or to clarify content.

Page 4-16/Policy LU-P2.4

~~Prohibit~~ Deny applications for major subdivisions outside the ULL ~~as well as~~ and successive minor subdivisions of lots outside the ULL that were created through previous subdivisions.

Page 4-16/Goal LU-2

Move Policy HS-P4.1 to instead be Policy LU-P2.10 and edit as follows: When considering development proposals and land use changes, treat susceptibility to hazards and threats to health and safety ~~human life~~ as primary considerations.

Page 4-17/Goal LU-2

See the Land Use, Infrastructure, and Transportation Coordination section of this Element and the Public Facilities and Services Element for additional policies and actions on urban services and infrastructure. See the Conservation, Open Space, ~~Conservation,~~ and Working Lands Element for additional policies and actions on agricultural areas, resource-based uses, and open space management.

Page 4-21/Intergovernmental Coordination

Important regional partners in land use planning include the Association of Bay Area Governments (ABAG)/Metropolitan Transportation Commission (MTC); Delta Protection Commission and Delta Stewardship Council, which ~~has regulatory~~ have authority over land use~~s~~ within the Primary Zone of the Delta and Legal Delta, respectively (see Figure LU-3); and ~~the~~ US military, which must be consulted on projects proposed near its facilities (see Figure LU-4) to ensure new development does not conflict with operations or pose safety risks.

An important component of long-range regional planning in the Bay Area is designation of Priority Development Areas (PDAs). PDAs are proximate to public transit and planned for concentrated development of new homes, jobs, services, and community amenities. PDAs are envisioned as walkable areas that provide the necessities of daily living, thereby allowing residents to be less automobile dependent. ABAG/MTC offers grants and other assistance to develop and implement PDA plans. While PDAs are a regional planning tool, they are under the jurisdiction of the cities and counties where they are located. Over 30 PDAs have been designated in Contra Costa County, six of which are entirely or partially within the unincorporated area, as shown on Figure LU-5 and described in Table LU-3.

Another regional planning tool supported by ABAG/MTC is Transit-Oriented Communities (TOCs). TOCs are similar to PDAs in that their purpose is to create walkable communities near public transit. However, TOCs specifically aim to provide high residential densities within one-half mile of high-quality transit facilities like BART stations and ferry terminals, whereas PDAs may have lower average densities and extend farther out. A TOC therefore may exist within a larger PDA. In Contra Costa County there are 14 locations (12 BART stations, one Amtrak station, and one ferry terminal) that could qualify for designation as a TOC. As shown on Figure LU-5, these include unincorporated areas near the Pleasant Hill/Contra Costa Centre and Pittsburg/Bay Point BART Stations.

Table LU-3: Priority Development Areas in Unincorporated Contra Costa County *(New table)*

	Households				Jobs			
Priority Development Area	**2010**	**2040**	**Projected 2010-2040 Growth**	**% Growth**	**2010**	**2040**	**Projected 2010-2040 Growth**	**% Growth**
San Pablo Avenue Corridor - Unincorporated County	1,586	4,784	3,198	202%	847	1,087	240	28%
North Richmond	1,080	4,304	3,224	299%	1,797	2,400	603	34%
Downtown El Sobrante	559	784	225	40%	1,030	1,127	97	9%
Contra Costa Centre	354	623	269	76%	4,441	5,888	1,447	33%
Pittsburg/Bay Point BART Station	847	1,460	613	72%	838	1,959	1,121	134%
Brentwood Boulevard	tbd				tbd			

Source: 2017 Contra Costa PDA Investment and Growth Strategy. Contra Costa Transportation Authority.

The following change is recommended by staff in response to a comment letter received on March 26, 2024, from the Alamo Improvement Association.

Page 4-21/Action LU-A5.1

In 2025 and at least once every five years thereafter, evaluate the County's off-street parking standards to ensure their continued applicability in light of changing conditions, trends, and technologies~~y~~. Each evaluation

should assess the appropriateness of reducing or eliminating parking minimums, taking off-site impacts and the variations in parking needs between communities into account, and recommend strategies for reducing parking demand.

The following changes are recommended by staff based on new information or to clarify content.

Page 4-21/Goal LU-5

Move existing Policy LU-P6.4 to instead be Policy LU-P5.2 and edit as follows: Coordinate with LAFCO to ensure that city annexations and related land use decisions do not:

(a) Interfere with attainment of the County's land use goals as expressed in this General Plan.

(b) Include Housing Element inventory sites unless provisions have been made to transfer the site's assigned units to the receiving city's Regional Housing Needs Allocation (RHNA).

(c) Create new unincorporated "islands" (i.e., ~~isolated~~ developed areas substantially surrounded by incorporated cities. *Renumber the subsequent policies accordingly.*

Move Policy LU-P6.5 to instead be Policy LU-P5.3 and edit as follows: Encourage cities to annex unincorporated "islands" such as the Rollingwood (San Pablo), Ayers Ranch (Concord) and San Miguel (Walnut Creek) neighborhoods. *Renumber the subsequent policies accordingly.*

The following changes are recommended by staff in response to a comment letter received on April 8, 2024, from the Delta Protection Commission and to clarify content.

Page 4-24/Policy LU-P6.1

Ensure that County projects and decisions on private development and land use activities within the Legal Delta are consistent with the following plans:

(a) ~~The~~ Land Use and Resource Management Plan for the Primary Zone of the Delta adopted by the Delta Protection Commission.
(b) ~~The~~ Delta Plan adopted by the Delta Stewardship Council.

In addition, screen proposed General Plan amendments affecting the Primary Zone for consistency with Public Resources Code Section 29763.5, including a specific analysis of consistency with each subsection thereof.

Page 4-24/Goal LU-6

New Policy LU-P6.2: Maintain Priority Development Area and Transit-Oriented Community designations in support of Plan Bay Area and other regional planning initiatives sponsored by ABAG/MTC. *Renumber the subsequent policies accordingly.*

The following changes are recommended by staff based on new information or to clarify content.

Page 4-26/Policy LU-P7.3

Protect residential neighborhoods from incompatible uses and activities that ~~will~~ adversely affect public health and safety.

Page 4-26/Policy LU-P7.5

Require new residential projects to provide convenient access/connections to public transit, local destinations, and multi-use trails ~~whenever possible~~.

Page 4-26/Goal LU-7

New Action LU-A7.1: Evaluate the appropriateness of amending County Ordinance Code Title 8 – Zoning to allow sale of an ADU as a condominium separate from the primary residence, pursuant to AB 1033 and Government Code Section 66342. *Renumber the subsequent actions accordingly.*

Page 4-26/Goal LU-7

Move existing Action LU-A7.1 to instead be Policy LU-P7.3: Maintain objective design standards for residential and mixed-use development to provide a streamlined approval process and ensure architectural compatibility for future infill development. *Renumber the subsequent policies accordingly.*

Move Policy HS-P4.6 to instead be Policy LU-P7.6: In hazard-prone areas, such as slopes exceeding 15 percent, mapped floodplains, High and Very High Fire Hazard Severity Zones, and Alquist-Priolo Earthquake Fault Zones, allow for decreased residential density, including below the minimum density requirement for the applicable land use designation, as the severity of risk increases. *Renumber the subsequent policies accordingly.*

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 4-27/Policy LU-P8.5

Emphasize the importance of commercial centers as civic gathering places. Whenever feasible, require plans for commercial and mixed-use areas to include safe, well-maintained open spaces, gathering places, and public ~~spaces and~~ amenities that create a strong sense of place.

Page 4-28/Policy LU-P9.1

~~Welcome~~ Actively seek out industries that create living-wage jobs and career advancement opportunities for county residents while minimizing environmental degradation, pollution exposure, hazardous conditions, and adverse public health impacts.

The following change is recommended by staff in response to a comment letter received on April 8, 2024, from the Delta Protection Commission.

Page 4-30/Policy LU-P10.3

Preserve the rural character of the following areas, which are displayed in Figure LU-5:

(a) Alhambra Valley/Briones

(b) Tassajara Valley

(c) Delta Primary Zone

(~~c~~d) Agricultural Core between Brentwood and Discovery Bay

(~~d~~e) Crockett Hills between Crockett and State Route 4

(~~e~~f) Franklin Canyon/State Route 4 corridor between Hercules and Martinez

(~~f~~g) Bollinger Canyon Road corridor between Las Trampas Regional Wilderness and Crow Canyon Road

(~~g~~h) Norris Canyon Road corridor between San Ramon and the Alameda County line

(~~h~~i) Marsh Creek Road corridor between Clayton and Byron Highway

(~~i~~j) Kirker Pass Road corridor

(~~j~~k) Morgan Territory Road corridor

(~~k~~l) Deer Valley Road corridor

Pay special attention to potential aesthetic impacts in these areas and ensure such impacts are adequately mitigated.

TRANSPORTATION ELEMENT

The following changes are recommended by staff based on new information or to clarify content.

Element Organization

Reorganize the Element so that the Coordinated Planning section is presented first. This will require edits to the introductory language for the Element, as well as renumbering all goals, policies, and actions.

Page 5-5/Policy TR-P1.2

Prioritize expansion of bicycle, micromobility, and pedestrian infrastructure (e.g., Class IV separated bikeways) to address the significant latent demand for these active transportation modes.

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club, and to clarify content.

Page 5-5/Policy TR-P1.4

Reduce single-occupant vehicle usage and VMT by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, ~~at a minimum using strategies defined in the~~ TDM Ordinance, and other best practices), and support for public transit.

The following changes are recommended in response to a comment letter received on April 22, 2024, from the Center for Biological Diversity and by staff to clarify content.

Page 5-6/Policy TR-P1.9

Support public transit and ~~E~~encourage transit use by advocating for increased funding with enhanced governance, high-frequency service, and ~~supporting~~ expansion of first-mile/last-mile programs~~, including micromobility~~.

The following changes are recommended by staff based on new information or to clarify content.

Page 5-6/Policy TR-P1.10

Enhance multimodal access to all transit stops~~, including local routes as well as passenger and commuter rail stations and ferry terminals~~, prioritizing stops which serve vulnerable and mobility-impaired populations.

Page 5-6/Policy TR-P1.11

Support transitioning all on-road vehicles, including personal vehicles and business, government, and public transit fleets, to electric power from renewable sources or other ~~zero-~~emission-free fuels.

The following changes are recommended by staff based on new information or to clarify content.

Page 5-6/Policy TR-P1.12

Continue to improve ZEV ~~(including electric bicycle)~~ charging/fueling infrastructure within new development and public rights-of-way, incorporating new technologies whenever possible.

The following changes are recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club, and to clarify content.

Page 5-6/Action TR-A1.1

Develop and promote mobility alternatives to single-occupancy vehicles, including but not limited to public transit, micromobility, ~~zero-carbon~~ carbon-free rideshare strategies, and ~~public transit~~ nonmotorized modes.

Page 5-6/Action TR-A1.2

Review and update County Ordinance Code Chapter 82-32 – Transportation Demand Management and the County's Transportation Demand Management Guidelines at least once every five years to incorporate current best practices.

Page 5-6/Action TR-A1.5

Conduct a survey ~~of County offices and facilities~~ to identify gaps in public transit and the ~~alternative~~ active transportation network within one mile of County offices and facilities, and pursue funding for projects and

programs that will fill those gaps and improve the availability of alternative transportation options for County employees.

Page 5-7/Action TR-A1.7

Partner with transit providers, cities, and CCTA to develop a countywide transit stop program that takes a holistic approach to transit stop planning and construction. ~~Push for~~ Encourage the program to address right-of-way adequacy (i.e., sufficient space for bus pullouts and amenities), amenities (e.g., shelters, seating, bicycle racks and lockers), and improvements around stops to increase accessibility (e.g., curb ramps, sidewalk widening).

Page 5-7/Action TR-A1.12

Update the County Ordinance Code as necessary to support advances in ZEV charging/fueling infrastructure~~, including for medium- and heavy-duty vehicles~~.

Page 5-7/Action TR-A1.13

Advocate for legislation requiring micromobility and other transportation technology providers to accept responsibility for and mitigate the unique physical, operational, and financial impacts of their services, such as abandoned mobility devices, upon local jurisdictions.

Page 5-8/Policy TR-P2.3

Provide or ~~R~~require new projects to install~~ation of, or provide,~~ energy-efficient street lighting to improve public safety and comfort in urbanized areas. Prioritize installation in Impacted Communities, particularly at parks, transit stops, alleyways, bike and pedestrian paths, trails, and other ~~appropriate~~ high-need areas, consistent with community preferences.

The following changes are recommended by staff based on new information or to clarify content.

Page 5-11/Policy TR-P3.3

Partner with cities, CCTA, and the San Francisco Bay Area Water Emergency Transportation Authority (WETA)~~, and other involved agencies~~ to plan and implement ferry service that benefits unincorporated county residents.

Page 5-11/Policy TR-P3.5

Pursue federal ~~regional~~, State, and ~~federal~~ regional funding to augment locally generated funds to construct and maintain transportation infrastructure.

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 5-11/Action TR-A3.1

Coordinate with Caltrans, neighboring jurisdictions, CCTA, and the Regional Transportation Planning Committees to plan, design, and implement Complete Streets concepts on Routes of Regional Significance.

The following change is recommended by staff based on new information or to clarify content.

Page 5-14/Policy TR-P4.3

Create connections between unincorporated communities and neighborhoods ~~in unincorporated areas~~ and adjacent jurisdictions to improve multimodal access to local destinations, such as schools, parks, shopping, health services, and workplaces.

The following changes are recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 5-15/Policy TR-P4.6

Enhance streetscapes in nonresidential areas, making them more pedestrian-friendly and inviting by reducing setback and off-street parking ~~and setback~~ requirements and augmenting traffic-calming measures.

Page 5-15/Action TR-A4.1

~~Update~~ Review the County Standard Plans at least once every five years for relevance and applicability and update ~~on an as-needed basis~~ as necessary to reflect best practices in context sensitivity, ~~c~~Complete ~~s~~Streets, travel safety, and environmental sustainability.

Page 5-15/Action TR-A4.3

Develop guidance for managing curb space in ways that are sensitive to the land use context, with considerations for ~~freight deliveries, parking,~~ active transportation use, users with limited mobility, transportation network companies, outdoor dining, freight deliveries, parking, and other curb uses that may emerge.

The following change is recommended by staff based on new information or to clarify content.

Page 5-19/Active Transportation

Local bikeways are classified based on traditional categories recognized by ~~regional~~ federal, State, and ~~federal~~ regional transportation agencies. Each bikeway class is intended to provide bicyclists with safe and convenient riding conditions. Different bikeway designs offer various levels of separation from traffic based on traffic volume, speed, and other factors. There are four ~~bikeway~~ types:

- **Class I bikeways (bike paths)** provide completely separate facilities from automobiles and are designated for the exclusive use of bicyclists and pedestrians with minimal cross-flow automobile traffic. In Contra Costa County, these types of paths are often along creeks, canals, utility corridors, and former rail lines. Class I bikeways are often used for recreational and commute trips.

The following changes are recommended in response to a comment received at an open house event and a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 5-20/Policy TR-P5.4

Ensure that fee programs include active transportation facilities, and require new development to contribute funds, right-of-way, and/or provide active transportation facilities themselves~~, where feasible~~.

Page 5-20/Policy TR-P5.10

Require generous parking for bicycles and other mobility devices at key destinations, such as shopping centers, parks, schools, ~~workplaces~~ employment centers, transit stations, and multiple-family housing. This parking should be conveniently located near entrances, include charging infrastructure, and accommodate cargo bikes when appropriate for the land use.

The following change is recommended by staff based on new information or to clarify content.

Page 5-21/Action TR-A5.3

~~Periodically r~~Review the scoring formula for active transportation projects at least once every five years to ensure continued prioritization of projects in Impacted Communities.

The following changes and new action are recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club, and to clarify content.

Page 5-21/Goal TR-5

Move Action TR-A5.5 to instead be Policy TR-P5.9 and edit as follows: Consider ~~allowing~~ proposals for temporary and permanent reorientation of public space towards increased outdoor activity, ~~including~~ such as walking, bicycling, rolling, dining, and other social uses. *Renumber the subsequent policies accordingly.*

Page 5-21/Goal TR-5

New Action TR-A5.5: Evaluate the feasibility and appropriateness of the following when updating the ATP and CRIPP:

(a) Installing bikeways along all segments of Routes of Regional Significance within the County's jurisdiction.
(b) Restriping arterials and collectors to include bikeways whenever major maintenance occurs.
(c) Installing bikeways and sidewalks along arterials and collectors to the limits of adjacent jurisdictions.
(d) Installing bicycle detection systems, bicycle signals, bicycle boxes, and pavement markings at new and retrofitted traffic signals.
(e) Installing crosswalks at all legs of signalized intersections.

The following change is recommended by staff based on new information or to clarify content.

Page 5-21/Goal TR-5

See the Public Facilities and Services Element for additional policies and actions related to the countywide trail network.

The following new action is recommended in response to a comment letter received on December 4, 2023, from Dick Offerman, Konveio comments received on January 31, 2024, from Dick Offerman, and a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 5-27/Goal TR-7

New Action TR-A7.2: Switch to sale of unleaded aviation gasoline at County-owned airports as soon as there is a commercially viable and safe drop-in replacement for leaded fuel.

CONSERVATION, OPEN SPACE, AND WORKING LANDS ELEMENT

The following changes are recommended by staff based on new information or to clarify content.

Page 7-1/Introductory text

- The **Energy Resources** section includes policy guidance to conserve energy and support a transition to ~~zero-~~carbon-free energy sources, such as wind and solar.

Page 7-2/Open Space Framework

Major open space landowners operating at the local level in Contra Costa County include:

The following change is recommended in response to online comments received on April 8, 2024, from Jim Hanson of the California Native Plant Society.

Page 7-3/Policy COS-P1.3

Discourage conversion of land designated Resource Conservation or Parks and Recreation to urban uses. If such conversion is to occur~~s~~, require mitigation through permanent protection of other open space or park lands for habitat, scenic, or recreation benefits at a ratio to be determined based on the biological, scenic, or recreational value of the land, but not less than 3:1.

The following changes are recommended in response to a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 7-3/Action COS-A1.1

Convene an annual staff-level meeting with ~~involved~~ conservation agencies, such as ~~(e.g.,~~ the East Contra Costa County Habitat Conservancy~~,~~ and EBRPD,~~), land trusts,~~ and conservation ~~groups~~ organizations (land trusts,

watershed stewardship groups, etc.) to review current and planned efforts to protect and maintain open space and habitat.

The following change is recommended by staff based on new information or to clarify content.

Page 7-7/Policy COS-P2.1

Preserve large, contiguous areas of the county for agricultural production. ~~Prohibit~~ Deny applications for projects that would lead to fragmentation of agricultural areas.

The following changes are recommended in response to a comment letter received on April 8, 2024, from the Delta Protection Commission.

Page 7-8/Goal COS-2

New Policy COS-P2.4: Consult with the Delta Protection Commission to identify mitigation strategies, as relevant, if a change in land use that converts agriculture would significantly affect the sustainability of the Delta agricultural economy. *Renumber the subsequent policies accordingly.*

Page 7-8/Policy COS-P2.4

Require new projects adjacent to agriculture to establish buffers on their properties as necessary to minimize conflicts and protect agriculture. Determine appropriate buffers in consultation with the County Agricultural Commissioner.

The following changes are recommended by staff based on new information or to clarify content.

Page 7-8/Policy COS-P2.11

Support efforts to protect, maintain, and improve soil health as a carbon sequestration tool.

Page 7-12/Ecological Resource Areas

The East Contra Costa County Habitat Conservancy oversees implementation of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP), which provides regional conservation and development guidelines to protect natural resources while improving and streamlining the permit process for projects that will impact endangered species and sensitive habitat.

During the first 15 years of HCP/NCCP implementation, ~~42~~ 43 properties were acquired for the Preserve System, totaling over 14,400 acres. All but one of the acquisitions were completed in partnership with EBRPD.

The following change is recommended in response to online comments received on April 8, 2024, from Jim Hanson of the California Native Plant Society.

Page 7-13/Policy COS-P4.3

Require a biological resources assessment prepared according to State and federal protocols for projects with the potential to impact rare, threatened, endangered, or special-status species or their habitat, and implement appropriate mitigation for identified impacts, preferably near the impact and within the county.

The following change is recommended in response to a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 7-13/Policy COS-P4.4

Protect ~~habitat and~~ wildlife migration corridors, including natural and channelized creeks providing habitat in urban settings, and support projects that enhance these areas.

The following change is recommended by staff based on new information or to clarify content.

Page 7-13/Policy COS-P4.5

Discourage ~~the~~ use of fencing that poses risks to wildlife.

The following new policy is recommended in response to a comment letter received on April 8, 2024, from the Delta Protection Commission.

Page 7-16/Goal COS-4

New Policy COS-P4.6: Require projects impacting Pacific Flyway habitat in the Delta Primary Zone to incorporate mitigation that ensures no net loss of habitat function, including temporal loss. Impacts to Pacific Flyway habitat will be determined based on best available information at the time of environmental review. *Renumber the subsequent policies accordingly.*

The following new policy is recommended in response to a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 7-16/Goal COS-4

New Policy COS-P4.7: Require projects near sensitive habitat areas to minimize lighting in general and mitigate light pollution by incorporating best practices for wildlife-friendly lighting. *Renumber the subsequent policies accordingly.*

The following changes are recommended in response to online comments received on April 8, 2024, from Jim Hanson of the California Native Plant Society.

Page 7-16/Policy COS-P4.6

Require appropriately-timed, comprehensive floristic and vegetation surveys prepared according to State and federal protocols when development is proposed on land with potentially suitable habitat for special-status plant species, sensitive natural plant communities, or locally rare plants, including areas mapped by the California Native Plant Society as Botanical Priority Protection Areas.

Page 7-16/Policy COS-P4.7

Require avoidance and protection of sensitive ecological resources not approved for disturbance or removal during project entitlement, and require restitution in exceedance of standard mitigation ratios for deliberate or inadvertent damage to these resources.

The following changes are recommended in response to a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 7-16/Policy COS-P4.8

Require majority use of California native plant species in ~~landscaping for~~ large landscaped areas in new developments, and require construction practices that avoid spread of invasive plant species by minimizing surface disturbance; seeding and mulching disturbed areas with certified weed-free native mixes; disinfecting/decontaminating equipment; and using native, noninvasive, drought-resistant species in erosion-control plantings.

Page 7-16/Policy COS-P4.9

Support preservation, enhancement, and reestablishment of native and sport fisheries ~~and reestablishment of fisheries in streams wherever possible~~. Assist conservation agencies and organizations with identifying and addressing barriers to fish passage and other challenges to fish survival in natural watercourses.

The following new action is recommended in response to a comment letter received on April 22, 2024, from the Center for Biological Diversity and a comment letter received on April 7, 2024, from the Walnut Creek Watershed Council.

Page 7-16/Goal COS-4

New Action COS-A4.3: Work with conservation agencies to identify appropriate locations and methods for incorporating wildlife crossings into future road projects.

The following changes are recommended in response to a comment letter received on April 7, 2024, from the Walnut Creek Watershed Council and to clarify content.

Page 7-17/Header edit and text edits

~~Creeks,~~ Wetlands, Natural Watercourses, and Riparian Areas

Contra Costa County hosts abundant aquatic habitat ~~through its~~ in the form of coastal salt and freshwater ~~and coastal salt~~ marshes, mud flats, inland wetlands, creeks and streams, and riparian vegetation.

As illustrated ~~o~~in Figures COS-5 and COS 6, many creeks, streams, and other drainages extend throughout the county and ultimately drain into San Francisco Bay, San Pablo Bay, Suisun Bay, and the Delta. Outside the urbanized parts of the county, creeks and streams tend to be in a natural or mostly undisturbed state, supporting diverse plant and animal life. The riparian ecosystems along creek banks provide permanent homes and migratory pathways for many species, while also offering recreational opportunities for people to connect with nature. ~~Natural c~~Creeks and other freshwater bodies also store water and help to recharge groundwater basins, which increases resiliency to drought conditions.

The following change is recommended in response to a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 7-17/Policy COS-P5.1

Support protection, restoration, and enhancement of ~~creeks,~~ wetlands, marshes, sloughs, ~~and~~ tidelands, natural watercourses, and riparian corridors, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.

The following change is recommended in response to a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 7-19/Policy COS-P5.2

Require ~~new~~ public infrastructure and private development projects to preserve, and whenever possible restore and enhance, natural watercourses, floodplains, and riparian habitat.

The following new policy is recommended in response to a comment letter received on April 8, 2024, from the Contra Costa Water District.

Page 7-19/Goal COS-5

New Policy COS-P5.6: Identify and pursue funding opportunities to acquire, protect, and maintain open space around existing flood control channels to facilitate implementation of the County's 50-Year Plan "From Channels to Creeks." *Renumber the subsequent policies accordingly.*

The following new policy is recommended in response to a comment letter received on April 7, 2024, from the Walnut Creek Watershed Council and a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 7-19/Goal COS-5

New Policy COS-P5.7: Work with conservation agencies and organizations to:

(a) Increase public awareness about threats to water quality and prepare and implement watershed restoration plans throughout the county.
(b) Acquire, protect, restore, and maintain areas adjacent to natural watercourses and riparian corridors. *Renumber the subsequent policies accordingly.*

The following new policy and changes are recommended in response to a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 7-19/Goal COS-5

New Policy COS-P5.8: Discourage ornamental landscaping within setback areas along natural watercourses and require use of California native plant species when revegetating those areas. *Renumber the subsequent policies accordingly.*

Page 7-19/Policy COS-P5.6

Require increased setbacks for animal-handling uses whenever necessary to protect natural watercourses, wetlands, riparian habitat, or erosion-prone soils. Setback increases can be applied to all ~~aspects~~ components of the use, such as manure storage or parking areas, and are not limited to buildings and structures.

Page 7-19/Policy COS-P5.7

Allow encroachments into required setback areas along natural watercourses and wetlands for the purpose of constructing low-impact public improvements or public-serving amenities, such as footbridges, trails, and nature viewing areas, provided a qualified biologist confirms that the improvements/amenities are compatible with protection of ecological values.

Page 7-19/Action COS-A5.1

Inventory wetlands, floodplains, marshlands, natural watercourses, riparian corridors, and adjacent lands that could potentially support climate adaptation (~~e.g.,~~ through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration).

The following change is recommended by staff based on new information or to clarify content.

Page 7-20/Action COS-A5.3

Amend ~~the~~ County Ordinance Code Chapter 914-14 – Rights-of-Way and Setbacks to ~~apply~~ make the ~~creek~~ setback requirements for unimproved earth channels applicable ~~in Title 9 – Subdivisions~~ to all projects, ~~including those that are not part of a~~ not just subdivisions.

The following new actions are recommended in response to a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 7-20/Goal COS-5

New Action COS-A5.4: With input from watershed stewardship groups, evaluate the setback requirements in County Ordinance Code Chapter 914-14 – Rights-of-Way and Setbacks to determine appropriate setbacks for maximizing the natural function of natural watercourses and allowing for future restoration.

New Action COS-A5.5: Review the Contra Costa County Watershed Atlas to determine whether an update is necessary.

The following change is recommended in response to online comments received on April 8, 2024, from Jim Hanson of the California Native Plant Society.

Page 7-20/Policy COS-P6.1

Preserve natural woodlands and significant trees, particularly mature native species, intact coastal scrub and chaparral, and grasslands, especially those with native grass and wildflower populations.

The following change is recommended in response to a comment letter received on April 7, 2024, from the Walnut Creek Watershed Council and online comments received on April 8, 2024, from Jim Hanson of the California Native Plant Society.

Page 7-20/Policy COS-P6.2

Encourage planting and propagation of California native trees and habitat-supporting native shrubs, forbs, and grasses throughout the county to enhance the natural landscape, provide shade (especially in riparian areas), sustain wildlife, absorb stormwater, and sequester carbon.

The following change is recommended in response to a comment letter received on April 7, 2024, from the Walnut Creek Watershed Council.

Page 7-20/Policy COS-P6.4

~~Encourage~~ Support removal of invasive, non-native trees, shrubs, and grassland weeds ~~species~~, especially those that are ecologically harmful or ~~known to~~ pose threats to public safety.

The following change is recommended in response to online comments received on April 8, 2024, from Jim Hanson of the California Native Plant Society.

Page 7-21/Policy COS-P6.5

Encourage revegetation with local or regional ecotypes of native species in areas that were previously converted for agriculture but are no longer in production.

The following change is recommended in response to online comments received on March 26, 2024, from the Alamo Improvement Association.

Page 7-25/Policy COS-A6.1

Update County Ordinance Code Chapter 816-6 – Tree Protection and Preservation~~,~~ to enhance tree protections and strengthen mitigation requirements/restitution for ~~tree~~ removal commensurate with the benefits the tree provides.

The following changes are recommended in response to a comment letter received on April 4, 2024, from the Alameda County Water District and to clarify content.

Page 7-25/Goal COS-7

Move Policy COS-P7.1 to instead be Policy COS-P7.6 and make the following text edits: Require new development to reduce ~~potable~~ water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water~~,~~ where available. *Renumber the remaining policies accordingly.*

The following change is recommended by staff based on new information or to clarify content.

Page 7-25/Policy COS-P7.7

Require landscaping for new development to ~~be drought tolerant,~~ filter and retain runoff, and support flood management and groundwater recharge.

The following change is recommended in response to a comment letter received on April 4, 2024, from the Alameda County Water District.

Page 7-27/Policy COS-P7.9

Support wastewater reclamation and reuse programs that maximize use of treated recycled water.

Staff recommends deleting the following policy because the concept is included in the recommended new Policy COS-P5.7.

Page 7-27/Policy COS-P7.10

~~Support programs and activities conducted by community watershed groups and volunteers that increase public awareness and encourage stewardship of water resources.~~

The following change is recommended in response to a comment letter received on March 11, 2024, from the Building Trades Council.

Page 7-27/Action COS-A7.3

Evaluate the feasibility and necessity of amending the County Ordinance Code to promote rainwater harvesting, installation of dual plumbing (purple pipe), and water reuse.

The following changes are recommended by staff based on new information or to clarify content.

Page 7-29/Policy COS-P9.3

Oppose all efforts to construct an isolated conveyance, ~~(e.g.,~~ such as a peripheral canal~~,~~ or tunnel~~),~~ or any other water diversion system that reduces Delta water flows unless and until it can be conclusively demonstrated that such a system would protect, preserve, and enhance water quality and fisheries of the San Francisco Bay/Delta estuary system.

The following new policy is recommended by staff in response to a comment letter received on April 8, 2024, from the Delta Protection Commission.

Page 7-29/Goal COS-9

New Policy COS-P9.4: Work with the Delta Protection Commission to advise agencies undertaking habitat restoration projects within the Delta Primary Zone of their obligation to comply with California Constitution Article XIII D, Section 4, which requires public projects to continue paying benefit assessments unless the project demonstrates that it would not receive relevant services. *Renumber the subsequent policies accordingly.*

The following changes are recommended by staff based on new information or to clarify content.

Page 7-32/Policy COS-P10.7

Require significant historic, archaeological, and paleontological resources to be either preserved onsite or adequately documented as a condition of removal. Any documentation of historic resources shall be conducted in accordance with Historic American Building Survey (HABS) Level III standards, as defined by the US Secretary of the Interior.

Page 7-33/Tribal Communities

Contra Costa County is in an area where traditional territories of three Native American tribal communities – the Bay Miwok, ~~Northern Valley~~ Delta Yokuts, and Ohlone – converged, as shown in Figure COS-11.

Page 7-34/Policy COS-P11.3

Consult with culturally affiliated tribes on General Plan and Specific Plan amendments with potential to impact tribal cultural resources. If an amendment redesignates a tribal cultural resource site on private land for open space purposes, evaluate the appropriateness of developing a treatment and management plan for tribal cultural resources in the affected area.

Page 7-35/Policy COS-P11.6

Encourage voluntary landowner efforts to protect tribal cultural resources, including voluntary relinquishment of tribal cultural resources to affiliated tribes.

Page 7-38/Policy COS-P12.9

Enable flexibility in the design of projects along scenic routes ~~in scenic corridors~~ and support innovative solutions to protect views and visual quality.

The following changes are recommended in response to a comment letter received on February 12, 2024, from the Western States Petroleum Association and to clarify content.

Page 7-41/Energy Resources

Contra Costa County has long been an energy producer. Coal mining began in the 1850s, as indicated previously. The first petroleum refinery in the Bay Area opened in Rodeo in 1896 and the county has historically been home to a small oil and natural gas production industry. However, energy production in Contra Costa County is evolving as reliance on fossil fuels decreases and the State enacts more aggressive policies to combat climate change~~. In recent years, the State has~~, including increased support for a transition~~ing~~ to cleaner-burning biofuels through investments in technology, infrastructure, and production. Biofuels, including biomethane, biodiesel, and gasoline and diesel fuels derived from renewable sources instead of petroleum, can reduce reliance on traditional fuel sources, improve air quality, and reduce greenhouse gas (GHG) emissions. Embracing the future, ~~T~~two former petroleum refineries in the county ~~have already begun~~ converted~~ing~~ their operations from refining crude oil to processing cleaner biofuels.

The following changes are recommended by staff based on new information or to clarify content.

Page 7-43/Energy Resources

The State and Contra Costa County are moving towards reducing or eliminating natural gas use in existing and new buildings and transitioning to a clean energy economy. The County adopted an all-electric building ordinance in 2022, but enforcement was suspended following a federal court ruling in January 2024. ~~requiring that all new residential, retail, office, and hotel buildings use electricity as the sole source of energy for space heating, water heating, cooking appliances, and clothes drying appliances; natural gas and propane plumbing is prohibited.~~ Later in 2024 the County will consider adopting a replacement ordinance that supports high levels of energy efficiency and low levels of GHG emissions for new construction.

The County, ~~and~~ regional utilities, and community choice energy providers also provide rebates and programs to help make homes and businesses more resource efficient through energy audits, building retrofits, and opportunities to transition to a renewable electricity provider. The County continues to pursue opportunities for reducing overall energy use and increasing reliance on renewable sources, such as converting municipal and other wastes to energy resources (e.g., methane).

In ~~December 2015~~ October 2024 the County will consider adopting ~~adopted a~~ its Climate Action and Adaptation Plan (CAAP), ~~which~~ the successor to the 2015 Climate Action Plan. The CAAP is the County's strategic approach to reducing GHG emissions from sources throughout the unincorporated area. The CAAP identifies County programs and actions to decrease energy use, improve energy efficiency, develop renewable energy, reduce vehicle miles traveled, increase multi-modal travel options, expand green infrastructure, reduce waste, and improve the efficiency of government operations. The CAAP also forecasts the County's GHG emissions and sets reduction targets and strategies. As a document that is integral to implementation of the General Plan, the CAAP ~~was updated in parallel with this~~ and General Plan must remain consistent and compatible.

Page 7-43/Goal COS-14

Increased generation of and reliance on renewable, sustainable, and ~~zero-~~carbon-free energy and reduced energy use.

Page 7-43/Policy COS-P14.1

Implement Climate Action and Adaptation Plan strategies to improve energy efficiency and conservation, promote carbon-free energy sources, and reduce energy-related GHG emissions.

Page 7-43/Policy COS-P14.2

Partner with State and regional ~~and State~~ agencies (e.g., California Public Utilities Commission, California Energy Commission, and ABAG/MTC) to support energy efficiency and renewable energy planning efforts.

Page 7-44/Policy COS-P14.8

Design and construct new County facilities to be ~~zero net~~ zero-net energy to the extent feasible.

Page 7-44/Policy COS-P14.10

Delete Policy COS-P14.10, replacing it with Action COS-A14.10 (covered below). ~~Require replacement and new water heaters and space heating and cooling systems to be electric if the building electric panel has sufficient~~

~~capacity in accordance with Bay Area Air Quality Management District Regulation 9, Rule 4, and Regulation 9, Rule 6.~~

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Pages 7-44 to 7-45/Action COS-A14.1

Amend County Ordinance Code Chapter 88-14 – Oil and Gas Drilling and Production to:

(a) Prohibit new and expanded oil and gas production wells in the following:
    i. Sensitive ecological areas, such as wetlands and habitat for rare, threatened, endangered, or special-status species.
    ii. Areas subject to 100-year flood hazards or sea level rise, as shown in Figures HS-2 and HS-6 through HS-9.
    iii. Areas within 3,200 feet of sensitive receptors or urban land use designations unless project-specific exceptions are granted by the California Department of Conservation, Geologic Energy Management Division.
(b) Restrict oil and gas drilling operations to agricultural zoning districts only.
(c) Require a land use permit for all new and expanded oil and gas wells.
(d) Require a reclamation plan for oil and gas well sites that includes bonding for site clean-up.
(e) Include performance standards related to surface water and groundwater quality and quantity, air quality, odors, noise, and aesthetics.

In parallel, study the feasibility of amending the County Ordinance Code to prohibit development of new oil and gas wells and phase out existing oil and gas well operations.

The following change is recommended in response to a comment letter received on March 11, 2024, from the Building Trades Council.

Page 7-45/Action COS-A14.2

Amend County Ordinance Code Division 88 – Special Land Uses to consolidate Chapters 88-3 and 88-30 governing wind energy conversion systems and solar energy facilities, respectively, into a new renewable energy chapter, with added provisions related to microgrids, community solar projects, and battery energy storage systems. Simultaneously review the boundaries of the Solar Energy Generation Combining District to determine whether opportunities exist for increasing solar energy generation without encroaching upon HCP/NCCP priority acquisition areas, aesthetically sensitive areas, or other lands that are inappropriate for solar energy development.

The following changes and new action are recommended by staff based on new information or to clarify content.

Page 7-45/Action COS-A14.4

~~Consider adopting~~ Adopt new or modified reach codes that exceed the California Building Standards Code, as the State updates the Building Code every three years, to require ~~the~~ use of low~~er~~-carbon intensive energy

sources, ~~to~~ achieve higher ~~feasible~~ levels of energy ~~conservation and efficiency~~ performance, and ~~to~~ achieve lower ~~feasible~~ levels of GHG emissions.

Page 7-45/Action COS-A14.5

Maintain, update, and publicize County ordinances and programs ~~and enforce the County Ordinance Code Title 7 – Building Regulations amendment~~ requiring new residential buildings, hotels, offices, and retail to be ~~all-electric.~~ more energy efficient, with low levels of GHG emissions. Evaluate the feasibility of including other building types as appropriate.

Page 7-46/Action COS-A14.7

Create a detailed County roadmap to convert existing homes and businesses to use low-carbon or ~~zero-~~carbon-free appliances. The roadmap should include steps to support converting buildings to rely on low-carbon or ~~zero-~~carbon-free energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants.

Page 7-46/Goal COS-14

New Action COS-A14.10: Provide educational and technical resources to advance the adoption of heat pump water heater and heat pump space heating in buildings in support of BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6, which will mandate that replacement and new water heaters (2027 and 2031) and space heaters (2029) are zero NOx. *Renumber the subsequent action accordingly.*

New performance measure recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 7-46/Conservation, Open Space, and Working Lands Element Performance Measures

- Increased renewable energy generation and storage.

PUBLIC FACILITIES AND SERVICES ELEMENT

The following change is recommended by staff based on new information or to clarify content.

Page 8-6/Action PFS-A2.6

Pursue public-private partnerships that ~~will~~ improve access to reliable, fast, and affordable internet ~~and make digital resources available~~ in Impacted Communities ~~at affordable prices~~.

The following changes are recommended in response to a comment letter received on April 8, 2024, from the Contra Costa Water District and to clarify content.

Page 8-8/Water and Wastewater

- EBMUD provides treated water to approximately 1.4 million ~~customers~~ people in western Contra Costa County and portions of Central County. EBMUD brings water from the Mokelumne River watershed in

the Sierra Nevada through three 81-mile aqueducts to the East Bay. Water is stored in a network of reservoirs, including Briones, Lafayette, San Pablo, and San Leandro in Contra Costa and Alameda Counties prior to treatment.

- CCWD provides treated and untreated water to approximately 500,000 ~~customers~~ people in ~~the urbanized parts of~~ central and northeastern Contra Costa County~~ that are not serviced by EBMUD, as well as some eastern parts of the county~~. Customers include municipalities, industrial facilities, businesses, and residences. CCWD's water is sourced from the Sacramento-San Joaquin Delta via the 48-mile Contra Costa Canal. CCWD also stores water at Los Vaqueros Reservoir in East County, southwest of Byron, before it is delivered via the Contra Costa Canal.

Properties outside of a water service district rely on individual groundwater wells or private water systems. East Contra Costa Irrigation District and Byron-Bethany Irrigation District also make additional raw water available to properties in East County.

The following new policy is recommended in response to a comment letter received on April 8, 2024, from the Contra Costa Water District.

Page 8-11/Goal PFS-4

New Policy PFS-P4.8: Partner with water service providers to protect water conveyance infrastructure, such as aqueducts and canals, from encroachment and pollution.

The following new policy is recommended in response to a comment letter received on April 8, 2024, from the Delta Protection Commission.

Page 8-11/Goal PFS-4

New Policy PFS-P4.9: Deny applications to establish private wastewater treatment facilities within the Delta Primary Zone that would serve areas outside the Primary Zone.

The following two new actions and other changes are recommended by staff based on new information or to clarify content.

Page 8-11/Goal PFS-4

New Action PFS-A4.1: Establish a standing drought and water shortage task force to facilitate drought and water shortage preparedness for State small water systems and domestic wells within the County's jurisdiction.

Page 8-11/Goal PFS-4

New Action PFS-A4.2: Develop a plan to address potential drought and water shortage risk, including interim and long-term solutions for State small water systems and domestic wells.

Page 8-12/Drainage and Flood Risk

Levees are especially important components of the county's flood control infrastructure. Figure PFS-4 depicts Contra Costa's levee system, most of which is owned and operated by public agencies such as reclamation districts. Similar to dams, levees hold back water and protect lower-lying areas from inundation. In Contra Costa County, many of these areas are at or below sea level. Levees protect critical infrastructure, including ~~EBMUD's~~

water ~~aqueducts~~ intake and conveyance facilities, highways, railroads, natural gas pipelines and storage ~~facilities~~ fields, and electrical transmission lines, ~~and more~~ as well as thousands of acres of private property. ~~Many levees in the Delta region are unstable; they were constructed over 100 years ago on land that is settling due to subsidence and were not built to provide long-term protection. Since 1980, 27 Delta islands have been partially or completely flooded due to levee failure.~~

Strengthening Delta levees is vitally important to safeguarding the lives and livelihoods of county residents and are equally important components of the county's flood control infrastructure. In addition to protecting property from flooding, Delta levees form the backbone of the regional road system, ensure the continued existence of Delta towns and communities, and protect habitat for wildlife, including threatened and endangered species. They form a network of channels that entice boaters to explore the Delta and support a longstanding tradition of hunting and fishing. They also carry fresh water to the pumps that supply water to the farmers of the San Joaquin Valley and residents of the Bay Area and Southern California. Local levee-maintaining agencies have managed the financing and ongoing maintenance, rehabilitation, and repair of Delta levees, and have improved levee integrity, reducing overall Delta flood risk. Much remains to be accomplished, however, as ~~S~~sea level rise, increased storm frequency and intensity, and higher flows from greater rainfall and less snowfall as a result of climate change will continue to threaten levee stability and effectiveness.

The following new policy is recommended in response to a comment letter received on April 8, 2024, from the Delta Protection Commission.

Page 8-14/Policy PFS-P5.4

Support material stockpiling and equipment staging for emergency ~~levee~~ repair~~, especially in the western~~ of Delta levees by:~~.~~

(a) Consulting with reclamation districts to identify storage sites within the Delta Primary Zone.
(b) Denying entitlements to convert identified storage sites to uses that would preclude storage unless the affected reclamation district(s) identify suitable alternative sites or determine sites to be converted are no longer needed.
(c) Denying entitlements for mining/extraction uses that would remove from the Primary Zone those materials deemed essential for levee repair.

Page 8-14/Goal PFS-5

New Policy PFS-P5.5: Evaluate projects involving water impoundment or conveyance to ensure they will not create a risk of seepage onto adjacent properties. Such projects must conclusively demonstrate that unacceptable seepage will not occur. *Renumber the subsequent policies accordingly.*

The following change is recommended in response to a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Page 8-14/Policy PFS-P5.5

~~Encourage new development~~ Require projects with potential to significantly impact natural watercourses to establish or participate in programs that ensure ongoing maintenance of ~~natural~~ the watercourses to maintain their flood carrying capacity and habitat values.

The following change is recommended by staff based on new information or to clarify content.

Page 8-14/Policy PFS-P5.8

~~Encourage~~ Work with developers of properties along transit corridors ~~and~~ or in commercial or mixed-use areas to combine ~~their private~~ required C.3/stormwater treatment facilities with green infrastructure on the adjoining ~~street frontage~~ public right-of-way to enhance the value and sizing of these facilities.

The following changes are recommended in response to a comment letter received on January 4, 2024, from CALFIRE and follow-up CAL FIRE comments received on July 22, 2024.

Page 8-16/Sheriff, Fire, and Emergency Medical Service

Fire protection services in ~~unincorporated~~ Contra Costa County are provided by six fire protection districts and three city fire departments that adequately cover the entire county except for Jersey Island, Bradford Island, Quimby Island, Webb Tract, and the Marathon Refinery near Martinez, as shown in Figure PFS-5. All fire protection agencies within the county have signed mutual-aid agreements to provide assistance to neighboring agencies. The firefighting capabilities of these agencies are further augmented by personnel and equipment from the California Department of Forestry and Fire Protection.

Page 8-19/Goal PFS-6

New Policy PFS-P6.4: Encourage multi-jurisdictional and mutual-aid disaster response training between all agencies providing emergency services within the county.

The following changes are recommended by staff based on new information or to clarify content.

Page 8-21/Parks and Recreation

Whether it is a peaceful nature walk through Carquinez Strait Regional Shoreline, an exciting hike around historic Black Diamond Mines Regional Preserve, fishing at a ~~local~~ nearby reservoir, or a fun day out with family and friends at a ~~neighborhood~~ local park, the county offers something for residents of all ages and abilities.

Page 8-24/Parks and Recreation

- Local parks are indispensable elements of our neighborhoods and communities. They serve as focal points where people can exercise and enjoy leisure time together, and include a variety of amenities such as sports courts, community centers, swimming pools and splash pads, playgrounds, ~~play~~ ballfields, picnic areas, community gardens, and gathering spaces ~~or other amenities~~. Local parks in unincorporated areas are typically owned and maintained by the County or a special district, such as a recreation and park district or community services district. The local park system is often augmented by similar facilities on school campuses. In some areas, private organizations such as homeowners' associations maintain parks for their communities, sometimes allowing public access.
- Trails are essentially linear parks~~. They~~ that provide safe connections between residential neighborhoods, parks, schools, and other destinations.

Page 8-30/Policy PFS-P8.3

~~Increase~~ Expand access to diverse, high-quality parks, green spaces, recreational facilities, trails, and natural environments for residents of Impacted Communities, including by facilitating ~~through~~ multiple transportation

modes. Partner with other agencies and non-governmental organizations to obtain funding, and design and maintain these facilities to offer a safe and comfortable environment for ~~residents~~ users of all ages and abilities.

Page 8-30/Policy PFS-P8.5

~~Whenever possible, r~~Require projects subject to the Park Dedication or Park Impact Fee Ordinances to develop parks and recreation amenities ~~listed~~ identified in, or ~~added~~ proposed for addition to, the County's Park Capital Improvement Plan. Park Impact fees or in-lieu fees should be assessed only when the County determines developer improvements are not feasible.

Page 8-30/Policy PFS-P8.6

Support expanded access to recreation opportunities by working with other agencies to co-locate parks and trails with public facilities, such as schools and utility easements, ~~with~~ prioritizing Impacted Communities ~~prioritized~~.

The following changes are recommended by staff based on new information or to clarify content.

Page 8-33/Schools

Post-secondary public education in Contra Costa County is offered at California State University, East Bay – Concord Campus and three community colleges operated by the Contra Costa Community College District: Contra Costa College in San Pablo; Diablo Valley College in Pleasant Hill, with a satellite campus in San Ramon; and Los Medanos College in Pittsburg.

HEALTH AND SAFETY ELEMENT

The following changes are recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 9-4/Policy HS-P1.2

~~Participate~~ Prioritize participation in emission and exposure reduction, public education, engagement, outreach, and other programs that promote improved air quality, focusing on Impacted Communities.

Page 9-4/Policy HS-P1.4

Require new industrial development to locate significant pollution sources ~~as far away~~ at the maximum distance possible from sensitive receptors ~~as possible~~.

Page 9-4/Policy HS-P1.6

Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to ~~local~~ residents in neighboring communities most impacted. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible or from sources that would improve air quality in an Impacted Community. If the project site is within or adjacent to an Impacted Community, require offsets/mitigation within that community unless determined infeasible by the County.

The following change is recommended by staff based on new information or to clarify content.

Pages 9-4 to 9-5/Policy HS-P1.8

Require new or expanded commercial and industrial projects ~~exceeding~~ resulting in 25,000 square feet or more of gross habitable floor area, such as warehouses and other large enclosed buildings, to be near zero-emission~~s (NZE)~~ operations, including the facilities themselves and the associated fleets. Require all necessary measures, such as the following, to achieve ~~NZE~~ near zero emissions:

(a) Reduce on-site energy consumption and increase on-site energy generation and energy storage.
(b) Provide adequate on-site zero-emission ~~ZE -~~vehicle~~-capable~~ parking for all anticipated truck traffic to prevent idling and off-site queuing.
(c) Provide electrified loading docks with receptacles allowing plug-in of refrigerated trailers.
(d) Use heavy-duty trucks that are model year 2014 or later and expedite a transition to ~~ZE~~ zero-emission trucks by establishing a clear timeline for electrification of trucks as they become commercially available. Ensure contracts with motor carriers include air quality incentives or requirements, such as providing incentives to fleets that meet United States Environmental Protection Agency (EPA) SmartWay standards or requiring use of ~~ZE~~ zero-emission or near-zero-emission ~~NZE~~ trucks.
(e) Use a "clean fleet" of delivery vehicles as they become commercially available, but no later than 2025.
(f) Use ~~ZE~~ zero-emission yard equipment, such as forklifts, pallet trucks and jacks, and stackers.
(g) Implement practices to control and remove fugitive dust and other contaminants from paved areas.

Uses with fewer than five vehicles domiciled on-site are exempt from this policy.

The following new policy is recommended in response to a comment letter received on April 22, 2024, from Holland and Knight on behalf of the Committee for Industrial Safety.

Page 9-5/Goal HS-1

New Policy HS-P1.7: Encourage modernization projects at existing industrial facilities that support State energy and climate goals and achieve all of the following:

(a) Improved community and worker health and safety.
(b) Enhanced environmental protection.
(c) Significant reductions in emissions of criteria pollutants, TACs, and GHGs.
(d) Timely remediation of preexisting and future on- and off-site contamination as a component of the project or through a fully funded work program that restores the site to a condition suitable for commercial or industrial use. *Relocate existing policy HS-P1.7 to HS-P1.9 and renumber the subsequent policies accordingly.*

The following new policy is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 9-5/Goal HS-1

New Policy HS-P1.11: Encourage installation of upgraded HVAC systems at schools, childcare centers, and similar uses located proximate to industrial facilities.

The following change is recommended in response to a comment letter received on February 28, 2024, from the Contra Costa County Hazardous Materials Commission, as well as a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 9-8/Action HS-A2.1

Partner with community members and regulatory agencies such as BAAQMD to conduct data collection and monitoring of pollution exposure, prepare a community-scale plan for reducing and mitigating air pollutant emissions and industrial hazards, such as pipeline risks, accidents, potential water or soil contamination, and impacts to sensitive ecological resources for each Impacted Community, or group of Impacted Communities, as appropriate. Require future projects to demonstrate consistency with those plans.

The following changes are recommended by staff based on new information or to clarify content.

Pages 9-9 to 9-10/Greenhouse Gases

Scientific consensus is that human activity involving the use of fossil fuels has resulted in an ever-accelerating increase in the concentration of heat-trapping gases, known as GHGs, in Earth's atmosphere (termed the "greenhouse effect"). In California, communities are now adapting to the resulting climate change stressors: warmer annual average temperatures, changes in precipitation patterns, sea level rise, and a reduction in snowpack. Recognizing the numerous threats posed by climate change, the State has set ambitious GHG emission reduction targets:

- Reduce statewide GHG emissions by 40 percent from 1990 levels by 2030.
- Reduce statewide GHG emissions by at least 85 percent from 1990 levels by 2045 and be on a path to support statewide carbon neutrality by 2045.

To support State efforts related to climate change and its own GHG emissions reduction goals, the County strives for ~~net~~ carbon neutrality through a ~~gradual~~ conscientious transition to renewable and carbon-free fuels, resource conservation, sustainable practices, and other approaches.

The goals, policies, and actions in this section focus on reducing GHG emissions throughout the county. The County's Climate Action and Adaptation Plan, one of the tools for implementing this General Plan, provides more specific strategies and actions to achieve Contra Costa County's GHG emission reduction goals.

Page 9-10/Policy HS-P3.1

Prioritize implementation of the Contra Costa County Climate Action and Adaptation Plan to reduce GHG emissions from community-wide sources and adapt to changing climate conditions.

Page 9-10/Policy HS-P3.2

Facilitate carbon-neutral development projects and communities that support a circular economy, ~~net~~ zero-emission modes of transportation, reliable and renewable energy resources, energy-efficient buildings, zero waste, water efficiency and conservation, green infrastructure, soil conservation, and a system of natural and working lands that support natural carbon sequestration and climate resilience.

Page 9-10/Policy HS-P3.3

Require new development projects using the Contra Costa County Climate Action and Adaptation Plan to streamline their environmental review of GHG emissions, as permitted by CEQA Guidelines Section 15183.5, to demonstrate consistency with the Climate Action and Adaptation Plan and incorporate applicable GHG reduction and climate change adaptation measures.

Pages 9-10 to 9-11/Action HS-A3.1

Update the Contra Costa County Climate Action and Adaptation Plan as needed to maintain consistency with CEQA Guidelines Section 15183.5(b), other State and regional guidance, and best practices. Future updates must include:

(a) Inventories of GHG emissions in the unincorporated county.
(b) GHG reduction targets for 2030 and 2045 at a minimum.
(c) Forecasts of GHG emissions for the unincorporated county consistent with growth assumptions of this General Plan.
(d) GHG reduction ~~measures and~~ strategies with quantifiable outcomes.
(e) Climate adaptation and resilience strategies to ensure the county's communities can respond to changing climate conditions.
(f) An implementation and monitoring program to track the County's progress toward achievement of the GHG reduction targets.
(g) A community and stakeholder engagement program for Climate Action and Adaptation Plan preparation and implementation.

Page 9-11/Policy HS-P4.1

Move Policy HS-P4.1 to instead be Policy LU-P2.10 and edit as follows: When considering development proposals and land use changes, treat susceptibility to hazards and threats to health and ~~human life~~ safety as primary considerations. *Renumber the subsequent policies accordingly.*

Page 9-13/Policy HS-P4.6

Move Policy HS-P4.6 to instead be Policy LU-P5.6: In hazard-prone areas, such as slopes exceeding 15 percent, mapped floodplains, High and Very High Fire Hazard Severity Zones, and Alquist-Priolo Earthquake Fault Zones, allow for decreased residential density, including below the minimum density requirement for the applicable land use designation, as the severity of risk increases.

Page 9-13/Goal HS-4

See the Land Use Element for additional policies and actions related to development in hazard areas.

Page 9-21/Goal HS-5

See the Public Facilities and Services Element for policies and actions related to flood hazards and sea level rise; the Conservation, Open Space, and Working Lands Element for policies and actions related to floodplain management; the Land Use Element for additional policies and actions related to development in hazard areas; and the Sea Level Rise section of this Element for policies and actions related to adaptive management of rising tides.

Page 9-26/Policy HS-P6.3

Delete Policy HS-P6.3, merging it with Policy HS-P9.5 (covered below). ~~Require new industrial development in areas subject to sea level rise, emergent groundwater flooding, or tsunami inundation to provide plans for prevention and remediation of any contaminant releases induced by these hazards, along with bonds that guarantee remediation plans are implemented. Remediation should meet standards that protect people and the environment in the event of future permanent inundation.~~ *Renumber the subsequent policies.*

Page 9-27/Action HS-A6.3

Coordinate with BCDC, Delta Stewardship Council, Caltrans, cities, and other affected agencies, organizations, and stakeholders to prepare and adopt a community-driven countywide sea level rise adaptation and resilience plan addressing increased flooding and sea level rise that provides unique adaptation options for the entire county shoreline and identifies funding mechanisms for implementation. Use Figures HS-6 through HS-9 or the best-available climate science data to identify where sea level rise hazards are likely to occur and lead efforts to:

(a) Maximize awareness and disclosure to property owners and the public.
(b) Assess and address impacts to future development, including promoting the Adaptation Pathways model to respond to uncertainty and evolving conditions.
(c) Plan for resiliency projects and adaptation measures to protect existing development and infrastructure, emphasizing nature-based solutions.
(d) Partner with the Adapting to Rising Tides Program, ~~Delta Stewardship Council,~~ property owners, and community-based organizations to conduct a study of opportunities and costs for shifting development away from areas at risk from inundation.
(e) Inform governance, funding, and financing decisions about short-term and long-term resiliency and adaptation projects.
(f) Ensure that the disproportionate impacts on vulnerable populations and Impacted Communities are addressed.

Page 9-27/Action HS-A6.4

Delete Action HS-A6.4, merging it with Action HS-A6.3 (covered above). ~~Coordinate with the BCDC, Delta Stewardship Council, cities, and other involved agencies and stakeholders to create a joint powers authority or public private partnership to develop, fund, and implement relevant, regionally coordinated sea level rise adaptation measures that leverage the results of Adapting to Rising Tides, Bay Adapt, Delta Adapts, and other studies and programs.~~ *Renumber the subsequent actions accordingly.*

Page 9-28/Wildfire Hazards

The California Department of Forestry and Fire Protection (CAL FIRE) designates lands into responsibility areas based on who is financially responsible for fire protection services. Local Responsibility Areas (LRAs) include areas where local fire protection districts and fire departments are charged with fire protection. State Responsibility Areas (SRAs) include unincorporated areas and State lands where the State/CAL FIRE has financial responsibility for fire protection. CAL FIRE can also provide fire protection services by contract to cities and counties. ~~Contra Costa County has a mutual-aid agreement with CAL FIRE and several~~ Six fire protection districts and three city fire departments provide fire prevention and protection services ~~in the unincorporated~~ that adequately cover the entire county~~,~~ except for Jersey Island, Bradford Island, Quimby Island, Webb Tract, and the Marathon Refinery near Martinez. ~~with t~~The Contra Costa County Fire Protection District ~~covering~~ covers 553 square miles and is by far the largest ~~area~~ local fire protection agency serving the county (see Figure PFS-5 in the Public Facilities and Services Element for a map of fire district service areas). All fire protection agencies within the county have signed mutual-aid agreements to provide assistance to neighboring agencies.

Within the responsibility areas, CAL FIRE designates ~~lands within~~ Fire Hazard Severity Zones. CAL FIRE designates lands within SRAs as Moderate, High, and Very High Fire Hazard Severity Zones; in LRAs, at the time the General Plan was adopted, CAL FIRE only designates land within Very High Fire Hazard Severity Zones (with city and county approvals). CAL FIRE is expected to designate Moderate and High Fire Hazard Severity Zones in the LRAs in future updates to the Fire Hazard Severity Zone Maps. As shown in Figure HS-10, Very High Fire Hazard Severity Zones are mainly in the interior of Contra Costa County, in areas with dense forest, brush, or grassland vegetation and steep terrain that is difficult to access. Wildfires may start in natural areas but can easily spread to developed areas bordering wildlands; this area is called the Wildland-Urban Interface (WUI) and is mapped in Figure HS-11.

Page 9-31/Policy HS-P7.1

Deny ~~applications for new residential subdivisions~~ entitlements for projects creating additional residential units (i.e., units not allowed by-right) in Very High Fire Hazard Severity Zones in the LRA or SRA. ~~and~~ ~~d~~Discourage ~~residential subdivisions~~ such projects in High Fire Hazard Severity Zones in the SRA and discourage them in the LRA unless adequate fire protection services are provided.

Page 9-31/Policy HS-P7.2

Require any construction of buildings or infrastructure within a High or Very High Fire Hazard Severity Zone in the LRA or SRA ~~or in the WUI~~, as shown on Figure~~s~~ HS-10 ~~and HS-11~~, or in areas that may be designated as the WUI to incorporate fire-safe design features that meet the State Fire Safe Regulations and Fire Hazard Reduction Around Buildings and Structures Regulation for road ingress and egress, fire equipment access, and adequate water supply.

Page 9-33/Policy HS-P7.3

Require new development within a Very High Fire Hazard Severity Zone in the LRA or SRA (as shown on Figure HS-10) or in areas that may be designated as the WUI ~~(as shown on Figure HS-11)~~, ~~or~~ and on a residential parcel with evacuation constraints (as shown on Figure HS-21), to prepare a traffic control plan to ensure that construction equipment or activities do not block roadways or interfere with evacuation plans during the construction period. Work with the appropriate fire protection district to review and approve the traffic control plan prior to issuance of building permits.

The following changes and new policy are recommended in response to a comment letter received on January 4, 2024, from CALFIRE and to clarify content.

Page 9-33/Policy HS-P7.5

Work with property owners ~~within mapped~~ in High or Very High Fire Hazard Severity Zones in the LRA or SRA, or in areas that may be designated as the WUI, ~~areas~~ to establish and maintain fire breaks and defensible space, vegetation clearance, emergency access roads, water supply and fire flow, signage, and firefighting infrastructure that meet~~s~~ ~~current~~ adopted State, County, or community fire safety standards.

Page 9-33/Goal HS-7

New Policy HS-P7.6: Coordinate with Caltrans and other agencies, local fire safe councils, and community organizations to ensure long-term maintenance of fire hazard reduction projects, including community fire breaks and public and private road clearance. *Renumber the subsequent policies accordingly.*

The following changes, new action, and new policy are recommended by staff based on new information or to clarify content.

Page 9-34/Action HS-A7.1

~~Collaborate~~ Work with local fire safe councils, CAL FIRE Santa Clara Unit, and other fire protection agencies to update and implement the *Community Wildfire Protection Plan* for Contra Costa County.

Page 9-34/Goal HS-7

New Action HS-A7.4: Upon future updates to LRA mapping, as promulgated by CAL FIRE, identify and as necessary adopt a WUI zone. *Renumber the subsequent actions accordingly.*

Page 9-34/Goal HS-7

See the Public Facilities and Services Element for policies and actions related to fire and emergency services and the Land Use Element for additional policies and actions related to development in hazard areas.

Page 9-37/Goal HS-8

New Policy HS-P8.5: Provide shade trees or shade structures at parks, plazas, and other outdoor spaces.

The following change is recommended in response to a comment letter received on February 28, 2024, from the Contra Costa County Hazardous Materials Commission.

Page 9-42/Policy HS-P9.2

Ensure CCHMP staff have an opportunity to review and comment on all ~~development~~ entitlement applications for projects involving use of hazardous materials or hazardous waste regardless of whether a land use permit is required pursuant to County Ordinance Code Chapter 84-63 – Land Use Permits for Development Projects Involving Hazardous Waste or Hazardous Material.

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 9-42/Policy HS-P9.5

~~Require facilities that manage hazardous materials or hazardous waste in stationary or fixed storage tanks and that are in areas at risk of inundation from sea-level rise and flooding to conduct sea-level rise studies to address the risk of hazardous materials release from rising water levels, including rising groundwater. Require these facilities to incorporate best management practices to reduce the risk of release.~~ Require industrial projects involving use, management, or generation of hazardous materials or waste, particularly those utilizing stationary or fixed storage tanks, in areas at risk from sea level rise, surface or emergent groundwater flooding, or tsunami to incorporate best management practices to reduce risk and prepare plans for prevention and remediation of hazardous materials/waste releases resulting from inundation. Remediation plans must meet regulatory standards for protection of people and the environment in the event of permanent inundation and include financial assurances to guarantee implementation.

The following changes are recommended in response to a comment letter received on February 28, 2024, from the Contra Costa County Hazardous Materials Commission.

Page 9-42/Policy HS-P9.7

Prioritize implementation of ~~safety~~ projects that reduce the risk of hazardous materials transportation accidents along hazardous material transportation corridors in Impacted Communities ~~to address high-risk scenarios~~.

Page 9-43/Policy HS-P9.8

Require applicants for projects ~~in Impacted Communities~~ that involve hazardous materials or hazardous waste to provide clear information in plain language about potential hazards their projects pose to nearby ~~residents~~ communities at the beginning of the review process. Review and verify this information, make it available to residents, and encourage project applicants to host at least one community meeting to discuss potential hazards.

The following change is recommended in response to a joint comment letter received on March 25, 2024, from 350 Contra Costa Action, Sunflower Alliance, Grid Alternatives, Bike East Bay, Contra Costa County Climate Leaders, Greenbelt Alliance, Citizens Climate Lobby, 1000 Grandmothers for Future Generations, Interfaith Climate Action Network, Center for Human Development and East County Community Leaders Network, Climate Reality Bay Area, and Sierra Club.

Page 9-43/Policy HS-P9.9

~~Discourage~~ Deny entitlements for construction of new large-scale facilities that treat, store, or dispose of hazardous waste from off-site sources and negatively impact Impacted Communities.

The following changes are recommended by staff based on new information or to clarify content.

Page 9-45/Policy HS-P10.3

Require new, modified, or expanded industrial uses involving hazardous materials or wastes to provide sufficient funds, in the form of a ~~cash deposit, surety bond, or other~~ financial instrument acceptable to the County, to guarantee site remediation, including removal of facilities, equipment, and structures, and ensure community safety and site reusability.

The following changes are recommended by staff based on new information or to clarify content.

Page 9-50/Policy HS-P11.1

For projects in ~~areas of known or suspected seismic or other geologic hazards, such as~~ Alquist-Priolo Earthquake Fault Zones or Seismic Hazard Zones (areas considered to be at risk of earthquake triggered ~~liquefiable soils,~~ liquefaction or landslide~~s~~ displacement)~~,~~ delineated by the California Geological Survey, ~~and~~ as well as any other areas of steep slopes~~,~~ or areas of suspected ground failure known to the County, require submittal of ~~a~~ appropriately detailed engineering geologic or geotechnical ~~report~~ investigations. ~~and ensure effective mitigation measures are incorporated into the project design~~ The reports must be compliant with State Guidelines and include:

(a) A map showing the outline of any geologic or potentially hazardous soil condition and areas subject to inundation.
(b) Recommended means of mitigation of any adverse condition representing a hazard to improvements.
(c) Recommendations to assure proper implementation of mitigation measures during construction.

Page 9-50/Policy HS-P11.3

Discourage construction of critical facilities and buildings intended for human occupancy in Alquist-Priolo Fault Zones~~.~~ and encourage earthquake retrofitting ~~W~~where such development already exists~~, encourage earthquake retrofitting~~. If there is no feasible alternative to ~~developing inside the Fault Zone~~ siting critical facilities and buildings intended for human occupancy in the Fault Zones, buildings must be sited, designed, and constructed to withstand the anticipated seismic stresses.

Page 9-50/Policy HS-P11.4

Refer geotechnical and ~~soils~~ engineering geologic reports to the County Peer Review Geologist for ~~review and approval whenever necessary~~ evaluation of their adequacy, as required by State Law for projects in State-designated hazard zones. Reports deemed inadequate will require further engineering analysis and revision until the findings/opinions of the Peer Review Geologist have been addressed to the County's satisfaction.

The following change is recommended in response to a comment letter received on January 30, 2024, from Fennemore Wendel law firm and to clarify content.

Page 9-50/Policy HS-P11.5

Discourage development on slopes exceeding 15 percent, and prohibit development on slopes ~~exceeding~~ of 26~~5~~ percent or greater, to avoid slope instability, ~~extensive~~ unnecessary grading, and ~~unnecessary~~ extensive land

disturbance and facilitate long-term control of erosion and sedimentation. Exceptions may be considered for infrastructure projects and development on existing legal lots where no other feasible building sites exist.

Page 9-50/Policy HS-P11.6

New Policy: Require projects to form a Geologic Hazard Abatement District (GHAD) or join an existing GHAD whenever necessary to adequately mitigate anticipated or residual geologic hazards. *Renumber the subsequent actions accordingly*

The following changes are recommended by staff based on new information or to clarify content.

Page 9-50/Policy HS-P11.6

Do not accept public road dedications or allow construction of private roads on unstable hillsides or in landslide hazard areas unless potential hazards have been mitigated to the County's satisfaction. All private roads constructed in such areas must be fully compliant with private road standards adopted by the County and fire protection district with jurisdiction.

Page 9-50/Goal HS-11

See the Land Use Element for additional policies and actions related to development in hazard areas.

The following changes are recommended in response to a comment letter received on January 4, 2024, from CALFIRE and follow-up CAL FIRE comments received on July 22, 2024.

Page 9-50/Preparedness, Response, and Recovery

Contra Costa County is committed to preservation of life, property, and the environment during emergencies. ~~The County implements its Local Hazard Mitigation Plan, which assesses risks from natural and human-caused hazards, including risks to people and facilities, and identifies mitigation actions to reduce or eliminate hazard risks. The current Local Hazard Mitigation Plan, certified by FEMA, is incorporated into this Health and Safety Element by reference, as permitted by California Government Code Section 65302.6.~~ The County prepared the most recent Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP) in accordance with the federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency's (FEMA) LHMP policy guidance. The County collaborated with local agencies, including 16 incorporated cities and towns and 25 special districts in the Contra Costa County planning area, to prepare the LHMP. Contra Costa County's LHMP process is one where hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions are developed to reduce or eliminate hazard risk. Implementation of these mitigation actions, which include short- and long-term strategies, involves planning, policy changes, programs, projects, and other activities. Local governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance.

The LHMP and Health and Safety Element address similar issues, but the Health and Safety Element provides a higher-level framework and set of policies that pertain to the long-term safety of the county, while the LHMP focuses on more specific mitigation actions to enable jurisdictions to better protect lives, property, and natural systems. The LHMP, certified by FEMA, is incorporated into the Health and Safety Element by reference, as permitted by California Government Code Section 65302.6, and can be accessed at www.contracosta.ca.gov/4732/General-Plan.

The following changes are recommended by staff based on new information or to clarify content.

Page 9-51/Policy HS-P12.1

Continue implementing the *Contra Costa County Local Hazard Mitigation Plan*, which was adopted by the Board of Supervisors and certified by FEMA and is incorporated by reference into this Health and Safety Element.

Page 9-58/Table HS-3

Replace Table HS-3 with the following table, and change the name to "Maximum Allowable Noise Exposure by ~~Land~~ Use"

Land Use Type	NOISE LEVEL, DNL (DB)						
	0-55	56-60	61-65	66-70	71-75	75-80	>81
Residential [a, b]							
Urban Residential Infill							
Schools, Libraries, Hospitals, Religious Institutions, Extended Care Facilities							
Hotels, Motels							
Auditoriums, Concert Halls, Amphitheaters							
Playgrounds, Local Parks							
Sports Arenas, Outdoor Spectator Sports							
Golf Courses, Riding Stables, Water Recreation (e.g., water parks), Cemeteries							
Office, Commercial, and Professional Buildings (i.e., uses that are generally indoors and not noise sensitive)							
Industrial, Manufacturing, Mining, Utilities, Agriculture							

	Normally Acceptable. Specified land use is satisfactory based on the assumption that any buildings involved are of normal, conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable. New construction or development should be undertaken only after a detailed analysis of the noise-reduction requirements is made and needed noise insulation features have been included in the design.
	Unacceptable. New construction or development should not be undertaken.

[a] A DNL of 60 dB or less may not be achievable in all residential areas due to environmental, economic, or aesthetic constraints. One example is small balconies associated with multiple-family housing. In this case, second- and third-story balconies may be difficult to control to the standard. A common outdoor use area that meets the goal can be provided as an alternative.

[b] If the primary noise source is passing trains, the standard for outdoor noise levels in residential areas is a DNL of 70 dB.

Page 9-60/Policy HS-P14.7

Condition entitlements to limit noise-generating construction activities to the following:

(a) Weekdays and non-holidays unless site-specific conditions warrant exceptions.
(b) Within 1,000 feet of noise-sensitive uses: 7:30~~8:00~~ a.m. to 5:00 p.m.
(c) Over 1,000 feet from noise-sensitive uses: 7:00 a.m. to 6:00 p.m.

GLOSSARY

Red-lined staff-recommended changes to the glossary are presented in Attachment 1. The majority of these recommended changes are based on new information or to clarify content. The addition of "natural watercourse" to the glossary is based on a comment letter received on April 7, 2024, from the Walnut Creek Watershed Council and a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

APPENDIX A: SUMMARY OF POLICIES AND ACTIONS BY THEME

Appendix A presents a summary of policies and actions by theme. The changes to policies and actions throughout the General Plan will also be updated in Appendix A once those changes are approved.

APPENDIX B: HEALTH AND SAFETY ELEMENT TECHNICAL APPENDIX

The following changes are recommended in response to a comment letter received on January 4, 2024, from CALFIRE.

Page B-2/Contra Costa County Local Hazard Mitigation Plan

~~In collaboration with local agencies and special districts, Contra Costa County prepared the most recent LHMP in accordance with the federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency's (FEMA) LHMP guidance. Contra Costa County's LHMP is a plan that assesses hazard vulnerabilities from natural and human-caused hazards, including risk to people and facilities, and identifies mitigation actions to reduce or eliminate hazard risks in the county, including in incorporated cities. Local governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance.~~

~~The LHMP and Health and Safety Element address similar issues, but the Health and Safety Element provides a higher-level framework and set of policies that pertain to the safety of the county, while the LHMP focuses on more specific mitigation actions, which are often short term, to enable jurisdictions to better protect lives, property, and natural systems. The current LHMP, certified by FEMA, is incorporated into the Health and Safety Element by reference, as permitted by California Government Code Section 65302.6.~~

The County prepared the most recent Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP) in accordance with the federal Disaster Mitigation Act of 2000 and the Federal Emergency Management Agency's (FEMA) LHMP policy guidance. The County collaborated with local agencies, including 16 incorporated cities and towns and 25 special districts in the Contra Costa County planning area, to prepare the LHMP. Contra Costa County's LHMP process is one where hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions are developed to reduce or eliminate hazard risk. Implementation of these mitigation actions, which include short- and long-term strategies, involves planning, policy changes, programs, projects, and other activities. Local governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance.

The LHMP and Health and Safety Element address similar issues, but the Health and Safety Element provides a higher-level framework and set of policies that pertain to the long-term safety of the county, while the LHMP focuses on more specific mitigation actions to enable jurisdictions to better protect lives, property, and natural systems. The LHMP, certified by FEMA, is incorporated into the Health and Safety Element by reference, as permitted by California Government Code Section 65302.6, and can be accessed at www.contracosta.ca.gov/4732/General-Plan.

Page B-13/Fire Protection

Fire protection service is addressed in the Public Facilities and Services Element. ~~Fire protection in unincorporated Contra Costa County is provided by six individual fire protection districts: the Contra Costa Fire Protection District, San Ramon Valley Fire Protection District, Moraga-Orinda Fire Protection District, Rodeo-Hercules Fire Protection District, Crockett-Carquinez Fire Protection District, and Kensington Fire Protection District. The incorporated cities of El Cerrito, Pinole, and Richmond provide fire protection services within their boundaries.~~ Six fire protection districts (the Contra Costa Fire Protection District, San Ramon Valley Fire Protection District, Moraga-Orinda Fire Protection District, Rodeo-Hercules Fire Protection District, Crockett-Carquinez Fire Protection District, and Kensington Fire Protection District) and three city fire departments provide fire prevention and protection services that adequately cover the entire county except for Jersey Island, Bradford Island, Quimby Island, Webb Tract, and the Marathon Refinery near Martinez. Other service providers include CAL FIRE and the Federal Fire Department Concord-US Army.

MAP FIGURES

Staff recommends that the map figures shown in Appendix 2 replace the map figures presented in the October 17, 2023, draft. The majority of these recommended figure edits are based on new information or to clarify content. The recommended update to Figure COS-6 (formerly Figure COS-5), showing watersheds, waterbodies, creeks, and rivers, is based on a comment letter received on April 7, 2024, from the Walnut Creek Watershed Council and a comment letter received on April 8, 2024, from Friends of Pleasant Hill Creeks.

Staff-Recommended Changes to the Climate Action and Adaptation Plan

In response to comments submitted by community members and other stakeholders and regulatory changes since the release of the Public Review Draft Climate Action Plan 2024 Update, County staff have revised the Climate Action Plan (now called the Climate Action and Adaptation Plan, or CAAP [a suggestion of a public commenter]) to address this input and information. The red-lined CAAP (Public Review Draft #2) is included as Attachment 3 for reference. Staff revised text, figures, and tables throughout the CAAP, including its appendices.

The most significant change is that staff have revised Built Environment Strategies BE-1 and BE-2. These strategies previously reflected continued implementation of the County's all-electric reach code, which was suspended in February 2024. With this revision, these strategies now anticipate a reach code that would allow new buildings to be either all-electric or mixed fuel as long as they achieve a high level of energy performance, consistent with the Board of Supervisors' direction to County staff on June 4, 2024. Staff have changed the language of these strategies and their action items to reflect this new approach, and have revised the GHG reduction projections from these strategies to anticipate this new reach code coming into effect in January 2025. Staff have inserted language explaining the changes to the reach code and added a new action to reflect the benefits from the all-electric reach code while it was in effect.

Furthermore, staff have revised the GHG reduction projections for zero-emission vehicles and equipment to better reflect State projections, consistent with modeling in the 2022 Scoping Plan. These changes are reflected in the assumptions disclosed in Appendix B of the CAAP. Staff have also added or revised actions to ensure that CAAP implementation better supports these projections, and made other revisions to the implementing actions to reflect community comments. Such actions include additional education and resources to support implementation of the Bay Area Air Quality Management District's requirement that water heaters and space-heaters be zero-NOx, improving coordinating with local and regional agencies to implement Complete Streets, prioritizing micromobility strategies for low-income residents, supporting reduced transit fares for some residents, continuing the County's requirements for increased electric vehicle charging infrastructure in new developments, and clarifying the County's role in commenting to permitting agencies on ways to reduce the impact of large industrial facilities on nearby communities. As appropriate, staff have also recommended revisions to the policy and action language in the Draft General Plan to reflect these changes to the CAAP strategies, as shown in the previous section.

Beyond the strategy quantification and language, staff edited existing text and added additional language to provide additional information, clarify or correct information, and correct minor grammar error. Staff added text to explain why large stationary sources have been excluded from the CAAP. As part of this work, staff have made revisions to how direct access electricity use from large stationary sources is reflected in the CAAP, ensuring that this usage is identified as an informational item separate from other nonresidential electricity use. Staff have added several definitions to the glossary and revised others to provide greater clarification. Similarly, staff have added clarifying language to the CAAP text and tables explaining particular terms and the methods used in some of the calculations, including clarifying language about carbon sequestration and why emissions from strategies that only decrease electricity use or increase renewable energy generation appear to have no GHG reduction benefit in 2045. Staff have revised descriptions of how the CAAP overlaps with and is distinct from the General Plan. Staff have also added a new appendix to the CAAP, Appendix D, which discusses the progress that the County has made in implementing the strategies in the 2015 Climate Action Plan.

These changes to the CAAP help to ensure that it remains feasible, technically accurate, and consistent with community goals and priorities. The CAAP continues to put the County on a path to achieving its 2030 and 2045 GHG reduction goals, maintaining the County's role as a leader on climate action issues and effectively integrating climate action planning with other long-term planning efforts.

ATTACHMENT 1:

REVISED GENERAL PLAN GLOSSARY

11 GLOSSARY

This glossary defines acronyms and abbreviations used in the General Plan and explains the technical terms used. Definitions come from several sources, including the California Office of Planning and Research; the California Institute for Local Government; and the American Planning Association Glossary of Zoning, Development, and Planning Terms.

ACRONYMS AND ABBREVIATIONS

~~AAA:~~	~~Area Agency on Aging (Contra Costa County)~~
~~AARP:~~	~~American Association of Retired Persons~~
AB:	Assembly Bill
ABAG:	Association of Bay Area Governments
ADA:	Americans with Disabilities Act
ALUC:	Airport Land Use Commission (Contra Costa County)
ALUCP:	Airport Land Use Compatibility Plan (Contra Costa County)
~~AQI:~~	~~Air Quality Index~~
ARPD:	Ambrose Recreation and Park District
BAAQMD:	Bay Area Air Quality Management District
BART:	Bay Area Rapid Transit
BBID:	Byron-Bethany Irrigation District
BIPOC:	Black, Indigenous, and People of Color
BOS:	Board of Supervisors
BSD:	Byron Sanitary District
BUSD:	Byron Union School District
CAL FIRE:	California Department of Forestry and Fire Protection
CAL OES:	California Governor's Office of Emergency Services
CAO:	County Administrator's Office
CAAP:	Climate Action and Adaptation Plan
CARB:	California Air Resources Board
CARE:	Community Air Risk Evaluation
CCCCD:	Contra Costa Community College District
CCCOE:	Contra Costa County Office of Education
CCCSD:	Central Contra Costa Sanitary District
CCCSO:	Contra Costa County Sheriff's Office
~~CCCWA:~~	~~Contra Costa County Water Agency~~
CCCFCWCD:	Contra Costa County Flood Control and Water Conservation District
CCCFPD:	Contra Costa County Fire Protection District
CCFPD:	Crockett-Carquinez Fire Protection District
CCHS:	Contra Costa Health Services Department
CC~~HS~~HMP:	Contra Costa Health Services Hazardous Materials Programs

~~CCRCD:~~	~~Contra Costa Resource Conservation District~~
CCWD:	Contra Costa Water District
CDPR:	California Department of Parks and Recreation
CEQA:	California Environmental Quality Act
CERT:	Community Emergency Response Team
~~CHP:~~	~~California Highway Patrol~~
CIP:	Capital Improvement Program
CNEL:	Community Noise Equivalent Level
~~CoC:~~	~~Continuum of Care~~
~~CRCWD:~~	~~Castle Rock County Water District~~
CSA:	County Service Area ~~or Community-Supported Agriculture~~
CSD:	Community Services District or Canyon School District
CUPA:	Certified Unified Program Agency
dB:	Decibel
dBA:	A-Weighted Sound Level
DCD:	Department of Conservation and Development (Contra Costa County)
DNL:	Day/Night Average Sound Level
DOC:	Department of Conservation (State)
DPC:	Delta Protection Commission
DTSC:	Department of Toxic Substances Control (State)
du:	Dwelling Unit
du/acre:	Dwelling Units Per Acre
DWD:	Diablo Water District
DWR:	Department of Water Resources (State)
EBMUD:	East Bay Municipal Utility District
EBRPD:	East Bay Regional Park District
ECCID:	East Contra Costa Irrigation District
EIR:	Environmental Impact Report
EMS:	Emergency Medical Service
EOC:	Emergency Operations Center (Contra Costa County)
EOP:	Emergency Operations Plan (Contra Costa County)
EPA:	Environmental Protection Agency (US)
EV:	Electric Vehicle
FAR:	Floor Area Ratio
FEMA:	Federal Emergency Management Agency
FHSZ:	Fire Hazard Severity Zone
~~FIRM:~~	~~Flood Insurance Rate Map~~
FMMP:	Farmland Mapping and Monitoring Program
GHG:	Greenhouse Gas
GPA:	General Plan Amendment
GSA:	Groundwater Sustainability Agency
GSP:	Groundwater Sustainability Plan
HCP/NCCP:	East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan
HHW:	Household Hazardous Waste
HOV:	High-Occupancy Vehicle
HUB Zone:	Historically Underutilized Business Zone

I-:	Interstate
IPM:	Integrated Pest Management
ISD:	Ironhouse Sanitary District
JSUSD:	John Swett Unified School District
KESD:	Knightsen Elementary School District
KFPD:	Kensington Fire Protection District
LAFCO:	Local Agency Formation Commission
LEED:	Leadership in Energy and Environmental Design
Leq:	Equivalent Sound Level
LHMP	Local Hazard Mitigation Plan
LOS:	Level of Service
LUHSD:	Liberty Union High School District
MAC:	Municipal Advisory Council
MDUSD:	Mt. Diablo Unified School District
MOA:	Military Operations Area
MOFD:	Moraga-Orinda Fire District
MOTCO:	Military Ocean Terminal Concord
MOU:	Memorandum of Understanding
MRA:	Mineral Resource Area
MTC:	Metropolitan Transportation Commission
MVSD:	Mt. View Sanitary District
NAHC:	Native American Heritage Commission
~~NFIP:~~	~~National Flood Insurance Program~~
NHA:	National Heritage Area
NPDES:	National Pollutant Discharge Elimination System
~~NZE:~~	~~Near-Zero Emissions~~
OES:	Office of Emergency Services (Contra Costa County)
~~OSHA:~~	~~Occupational Safety and Health Administration (US)~~

PCA:	Priority Conservation Area
PDA:	Priority Development Area
PPA:	Priority Production Area
PG&E:	Pacific Gas and Electric Company
~~CC~~RCD:	~~Contra Costa~~ Resource Conservation District (Contra Costa County)
RHNA:	Regional Housing Needs Allocation
RHFPD:	Rodeo-Hercules Fire Protection District
RSD:	Rodeo Sanitary District
RTP:	Regional Transportation Plan
RWQCB:	Regional Water Quality Control Board
SB:	Senate Bill
SMARA:	Surface Mining and Reclamation Act (State)
SMGB:	State Mining and Geology Board
SOI:	Sphere of Influence
SR-:	State Route
SRVFPD:	San Ramon Valley Fire Protection District
SSD:	Stege Sanitary District
SWRCB:	State Water Resources Control Board
TAC:	Toxic Air Contaminant
TDM:	Transportation Demand Management
ULL:	Urban Limit Line
USDA:	United States Department of Agriculture
USFWS:	United States Fish and Wildlife Service
USGS:	United States Geological Survey
VMT:	Vehicle Miles Traveled
WCCUSD:	West Contra Costa Unified School District
WCWD:	West County Wastewater District
ZEV:	Zero-Emissions Vehicle

TERMINOLOGY

~~**Acceptable Risk.** A hazard that is deemed a tolerable exposure to danger given the expected benefits. The level of loss, injury, or destruction below which no specific action by local government is deemed necessary other than making the risk known. Different levels of acceptable risk may be assigned according to the potential danger and the critical nature of the threatened structure. The levels may range from "near zero" for nuclear plants and natural gas transmission lines to "moderate" for farm structures and low-intensity warehouse uses.~~

Accessory Dwelling Unit (ADU). A dwelling unit that provides complete independent living facilities and is located on the same lot as, and is subordinate to, a primary residence. ADUs include permanent provisions for living, sleeping, cooking and sanitation.

Acreage, Gross. The land area of a development site that exists prior to any dedications for public use, health, and safety purposes.

Acreage, Net. The portion of a development site that ~~can actually be built upon, which is the land area~~ remain~~s~~ing after dedication of ~~ultimate~~land for public facilities, parks and open space, rights-of-way, and ~~utility~~ easements, ~~for:~~

~~Exterior boundary streets~~

~~Floodways~~

~~Public parks and other open space developed to meet minimum standards required by County ordinance~~

Action. A measure, procedure, or ~~technique~~activity that helps the County achieve a specific goal. An action is something concrete that can and will be completed. (see "Goal")

Active Transportation Plan. A plan to enhance safety and mode share for active transportation, which comprises any self-propelled, human-powered travel, such as walking and bicycling.

Adaptation. Making changes in response to current or anticipated future conditions (such as the increased frequency and intensity of climate-related hazards), usually to reduce harm and take advantage of new opportunities.

Adapting to Rising Tides. A program of the San Francisco Bay Conservation and Development Commission to "provide staff support, guidance, tools, and information to help agencies and organizations understand, communicate, and begin to resolve complex climate change issues."[1]

Adaptive Capacity. The "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."[2]

Adverse Impact. A negative consequence for the physical, social, or economic environment resulting from an action or project.

Agricultural Tourism. A form of ~~T~~tourism, also known as agritourism, that involves guests visiting working farms and ranches to observe, and ~~learn about~~sometimes participate in, farming practices and purchase locally grown products.

Air Quality Index. An index used by the US Environmental Protection Agency to report daily air quality for five major air pollutants regulated by the Clean Air Act: ground-level ozone, particulate matter, carbon monoxide, ~~sulfer~~sulfur dioxide, and nitrogen dioxide.

Archaeological Resource. Material evidence of past human activity found below the surface of ground or water, portions of which may be visible above the surface.

Asset. A valued feature of a community ~~that may be harmed by climate change~~. Assets may include buildings and institutions, infrastructure, community services, ecosystems, and economic drivers.

Benefit Assessment District. A financing mechanism established to provide public infrastructure to a defined area. Property owners within the district (i.e., the area that receives the benefit) pay an assessment to cover the cost of constructing and/or maintaining the public facility.

Bike Lane (Class II facility). A corridor ~~expressly reserved~~ for exclusive use by bicycles and micromobility devices, existing on a street or roadway in addition to vehicular lanes ~~for~~ used by ~~motorized vehicles~~automobiles. Bicycle lanes are identified by signage and pavement markings.

[1] Adapting to Rising Tides, "About Us," https://www.adaptingtorisingtides.org/about/, accessed June 15, 2023.

[2] Intergovernmental Panel on Climate Change, "Annex II: Glossary," ed. K. J. Mach, S. Planton, and C. von Stechow, in Climate Change 2014: Synthesis Report, ed. Core Writing Team, R. K. Pachauri, and L. A. Meyer (Geneva, Switzerland: IPCC, 2014), p. 117–130, https://www.ipcc.ch/report/ar5/syr/.



Bike Path (Class I facility). A paved route, not on a street or roadway, expressly reserved for bicycles and micromobility devices traversing an otherwise unpaved area. Bicycle paths ~~may be parallel to roads but are typically separated from them by landscaping~~typically provide travel routes not provided by the road system.

Bike Route (Class III facility). A ~~roadway~~facility shared with ~~motorists~~automobiles and identified only by signage. ~~A b~~Bicycle route~~s~~ ha~~ves~~ no pavement markings~~ or lane stripes~~.

Bikeway (Separated) (Class IV facility). ~~A term that encompasses "bike lanes," "bike paths," "bike routes," and "separated bikeways."~~A facility for exclusive use by bicycles and micromobility devices that is physically separated from vehicular lanes by islands, curbs, flexible or inflexible~~inflexble~~ posts, on-street parking spaces, or other delineators.

Buffer. An area established between potentially conflicting land uses, which, depending on the potential impact, may use setbacks, landscaping, or structural barriers such as ~~setbacks or roads~~buildings to minimize the conflict.

Building. A type of structure with a roof supported by walls or columns that is permanently or semi-permanently attached to the ground and intended for shelter of people, animals, or property.~~A habitable structure.~~ (see "Structure")

Building Code. Standards adopted by the State of California governing ~~the~~ construction, alteration, demolition, occupancy, or other use of buildings and structures~~used for human habitation~~. The State regulations are substantially the same as those contained in the most recent editions of the Uniform Building Code, Uniform Housing Code, Uniform Plumbing Code, Uniform Mechanical Code, and the National Electric Code. Local governments may ~~have~~adopt stricter standards under certain circumstances.

Buildout. Development of land to its full potential, or theoretical capacity, as permitted under current or proposed planning or zoning designations.

California Environmental Quality Act. Legislation and corresponding procedural components established in 1970 by the State of California to require environmental review for projects anticipated to result in adverse impacts to the environment. (see "Environmental Impact Report")

Capital Improvement Program. A program that schedules ~~permanent~~ infrastructure improvements, usually ~~for~~over a minimum period of five years into the future, that fits the needs, priorities, and projected fiscal capability of the local jurisdiction. The program ~~generally~~typically is reviewed on an annual basis for conformance to and consistency with the General Plan.

Carbon Neutral. Reducing greenhouse gas (GHG) emissions to zero, either by entirely eliminating all GHG emissions or by balancing out all remaining GHG emissions through carbon removal practices so that the "net" emissions are zero.

Carbon Sequestration. The process of storing carbon dioxide in locations other than the atmosphere, where it cannot contribute to climate change or ocean acidification. For the purposes of this plan, carbon sequestration refers to the storage of atmospheric carbon in vegetation, soils, woody products, and aquatic environments.

~~**Carrying Capacity.** Used in determining the potential of an area to absorb development: (1) The level of land use, human activity, or development for a specific area that can be permanently accommodated without an irreversible change in the quality of air, water, land, or plant and animal habitats. (2) The upper limits of development beyond which the quality of human life, health, welfare, safety, or community character within an area will be impaired. (3) The maximum level of development allowable under current zoning. (see "Buildout")~~

Class 1 Soil: Soil with slight limitations that restrict its use for agriculture, as defined by the U.S. Department of Agriculture Natural Resources Conservation Service Land Use Capability Classification. This ranking represents both irrigated and ~~nonirrigated~~non-irrigated land, unless otherwise specified as such in the ranking.

Class 2 Soil: Soil with moderate limitations that reduce the choice of plants or require moderate conservation practices for agriculture, as defined by the U.S. Department of Agriculture Natural Resources Conservation Service Land Use Capability Classification. This ranking represents both irrigated and non-irrigated land, unless otherwise specified as such in the ranking.

Clean Air Refuge. A building with efficient air filtration and improved air quality that is opened to community members during poor air quality days.

Climate Change. A change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. In the context of this plan, this term refers to changes brought on by human activities.

Climate Justice. The concept that no group of people should disproportionately bear the burden of climate change impacts or the costs of mitigation and adaptation.

Climate Sensitivity. The level to which a species, natural system, community, or government would be affected by changing climate conditions.

Community Facilities District. A special district established by a local agency to finance tax-exempt bonds for public services or the planning, design, acquisition, construction, and/or operation of public facilities. Special taxes levied within the district are used to repay the bonds.

Community Noise Equivalent Level. A 24-hour energy equivalent level derived from a variety of single-noise events, with weighting factors of 5 and 10 A-weighted decibels (dBA) applied to the evening (7 p.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) periods, respectively, to allow for the greater sensitivity to noise during these hours.

Community Resource Centers. Pacific Gas and Electric Company (PG&E) facilities that are open to the public during Public Safety Power Shutoff events, offering air-conditioning or heating, ice, restrooms and hand-washing stations, medical equipment charging, device charging, Wi-Fi, bottled water, and snacks.

Community-Supported Agriculture. A community of individuals who pledge support to a farm operation so that the farmland becomes, either legally or cooperatively, the community's farm, with the growers and consumers providing mutual support and sharing the risks and benefits of food production. Typically, members or "share-holders" of the farm ~~or garden~~ pledge in advance to cover the anticipated costs of the farm operation and farmer's salary.

Compatible. Capable of existing together without significant conflict or ill effects.

Complete Street. A transportation facility that is planned, designed, constructed, operated, and maintained to provide comfortable and convenient mobility, and improve accessibility and connectivity to essential community destinations for all users and abilities, regardless of whether they are traveling as pedestrians, bicyclists, public transportation riders, or drivers. Complete streets are especially attuned to the needs of people walking, using assistive mobility devices, rolling, biking, and riding transit.

Conservation. The management and use of natural resources in a sustainable manner. Conservation results in land and water areas that are durably protected and managed to sustain functional ecosystems, ~~both~~whether intact and restored, and the diversity of life they support.

Conserve. To manage natural resources sustainably.

County Service Area. A special district in an unincorporated area formed to fund a public service that the County would not otherwise be able to fund through traditional sources, like property or sales tax. County Service Areas are governed by the County Board of Supervisors and funded by a direct assessment paid by property owners who benefit from the services provided.

Critical Facility. A facility whose continued functioning is necessary to maintain public health and safety following a disaster, and where damage or failure could pose hazards to life and property well beyond their immediate vicinity. Examples include hospitals, fire stations, and water treatment plants.

Cultural Resource. A historic, archaeological, tribal, or paleontological resource or human remains. Cultural resources include tribal cultural resources, as defined in California Public Resources Code Section 21074, regardless of whether a tribe is federally recognized.

Cumulative Impact. As used in CEQA, the total environmental impact resulting from the accumulated impacts of individual projects or programs over time.

Decibel. A unit used to express the relative intensity of a sound as it is heard by the human ear. The lowest volume a normal ear can detect under laboratory conditions is 0 decibel (dB), the threshold of human hearing. Since the decibel scale is logarithmic, 10 decibels are 10 times more intense, and 20 decibels are 100 times more intense, than 1 db.

dBA. The "A-weighted" scale for measuring sound in decibels, which weighs or reduces the effects of low and high frequencies to simulate human hearing. Every increase of 10 dBA doubles the perceived loudness, even though the noise is actually 10 times more intense.

Dedication. ~~The turning over by an owner or developer~~Transfer of private land for public use~~, and the acceptance of land for such use by the governmental agency having jurisdiction over the public function for which it will be used~~. Dedications for roads, parks, school sites, or other public uses are often required by ~~a~~ cities~~y~~ ~~or~~and counties~~y~~ as conditions for approval of ~~a~~ development. (see "In-Lieu Fee")

Density. The number of permanent residential dwelling units per acre of land (du/acre). Densities specified in this General Plan are expressed in dwelling units per net acre~~age~~, which excludes any land dedications, and not per gross acre. (see "Acreage, Gross," ~~and~~ "Acreage, Net," and "Dedication")

Development Review; Design Review. The comprehensive evaluation of a development and its impact on neighboring properties and the community as a whole, from the standpoint of site and landscape design, architecture, materials, colors, lighting, and signs, in accordance with a set of adopted criteria and standards.

Development. The physical extension and/or construction of non-farm land uses. Development activities include subdivision of land; construction or alteration of buildings, structures, roads, utilities, and other facilities; installation of septic systems; grading; deposit of refuse, debris, or fill materials; and clearing of natural vegetative cover (with the exception of agricultural activities). ~~The construction of a single-family home on an existing lot, and r~~Routine repair and maintenance activities~~,~~ are not considered development.

~~**Disabled Person.** A person determined to have a physical impairment or mental disorder, which is expected to be of a long, continued, or indefinite duration and is of such a nature that the person's ability to live independently could be improved by more suitable housing conditions.~~

Duplex. A free-standing ~~house~~building divided into two separate living units or residences, usually having separate entrances. Duplexes are not synonymous~~synonomous~~ with ADUs.

Dwelling Unit. The place of customary ~~abode~~residence of a person or household, which is either considered to be real property under State law or cannot be easily moved.

Ecologically Significant Resource Area. Land containing unique, representative, and/or sensitive habitats, communities, or ecological processes.

Ecosystem. An interacting system formed by a biotic community and its physical environment.

Emergency Shelter. A facility that provides immediate short-term housing and supplemental services for homeless people. Supplemental services may include food, counseling, and access to other programs.

Enhanced Infrastructure Financing Districts. An economic development district that uses local property taxes to fund public and private projects that provide a benefit to the district. The district obtains funding for community projects through incremental tax. Tax increment financing works by "freezing tax revenues from a tax rate area in the interim base year and diverting forecasted tax revenue in future years (known as increment) to pay for improvements and/or pay back bonds."[3]

Environmental Impact Report (EIR). A comprehensive study required pursuant to the California Environmental Quality Act that assesses all the environmental characteristics of an area, determines what effects or impacts will result if the area is altered or disturbed by a proposed action, and identifies alternatives or other measures to avoid or reduce those impacts. (see "California Environmental Quality Act")

~~**Environmental, Social, and Governance (ESG).** The iImplementation of a governance structure and reporting system that evaluates a company's performance related to environmental and social factors that go beyond the company's duty to maximize profits. Environmental metrics may include how well a company performs related to conserving energy, water, and other natural resources; protecting ecosystems and biodiversity; reducing carbon emissions; mitigating climate change; and promoting resilience. Social metrics include factors such as whether a company is union-friendly, provides fair pay and leave, prioritizes worker health and safety, and proactively seeks a diverse workforce. Governance refers to how the company manages both the environmental and social aspects of its policies, programs, and reporting.~~

Equity. The state in which each individual or group is allocated the resources needed to reach an equal outcome.

Evacuation Route. A roadway designated in the General Plan or a disaster/ emergency planning document as a potential recommended route to travel when evacuating from a hazardous condition.

Explosive. Any substance or combination of substances, the primary purpose of which is detonation or rapid combustion. (California Health and Safety Code)

~~**Exposure.** The presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.~~

[3] State of California, "Enhanced Infrastructure Financing Districts (EIFDs)," https://opzones.ca.gov/enhanced-infrastructure-financing-districts-eifds/, accessed June 15, 2023.

Extreme Event. When a weather or climate variable exceeds the upper or lower thresholds of its observed range.

Extreme Heat. Temperatures that are hotter than 98 percent of the historical high temperatures for the area, as measured between the months of April and October during the period between 1961 and 1990. ~~Across~~For Contra Costa County~~,~~ the extreme heat threshold is 96.6 degrees Fahrenheit (°F), ~~al~~though it varies from 87.1°F in Kensington to 102.4°F in Byron.

Farmers Market. A mobile or non-mobile market: (1) operated by a local government agency, one or more certified producers, or a nonprofit organization; (2) certified by and operating in a location approved by the County Agricultural Commissioner; and (3) where farmers sell directly to consumers agricultural products or processed products made from agricultural products (also known as "value-added products") that the farmers grow themselves.

Fault. A fracture or zone of fractures in ~~the e~~Earth's crust that forms a boundary between rock masses that have shifted.

Fee, Impact. A fee charged to a developer by a jurisdiction according to the proposed development project, typically by number of units, square footage, or acreage. The fee is often used to offset costs incurred by the agency for services and infrastructure such as schools, roads, police and fire protection, and parks.

Fee, In-Lieu. Payments that may be required of a property owner or developer as a substitute for a dedication of land for public use or construction of a public facility, usually calculated in dollars per lot, unit, or square foot. Also referred to as in-lieu contributions. (see "Dedication")

Fire Hazard Severity Zone. An area of significant fire hazard based on fuels, terrain, weather, and other relevant hazards. There are three levels of severity for these zones: Moderate, High, and Very High. CAL FIRE designates these zones, and local fire protection agencies may expand these zones or increase their severity within areas where they have responsibility for fire protection services (i.e., Local Responsibility Areas).

Flood, 100-Year. In any given year, a flood that has a 1 percent likelihood (a 1 in 100 chance) of occurring~~, and is recognized as a standard for acceptable risk~~. Also known as the "base flood."

Flood, 200-Year. In any given year, a flood that has a 0.5 percent likelihood (a 1 in 200 chance) of occurring. Senate Bill 5 requires a 200-year level of flood protection for urban communities in the Central Valley.

Flood, 500-Year. In any given year, a flood that has a 0.2 percent likelihood (a 1 in 500 chance) of occurring.

Floodplain. The relatively level land area ~~on either side of the banks of a stream~~adjacent to a natural watercourse that is regularly subject to flooding.

Floodway. The part of the floodplain capable of conveying the 100-year flood with no more than a 1-foot rise in water. The floodway includes the ~~river channel~~natural watercourse itself and adjacent land areas.

Floor Area Ratio (FAR). The gross floor area of a building in square feet divided by gross land area, expressed as a decimal number. For example, a 60,000-square-foot building on a 120,000-square-foot parcel would have a floor area ratio of 0.50. The FAR is used in calculating the building intensity of nonresidential development.

Garden, Demonstration or Educational. Gardens operated by community organizations or educational institutions to serve an educational function, such as teaching school children about vegetables or agriculture, or assisting property owners with drought-tolerant or fire-resistant landscaping choices.

Gateway. A unique transition point in topography or land use that serves as an entrance to a region of the county or an individual community.

~~**General Plan.** A compendium of County policies regarding its long-term development, in the form of maps and accompanying text. The General Plan is a legal document required of each local agency by the State of California Government Code Section 65301 and adopted by the Board of Supervisors.~~

Greenhouse Gas (GHG) Emissions Inventory. A quantified list of a community's GHG emissions and sources.

Gleaning. Food recovery through collecting or harvesting of otherwise unused food for distribution to those in need.

Goal. A description of the general desired result sought by the County. Each goal has one or more policies and/or actions associated with the goal. (see "Policy" and "Action")

Graywater. Untreated wastewater that has not been affected by infectious, contaminated, or unhealthy bodily wastes and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes.

Green Benefit District. A special district that provides additional maintenance and capital improvements for a variety of neighborhood enhancements, such as parks and open space, beautification, and sidewalks, beyond what is already provided by the local agency. Green Benefit Districts are funded by a direct assessment paid by property owners who benefit from the services provided.

Green Infrastructure. Stormwater management systems that filter and absorb stormwater where it falls. These systems use plants, soil, and stormwater capture and reuse to store, infiltrate, or evapotranspirate stormwater and reduce flows to wastewater systems or surface waters.

Greenhouse Gas (GHG). A gas that allows sunlight to pass through but reflects heat radiated from the earth's surface, trapping heat in the lower atmosphere. Common GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). They may be emitted by natural or human processes.

Groundwater. Water that exists beneath the earth's surface, typically found between saturated soils and rock, and is used to supply wells and springs.

Growth Management. Ensuring that future residential, ~~business, and~~ commercial, and industrial growth pays for the facilities required to meet the demands resulting from that growth.

Habitat. The physical location or type of environment in which an organism or biological population lives or occurs.

Hazard. An event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural losses, damage to the environment, interruption of business, or other types of harm or loss.

Hazard Mitigation. Sustained action taken to reduce or eliminate the long-term risk to human life and property, by means of efforts ~~through actions~~ that reduce hazards, exposure, and vulnerability.

Hazardous Material, Hazardous Waste: A substance or waste that, because of its physical, chemical, or other characteristics, may pose a risk of endangering human health or safety or ~~of~~ degrading the environment. This does not include household hazardous waste, universal waste, or electronic waste, as they do not contain the quantity, concentration, and/or types of ~~products~~compounds significant enough to pose a substantial risk to human health and safety or ~~to~~ the environment.

Hazardous Waste Facility. All contiguous land and structures, or other appurtenances, and improvements on land used for the treatment, transfer, storage, resource recovery, disposal, or recycling of hazardous waste that

require a Department of Toxic Substances Control (DTSC) permit for treatment, storage, and disposal facilities (i.e., treatment, storage, and disposal facility [TSDF] permit).

Health Equity. The state in which everyone has a fair and just opportunity to attain their highest level of health.[4]

Heat Wave. A~~n~~ weather event with five extreme heat days in a row.

Household. All persons occupying one dwelling unit. Persons comprising a household need not be related.

HUB Zone. A program that helps small businesses gain preferential access to federal supportive services and opportunities.

Impact, Climate. The effects (especially the negative effects) of a hazard or other condition associated with climate change.

~~**Impact Fee.** A fee charged to a developer by a jurisdiction according to the proposed development project, typically by number of units, square footage, or acreage. The fee is often used to offset costs incurred by the municipality for services and infrastructure such as schools, roads, police and fire services, and parks.~~

Impacted Community. An area, typically low-income, that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation. This is the term Contra Costa County uses in place of "disadvantaged communities," as named in Senate Bill (SB) 1000. SB 1000 defines disadvantaged communities per Health and Safety Code Section 39711, specifying CalEnviroScreen as the primary screening method for identifying these communities. In this General Plan, Census tracts with a cumulative CalEnviroScreen score of 72 or higher are ~~considered to be~~identified as Impacted Communities.

Impervious Surface. Surface through which water cannot penetrate, such as a roof, road, sidewalk, or paved parking lot. The amount of impervious surface increases with development and establishes the need for drainage facilities to carry the increased runoff.

Implementation. Actions, procedures, programs, or techniques that carry out a plan.

Infill Development. Development that occurs on vacant or underutilized land within areas that are already largely developed.

~~**In-Lieu Fee.** Cash payments that may be required of an owner or developer as a substitute for a dedication of land for public use, usually calculated in dollars per lot, and referred to as in-lieu fees or in-lieu contributions. (see "Dedication")~~

Land Use. The occupation or use of an area of land for any human activity or purpose.

Land Use Designation. ~~One particular category in a~~A land classification ~~series of appropriate use of properties~~ established by the General Plan Land Use Element that broadly determines the types and intensities of land uses that may exist on a given property.

Land Use Permit. ~~The~~A discretionary, ~~and~~usually conditional, ~~review of an~~permit issued to allow specific buildings or activities~~y. or function or operation on a site or in a building or facility~~at a specific location. Review of a

[4] Centers for Disease Control and Prevention, "Health Equity," https://www.cdc.gov/healthequity/whatis/index.html#:~:text=Health%20equity%20is%20the%20state,health%20and%20health%20care%3B%20and, accessed June 15, 2023.

land use permit application typically focuses on assessing the environmental impacts of a proposed land use and its compatibility with its surroundings.

Landslide. Movement of soil and/or rock down a slope, which typically occurs during an earthquake or following heavy rainfall.

Leadership in Energy and Environmental Design (LEED). A voluntary, consensus-based national standard for developing and rating high-performance, sustainable "green" buildings. LEED provides a complete framework for assessing building performance and meeting sustainability goals, such as water savings, energy-efficiency, materials selection, and indoor environmental quality. LEED standards are currently available or under development for new commercial construction and major renovation projects, existing building operations, commercial interiors projects, core and shell projects, and homes.

Leq, Equivalent Sound Level. The average of sound energy occurring over a specified period. The Leq is equivalent to the same average acoustical energy as the time-varying sound that actually occurs during a specified period.

Level of Service (Traffic). A scale that measures the amount of traffic that a roadway or intersection can accommodate, based on such factors as maneuverability, driver dissatisfaction, and delay.

Liquefaction. The transformation of loose, wet soil from a solid to ~~a~~ liquid state, often as a result of ground shaking during an earthquake.

Local Agency Formation Commission (LAFCO). A five- or seven-member commission within each county that reviews and evaluates all proposals for formation of special districts, incorporation of cities, annexation to special districts or cities, consolidation of districts, and merger of districts with cities. Each county's LAFCO is empowered to approve, disapprove, or conditionally approve such proposals.

Local Responsibility Area (LRA). Areas where a local government, such as a city, county, or district, has the primary financial responsibility of preventing and suppressing fires. (California Fire Code Section 4902.1)

Major Project. A General Plan amendment~~,~~ or rezoning to increase intensity of use, ~~major subdivision~~residential development exceeding 30 units, ~~or~~ nonresidential development of 25,000 square feet or more, or a project requiring a land use permit pursuant to the Industrial Safety Ordinance. ~~(see "Subdivision, Major")~~

Micromobility/Microtransit. Transportation via small, lightweight vehicles operated by the driver, such as electric scooters and bicycles. Vehicles typically do not exceed 15 miles per hour and are often available for rent for short-range travel within a defined area.

Military Operations Areas. A three-dimensional airspace designated for military training and transport activities that has~~ve~~ a defined floor (minimum altitude) and ceiling (maximum altitude).

Mitigation. Modification to avoid, reduce, minimize, or eliminate a negative impact. There are various types of mitigation, including environmental impact mitigation, hazard mitigation, GHG emissions mitigation, and more.

Mixed Use. ~~Any mixture of land uses, including mixtures of residences with commercial, offices with retail, or visitor accommodation with offices and retail. As distinguished from a single-use land use designation or zone, mixed use refers to an authorized variety of uses for buildings and structures in a particular area.~~A type of development that combines different land uses, such as residential and commer~~i~~cial uses, within the same building (vertical mixed use) or site (horizontal mixed use).

Mobile Home. A structure, transportable in one or more sections, built on a permanent chassis and designed for use as a single-family dwelling unit and which: (1) has a minimum of 400 square feet of living space; (2) has a

minimum width ~~in excess~~ of 102 inches; (3) is connected to all available permanent utilities; and (4) is tied down (a) to a permanent foundation on a lot either owned or leased by the homeowner or (b) is set on piers, with wheels removed and skirted, in a mobile home park.

Mobile Home Park. Any area of land or property that has at least two mobile homes and/or lots that are held out for rent or lease for non-transient use~~A parcel of land under one owner that has been planned and improved for the placement of two or more mobile homes for rental purposes for nontransient use~~.

Mode Share. The percentage of travelers using a certain type of transportation, such as walking, biking, taking transit, or driving a vehicle.

Municipality. An incorporated city or town.

Mutual-Aid Agreement. An agreement between two or more agencies to provide resources, facilities, and services in the event of a disaster or other emergency ~~in the event that~~if the affected agency does not have the capability to adequately respond to the emergency with its own means.

Natural Watercourse. A naturally occurring body of water, such as a river, creek, or stream, flowing in a natural or artificial channel. Does not include canals, irrigation ditches, or similar structures built to convey water to or from a natural watercourse or other water body.

Natural and Working Lands. Lands not covered by buildings or structures, including forests, grasslands, shrublands, woodlands, rangelands, farmlands, wetlands, coastal areas, and the green spaces in urban and built environments. These lands provide food and fiber, clean air, water, and other resources and benefits.

Near Zero-Emissions ~~Vehicle~~. A building, vehicle, or other type~~e~~ of operation that uses zero-emission technologies, enables technologies that provide a pathway to zero-emissions operations, or incorporates other technologies that significantly reduce criteria pollutants, toxic air contaminants, and GHG emissions. (California Health and Safety Code Section 44258(c))

Neighborhood. ~~Relatively large~~A residential area~~s that have some~~defined by ~~common~~shared characteristics~~,~~ such as ~~a common~~ history, ~~common~~ physical ~~characteristics~~appearance (~~e.g.,~~ development pattern, architectural style, etc.), ~~a~~ common ~~meeting place~~facilities such as schools and parks, ~~or more~~ intangible characteristics (e.g., a psychological sense of place or cohesion), or clear physical boundaries ~~(e.g.,~~like waterways or major roads~~)~~.

Neighborhood Kitchen. A shared, commercial-scale kitchen space that is organized by a neighborhood or community group to facilitate safe food production by community members, such as for soup kitchens, community events, or small-scale cottage food industry operations.

Neighborhood-Serving Retail Use. A small-scale business providing goods and services necessary for the day-to-day maintenance of a household (e.g., ~~butchers or bakers~~corner markets, dry cleaners, coffee shops).

Noise Contours. ~~A l~~Lines superimposed on a map ~~connecting points of equal~~that indicate various levels of average noise ~~level~~exposure as measured on the same scale.

Noise-Sensitive Use. A location where people reside or where the presence of unwanted sound could adversely affect the use of land, such as residences, schools, and hospitals.

Non-Conforming Use, Legal. A use that was ~~valid when brought into existence~~established legally, but ~~no longer permitted by later~~does not conform to subsequently adopted regulations. ~~"Non-conforming use" is a generic term and includes: (1) non-conforming structures (because their size, type of construction, location on land, or proximity to other structures is no longer permitted); (2) non-conforming use of a conforming building; (3) non-~~

~~conforming use of a non-conforming building; and (4) non-conforming use of land. Any use lawfully existing on any piece of property that is inconsistent with a new or amended General Plan, and that in turn is a violation of a Zoning Ordinance amendment subsequently adopted in conformance with the General Plan, will be a non-conforming use. Typically, non-conforming uses are permitted to continue, subject to certain restrictions.~~

Non-Essential Idling. Operation of a vehicle while it is stationary when none of the following circumstances are met: the vehicle is stuck in traffic; idling is necessary to inspect or service the vehicle; the vehicle is transferring power via a power-takeoff device; the vehicle can't move due to adverse weather conditions or mechanical failure; the vehicle is a bus with passengers on board. See California Code of Regulations, Title 13, Section 2485 for a full definition.

Offsets (emissions). Banked air emission reduction credits that compensate for cumulative increases in air emissions, as defined by BAAQMD Regulation 2 Rule 4.

On-Site Wastewater Treatment System. A multi-stage system that collects, treats, and disperses wastewater generated on an individual site. On-site wastewater treatment systems typically include a septic tank and disposal (leach) field.

~~Protected~~ Open Space. Natural habitat and other ~~open space~~undeveloped areas that are usually protected from development by ownership, deed restrictions, conservation easements, land dedications, ~~and/or~~ or other techniques.

Opportunity Zone. Economically distressed communities that have experienced a lack of investment for decades, defined by the federal government by Census tract. These areas may qualify for preferential tax treatment on new investments to incentivize investment in the community.

Overlay. A land use or zoning designation that modifies the basic underlying designation or designations in some specific manner, usually by applying supplemental regulations.

Parcel. A unit of real property, commonly referred to as a "lot.," ~~or contiguous group of lots, in single ownership or under single control, usually considered a unit for purposes of development.~~Differs from an Assessor's parcel in that the latter is delineated by the County Assessor's Office solely for the purpose of assessing property taxes on a given area of land.

Planned Unit Development (PUD). ~~A description of a proposed unified development, consisting at a minimum of a map and adopted ordinance setting forth the governing regulations, and the location and phasing of all proposed uses and improvements to be included in the development.~~A development approach that uses flexible zoning regulations to create projects that would otherwise be impermissible under standard zoning. PUDs often incorporate nontraditional development patterns and different types of residential buildings, and may include commer~~.~~cial, recreational, or public use components.

Pocket Park. A small park, typically less than a quarter acre in size.

Policy. A specific statement that guides decision making as the County works to achieve a goal. Policies represent statements of County regulation and set the standards used by decision makers when considering proposed development and actions. A policy is ongoing and requires no further action (see "Goal").

~~Protected Open Space. Natural habitat and other open space areas that are protected from development by ownership, deed restrictions, conservation easements, land dedications, and/or or other techniques.~~

Reach Code. A local ~~municipal~~building code that exceeds the State Building Code requirements. A reach code must be at least as stringent as the State

Code, cost-effective, approved by the California Energy Commission, and updated and re-adopted~~approved~~ with each State Energy Code update.

Remediation. Restoration of contaminated areas to protect human health and the environment.

Resilience. The capacity of any entity—an individual, community, organization, or natural system—to prepare for disruptions, recover from shocks and stresses, and adapt and grow from a disruptive experience. Community resilience is the ability of communities to withstand, recover, and learn from past disasters to strengthen future response and recovery efforts.

Resilience Center. A ~~well-used~~ community-serving facility with year-round programming that also provides local communities with ~~shelter,~~ water~~,~~ and electricity during hazardous events or disasters.

Riparian. A habitat and vegetation zone that is associated with the banks and floodplains of a river, stream, or lake. Riparian trees and shrubs are typically phreatophytes, plants whose root systems are in constant contact with groundwater.

Risk. The potential for damage or loss created by the interaction of hazards with assets such as buildings, infrastructure, or natural and cultural resources.

Safe Routes to School~~s~~ (SRTS). ~~Pedestrian and bicycling routes that provide safe access to and from schools.~~Federal, State, and local programs that promote walking and bicycling to school through infrastructure improvements, safety education, enforcement, and incentives.

~~Scenic Corridor. Land that is visible from, adjacent to, and outside a roadway right-of-way, and is made up primarily of scenic and natural features.~~

~~Topography, vegetation, viewing distance, and/or jurisdictional lines determine the corridor boundaries.~~

Sea~~-~~ Level Rise. The worldwide average rise in mean sea level, which may be due to a number of different causes, such as the thermal expansion of sea water and the addition of water to the oceans from the melting of glaciers, ice caps, and ice sheets.

Seniors. People 65 years of age or older.

Sensitive Receptor. A use that is highly sensitive to impacts from other uses, including homes, schools, playgrounds, sports fields, childcare centers, senior centers, hospitals, and long-term health care facilities.

~~Sensitivity. The level to which a species, natural system, community, or government would be affected by changing climate conditions.~~

~~Separated Bikeway (Class IV facility). A bikeway for the exclusive use of bicycles that are physically separated from vehicle traffic. (Also called cycle tracks and protected bikeways.) (see also "Bikeway")~~

Severe Ground Shaking. Intense ground movement resulting from ~~the~~ transmission of seismic waves during an earthquake.

~~Social Vulnerability. The susceptibility of a given population to harm from exposure to a hazard, directly affecting its ability to prepare for, respond to, and recover.~~

~~Specific Plan. Under Article 8 of the Government Code (Section 65450 et seq.), a legal tool for detailed design and implementation of a defined portion of the area covered by a General Plan. A specific plan may include all detailed regulations, conditions, programs, and/or proposed legislation that may be necessary or convenient for the systematic implementation of any General Plan element(s).~~

Sphere of Influence (SOI). The ~~probable~~potential ultimate physical boundaries and service area of a municipality or special district, as determined by the Local Agency Formation Commission of the county. The SOIs for cities and towns include unincorporated land that could be annexed.

State Responsibility Area (SRA). The area where the State of California has primary financial responsibility for ~~the~~ prevention and response to wildland fires as delineated on maps prepared by the State Fire Marshall.

Stationary Source. A fixed, non-mobile source of air pollution or noise.

Strip commercial. A linear pattern of retail businesses along a major roadway, usually characterized by single-story buildings with prominent parking lots visible from the roadway, multiple driveways, large signs, and a dependency on automobiles for access and circulation.

Structure. ~~-~~Anything constructed or erected on and permanently or semi-permanently attached to land ~~and with a roof supported by columns or walls, except buildings intended for human occupancy~~. (see "Building")

Subdivision. The division of any unit or units of real property, improved or unimproved, ~~land~~ for the purpose of sale, lease, or financing. Major subdivisions yield five or more lots, while minor subdivisions yield four lots or fewer.

Substandard Housing. A ~~housing~~residential building or living unit whose physical condition ~~that~~ endangers the ~~life, limb, property,~~ safety, property, or welfare of the occupants or general public.

Sustainability. Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable Streets. "Multimodal rights-of-way designed and operated to create benefits relating to movement, ecology, and community that together support a broad sustainability agenda embracing the three Es: environment, equity, and economy."[5]

Townhouse/Townhome. A series of residences on individual parcels, ~~often~~typically two ~~to~~or three stories in height, that are connected side~~-~~-by~~-~~-side in a row, each having a separate street-level entrance.

Toxic Air Contaminant (TAC). An air pollutant that may cause or contribute to an increase in serious illness, or that may pose a present or potential hazard to human health, according to California Health and Safety Code Section 39655.

Traffic Calming. Measures designed to reduce motor vehicle speeds, increase safety, and ~~to~~ encourage pedestrian use, including narrow streets, tight turning radii, sidewalk bulbouts, parking bays, and textured paving at intersections~~, and parkways between sidewalks and streets~~.

Triplex. A free-standing house divided into three separate living units or residences, usually having separate entrances.

Unincorporated Area. ~~Encompasses properties that are~~All land and water within a county that is outside the boundaries of incorporated ~~municipalities~~cities and towns. Development in the unincorporated area is subject to County ~~jurisdiction~~land use regulations.

Universal Waste. Common ~~H~~hazardous ~~substances~~wastes that are widely ~~produced~~generated by households and many different types of businesses,

[5] Greenberg, Ellen J., "Sustainable Streets: Foundations for an Emerging Practice," 2009, Washington, DC: Transportation Research Board 88th Annual Meeting.

including batteries, pesticides, ~~mercury-containing equipment~~paints, lamps, and aerosol cans.

Unstable Slope. A ~~very steep hillside~~slope that ~~does not have a substantial root system and/or soil type to prevent landslides or other~~is susceptible to failure due to geologic hazards, steepness, lack of vegetation, or other adverse conditions.

Urban Agriculture/Farming. The practice of ~~growing and processing fresh food~~farming within an urban ~~area~~environment. Includes cultivation and small-scale processing of agricultural products.

Urban Heat Island. The phenomenon in which large urban areas experience higher temperatures, greater pollution, and more negative health impacts during hot months due to a combination of heat-absorptive surfaces, heat-generating activities, and the absence of vegetation.

Urban Limit Line (ULL). A political boundary approved by Contra Costa County voters to limit urban development to defined areas of the county while preserving farmland, watersheds, and open space outside those areas.

Use. The purpose for which a lot, building, or structure is or may be leased, occupied, maintained, arranged, designed, intended, constructed, erected, moved, altered, and/or enlarged in accordance with the County General Plan land use designations and corresponding ~~Z~~zoning districts~~Ordinance and General Plan land use designations~~.

Utility Corridor. Rights-of-way or easements for utility lines on either publicly or privately owned property.

Vertiport. A facility~~faciity~~ or area designated for use by electric, hydrogen, or hybrid vertical take-off and landing (VTOL) aircraft.

Vulnerability. The degree to which natural, built, and human systems are susceptible "…to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt."[6]

Vulnerability Assessment. An analysis of how a changing climate may harm a community and which elements—people, buildings and structures, resources, ecosystems, and other assets—are most vulnerable to its effects based on an assessment of exposure, sensitivity, the potential impact(s), and the community's adaptive capacity.

Wastewater. Water that has been used in homes, businesses, industrial processes, or other applications. May contain~~s other elements, such as excess water from drainage or piping systems, small~~ pathogens, organic matter, and ~~inorganic~~ contaminants. ~~This term is also used to refer to water generated in industrial plants and commercial activity.~~

Wetland. An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

Wildland-Urban Interface (WUI). An area that includes houses and wildland vegetation, creating a significant threat to human life or property from wildfires. The WUI is comprised of three distinct zones:

[6] Neil Adger, "Vulnerability," Global Environmental Change 16 (2006): 268–281, https://www.geos.ed.ac.uk/~nabo/meetings/glthec/materials/simpson/GEC_sdarticle2.pdf

1. The **intermix zone** contains housing development or improved parcels interspersed in an area dominated by wildland vegetation subject to wildfire.
2. The **interface zone** contains dense housing next to vegetation that can burn in a wildfire, but is not dominated by wildland vegetation.
3. The **influence zone** contains wildfire-susceptible vegetation within 1.5 miles from the intermix and interface zones.

Xeriscape. Landscaping with an emphasis on water conservation and efficiency.

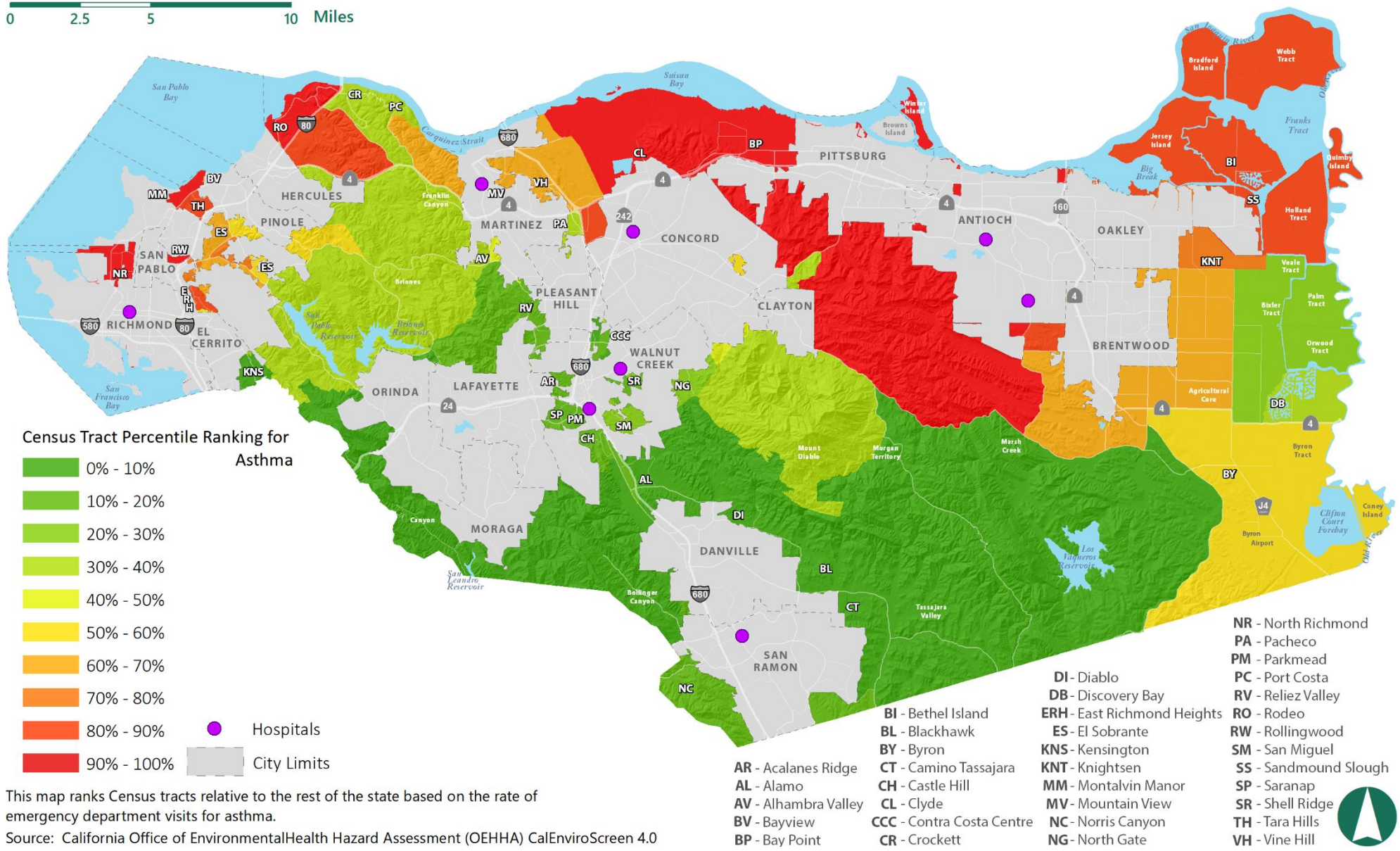
Zero Emission Vehicle/Transportation Device. A vehicle or transportation device (e.g., bicycle or scooter) that does not produce emissions when in operation, including battery-electric vehicles/devices and hydrogen fuel-cell electric vehicles.

Zoning. ~~The division of a county by o~~Ordinances or other ~~legislative~~ regulations adopted by the legislative body of a city or county that divide the jurisdiction into districts or zones that specify allowable uses for real property, impose standards for development (building setbacks, height limitations, landscaping requirements, etc.), and ~~size restrictions for buildings constructed in these areas~~establish procedures for review and approval of development proposals. Zoning implements the land use policies of the General Plan.

ATTACHMENT 2:

REVISED GENERAL PLAN MAPS

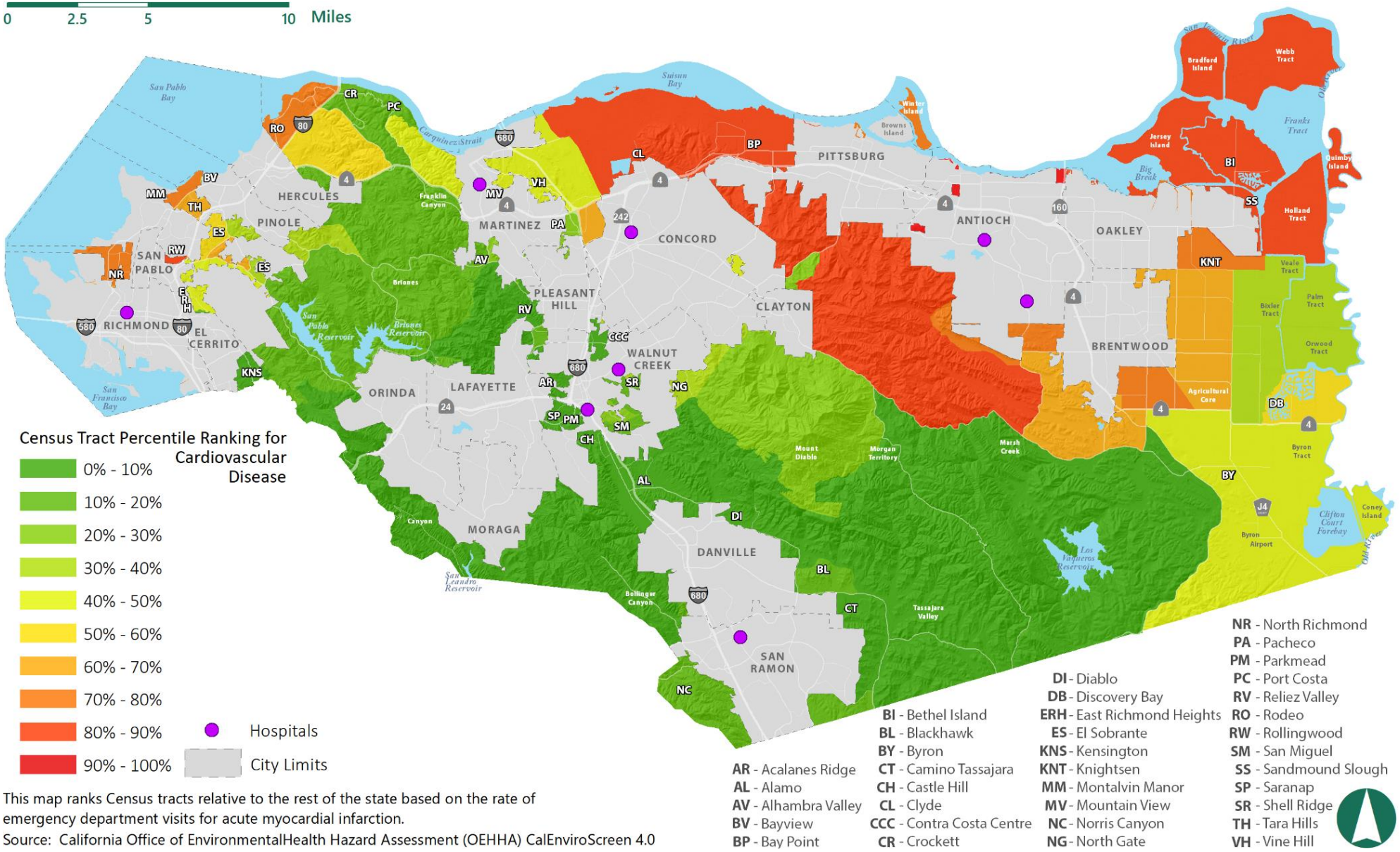
FIGURE SC-2 ASTHMA RANKINGS RELATIVE TO THE STATE



This map ranks Census tracts relative to the rest of the state based on the rate of emergency department visits for asthma.

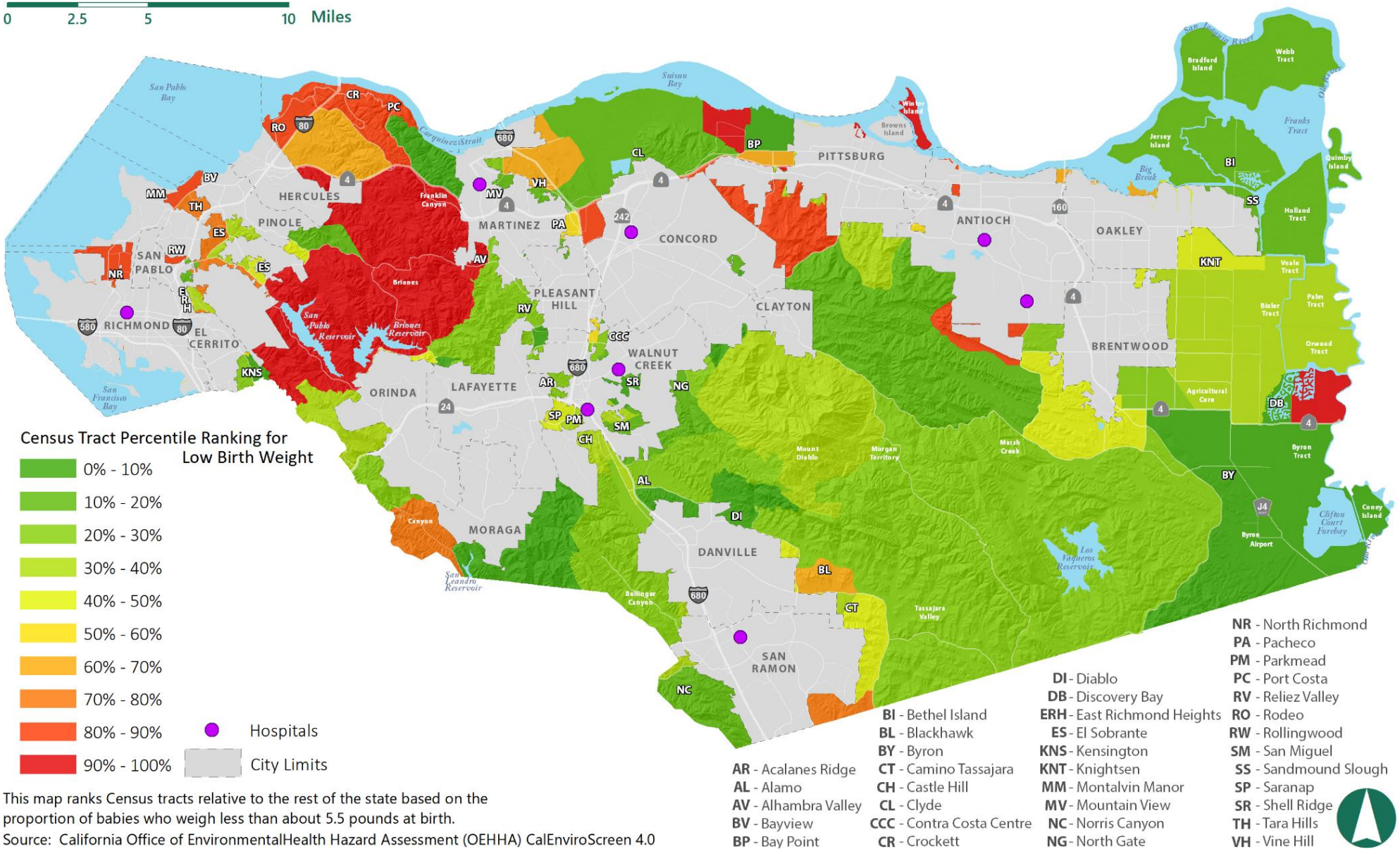
Source: California Office of EnvironmentalHealth Hazard Assessment (OEHHA) CalEnviroScreen 4.0

FIGURE SC-3 CARDIOVASCULAR DISEASE RANKINGS RELATIVE TO THE STATE



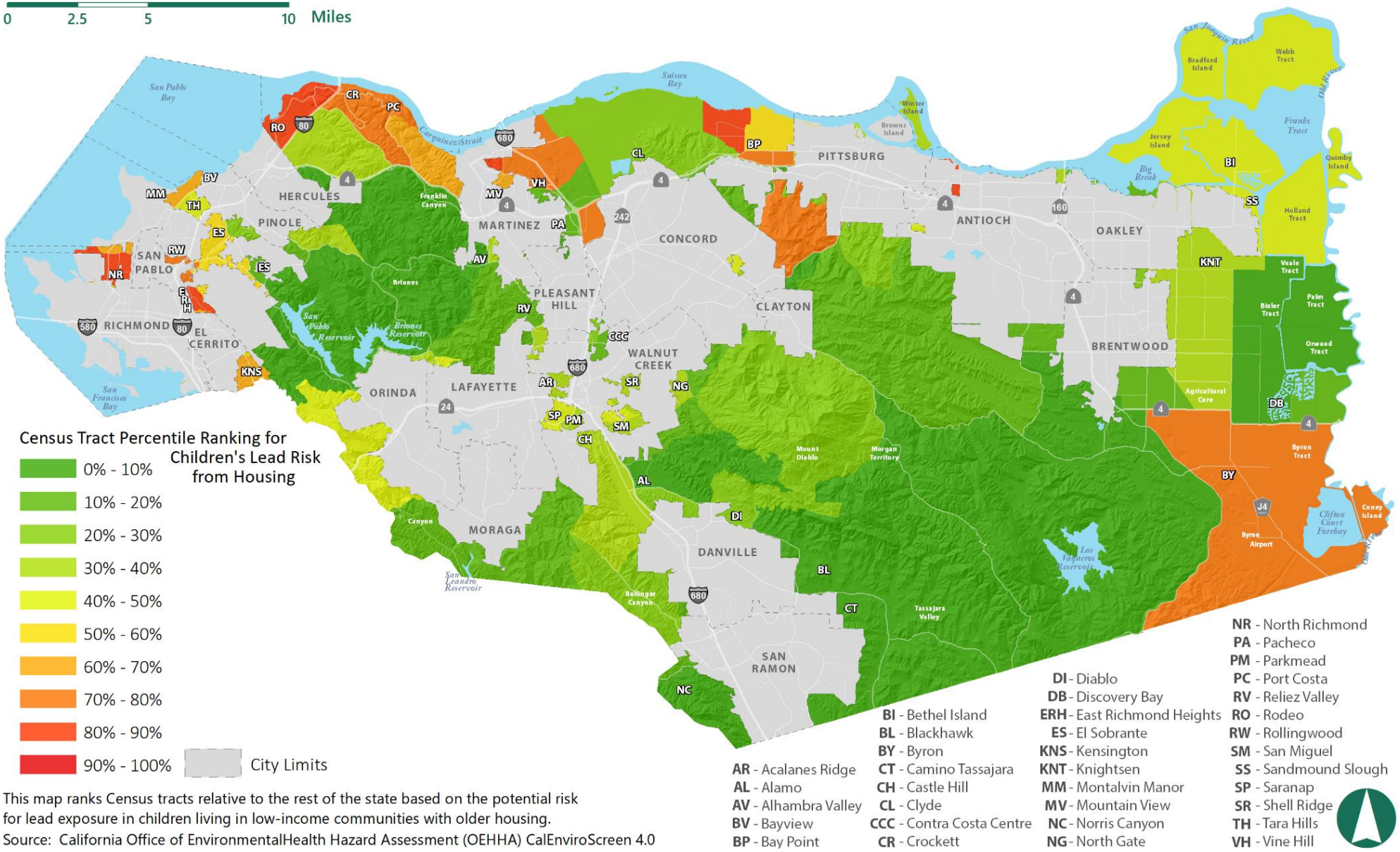
This map ranks Census tracts relative to the rest of the state based on the rate of emergency department visits for acute myocardial infarction.
Source: California Office of EnvironmentalHealth Hazard Assessment (OEHHA) CalEnviroScreen 4.0

FIGURE SC-4 LOW BIRTH WEIGHT RANKINGS RELATIVE TO THE STATE



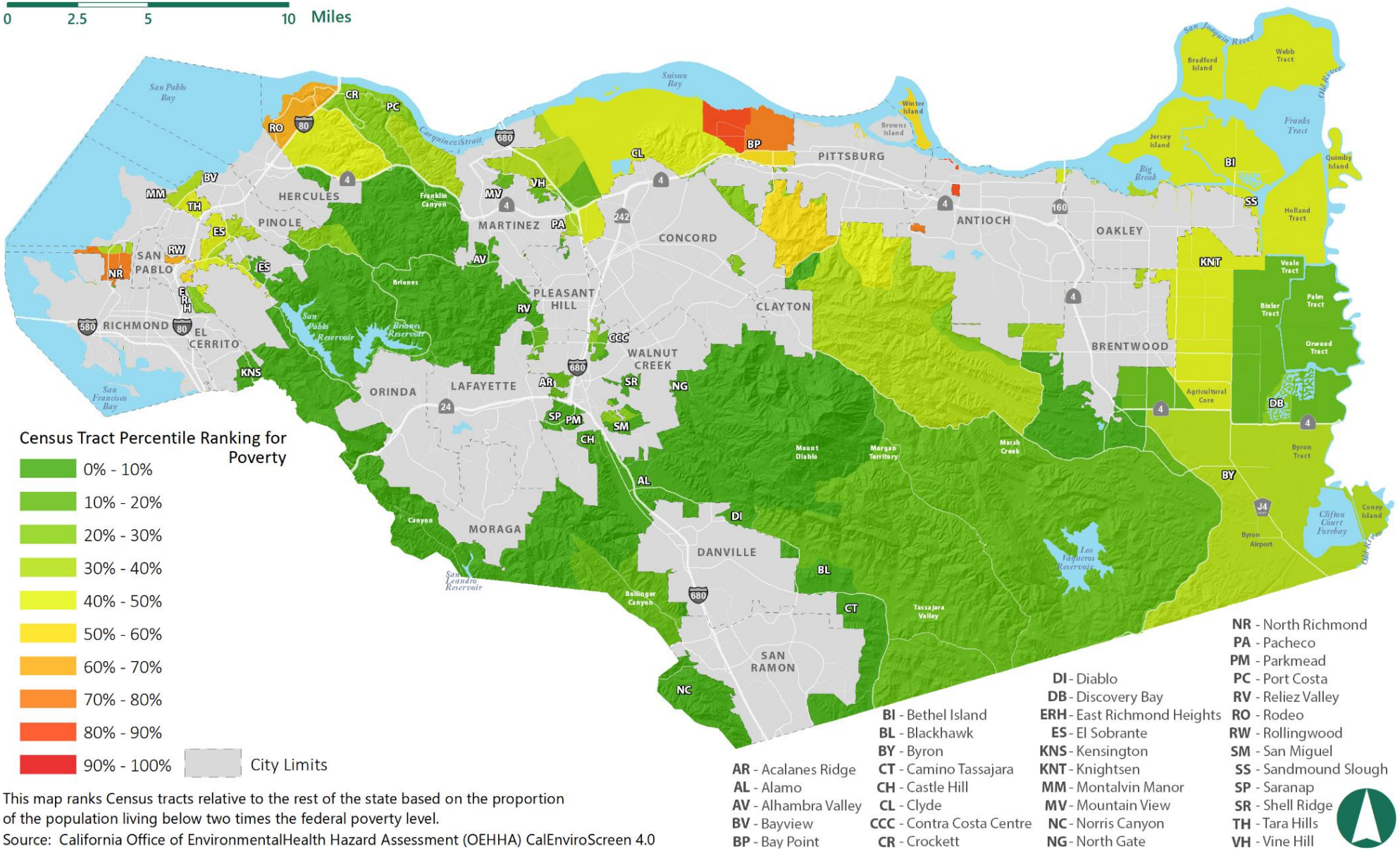
This map ranks Census tracts relative to the rest of the state based on the proportion of babies who weigh less than about 5.5 pounds at birth.
Source: California Office of EnvironmentalHealth Hazard Assessment (OEHHA) CalEnviroScreen 4.0

FIGURE SC-5 CHILDREN'S LEAD RISK FROM HOUSING RANKINGS RELATIVE TO THE STATE



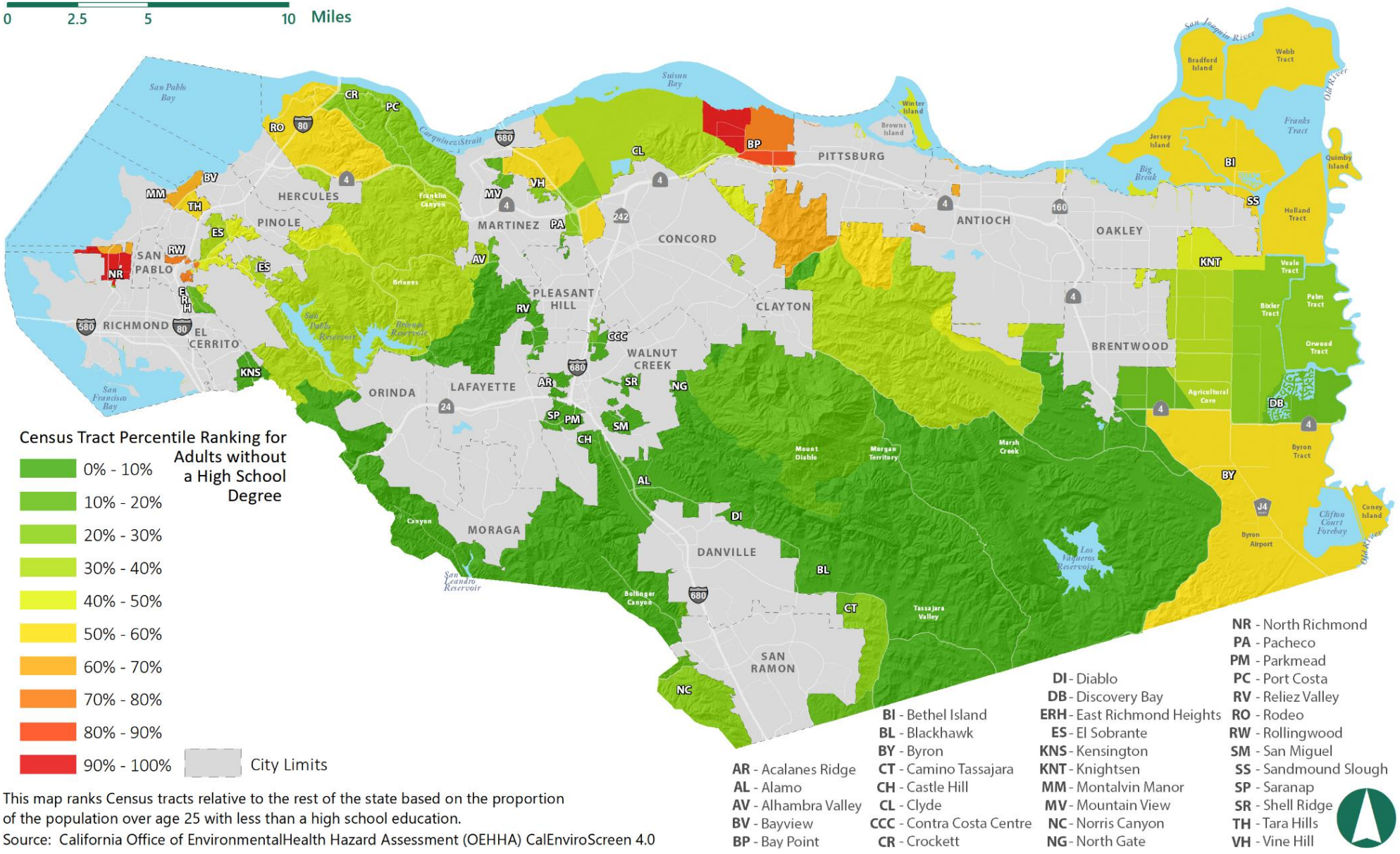
This map ranks Census tracts relative to the rest of the state based on the potential risk for lead exposure in children living in low-income communities with older housing.
Source: California Office of EnvironmentalHealth Hazard Assessment (OEHHA) CalEnviroScreen 4.0

FIGURE SC-6 POVERTY RANKINGS RELATIVE TO THE STATE



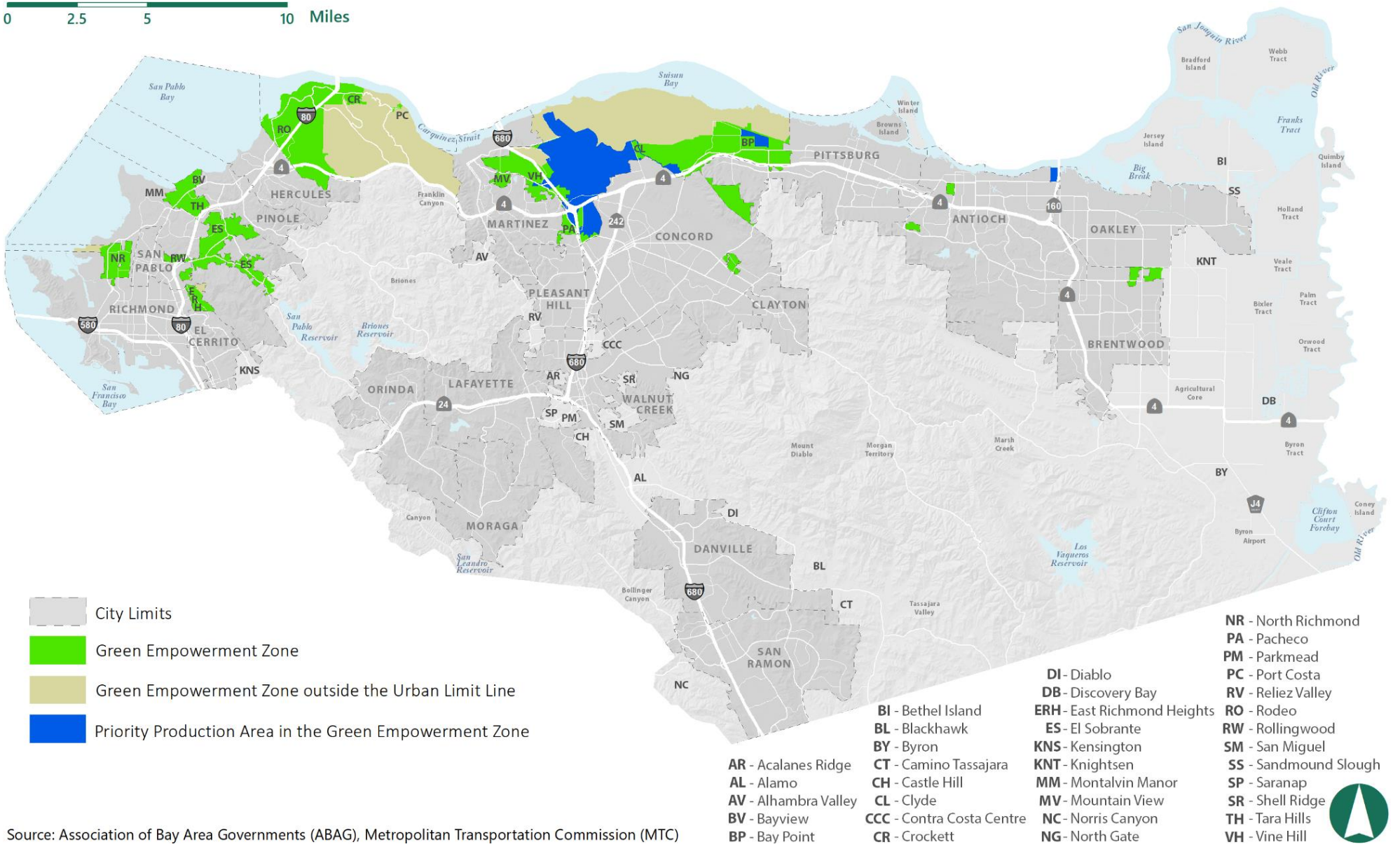
This map ranks Census tracts relative to the rest of the state based on the proportion of the population living below two times the federal poverty level.
Source: California Office of EnvironmentalHealth Hazard Assessment (OEHHA) CalEnviroScreen 4.0

FIGURE SC-7 ADULTS WITHOUT A HIGH SCHOOL DEGREE RANKINGS RELATIVE TO THE STATE



This map ranks Census tracts relative to the rest of the state based on the proportion of the population over age 25 with less than a high school education.
Source: California Office of EnvironmentalHealth Hazard Assessment (OEHHA) CalEnviroScreen 4.0

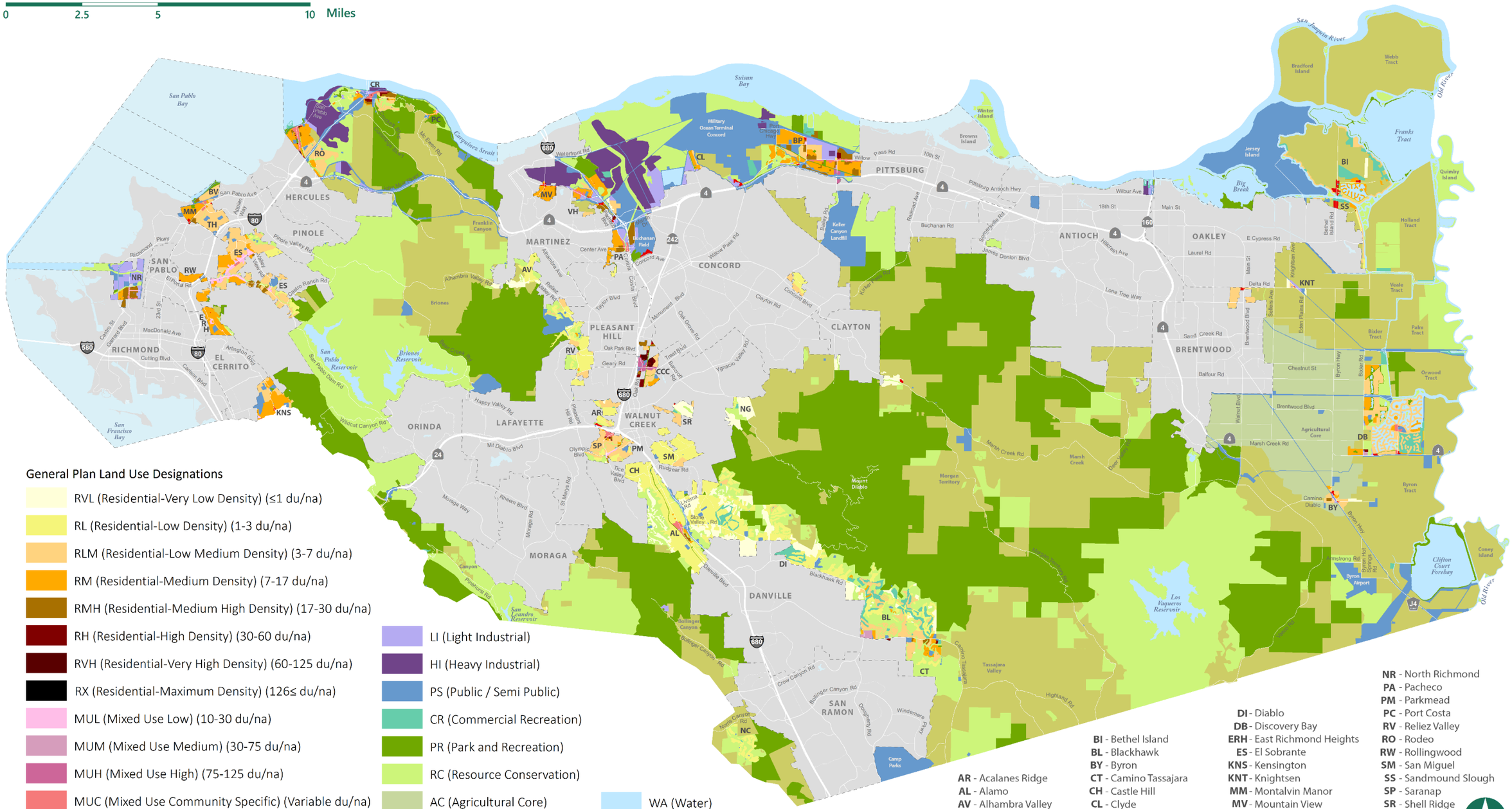
FIGURE SC-8 GREEN EMPOWERMENT ZONE AND PRIORITY PRODUCTION AREAS



Source: Association of Bay Area Governments (ABAG), Metropolitan Transportation Commission (MTC)

FIGURE LU-1 GENERAL PLAN LAND USE MAP

0 2.5 5 10 Miles

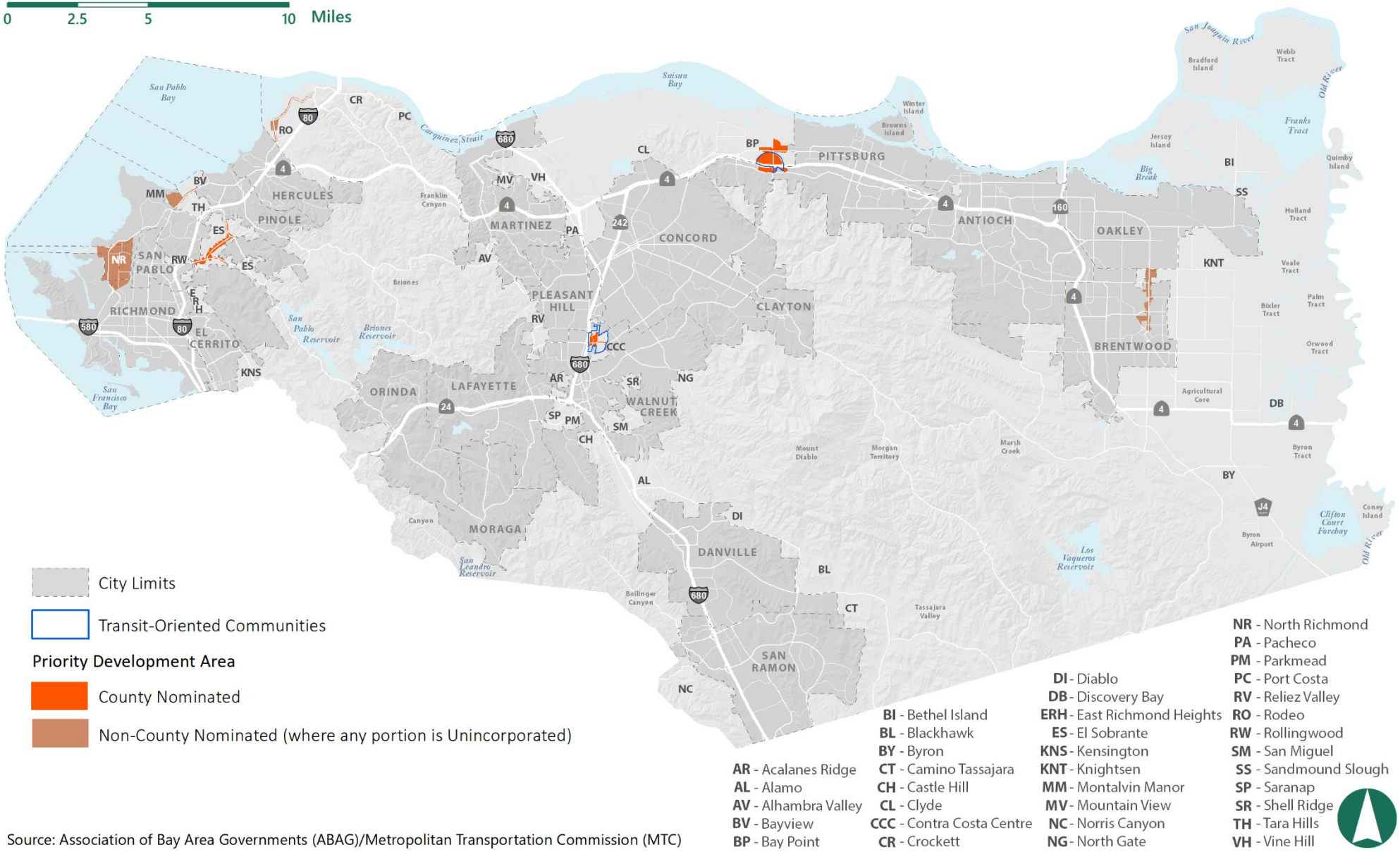


General Plan Land Use Designations

- RVL (Residential-Very Low Density) (≤1 du/na)
- RL (Residential-Low Density) (1-3 du/na)
- RLM (Residential-Low Medium Density) (3-7 du/na)
- RM (Residential-Medium Density) (7-17 du/na)
- RMH (Residential-Medium High Density) (17-30 du/na)
- RH (Residential-High Density) (30-60 du/na)
- RVH (Residential-Very High Density) (60-125 du/na)
- RX (Residential-Maximum Density) (126≤ du/na)
- MUL (Mixed Use Low) (10-30 du/na)
- MUM (Mixed Use Medium) (30-75 du/na)
- MUH (Mixed Use High) (75-125 du/na)
- MUC (Mixed Use Community Specific) (Variable du/na)
- CO (Commercial and Office)
- LI (Light Industrial)
- HI (Heavy Industrial)
- PS (Public / Semi Public)
- CR (Commercial Recreation)
- PR (Park and Recreation)
- RC (Resource Conservation)
- AC (Agricultural Core)
- AL (Agricultural Lands)
- WA (Water)
- City Limits

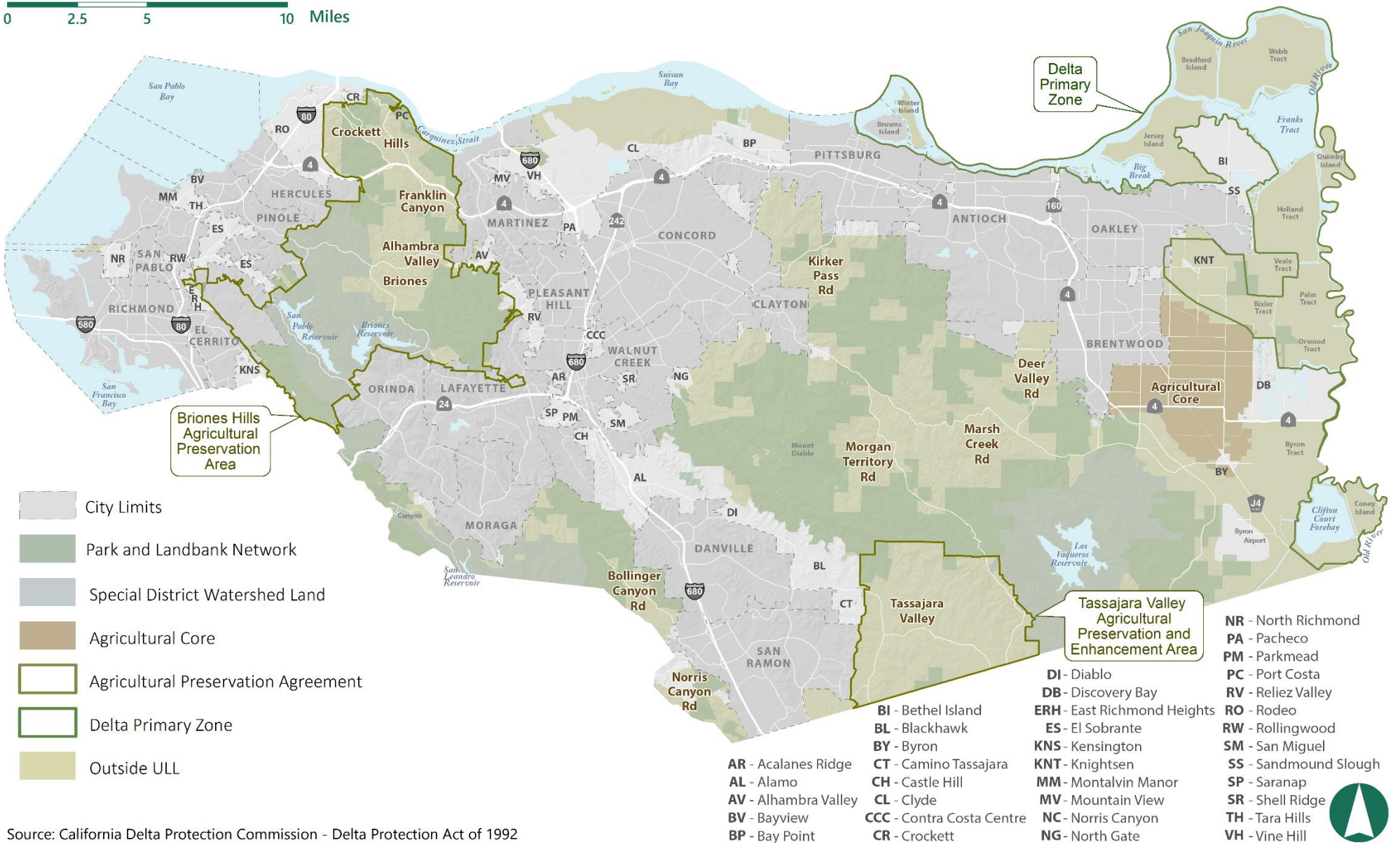
AR - Acalanes Ridge
AL - Alamo
AV - Alhambra Valley
BV - Bayview
BP - Bay Point
BI - Bethel Island
BL - Blackhawk
BY - Byron
CT - Camino Tassajara
CH - Castle Hill
CL - Clyde
CCC - Contra Costa Centre
CR - Crockett
DI - Diablo
DB - Discovery Bay
ERH - East Richmond Heights
ES - El Sobrante
KNS - Kensington
KNT - Knightsen
MM - Montalvin Manor
MV - Mountain View
NC - Norris Canyon
NG - North Gate
NR - North Richmond
PA - Pacheco
PM - Parkmead
PC - Port Costa
RV - Reliez Valley
RO - Rodeo
RW - Rollingwood
SM - San Miguel
SS - Sandmound Slough
SP - Saranap
SR - Shell Ridge
TH - Tara Hills
VH - Vine Hill

FIGURE LU-5 PRIORITY DEVELOPMENT AREAS



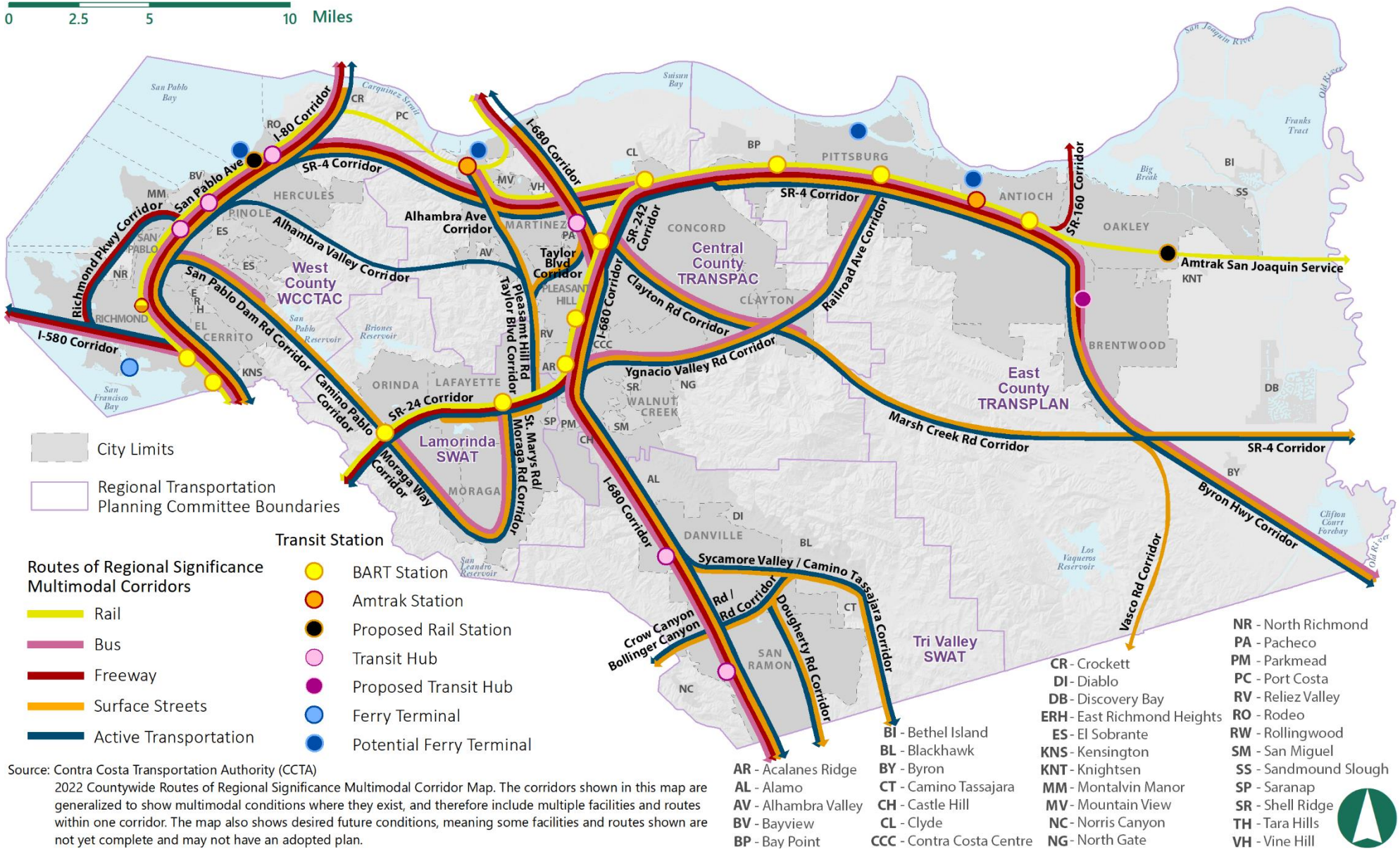
Source: Association of Bay Area Governments (ABAG)/Metropolitan Transportation Commission (MTC)

FIGURE LU-6 RURAL AND AGRICULTURAL AREAS



Source: California Delta Protection Commission - Delta Protection Act of 1992

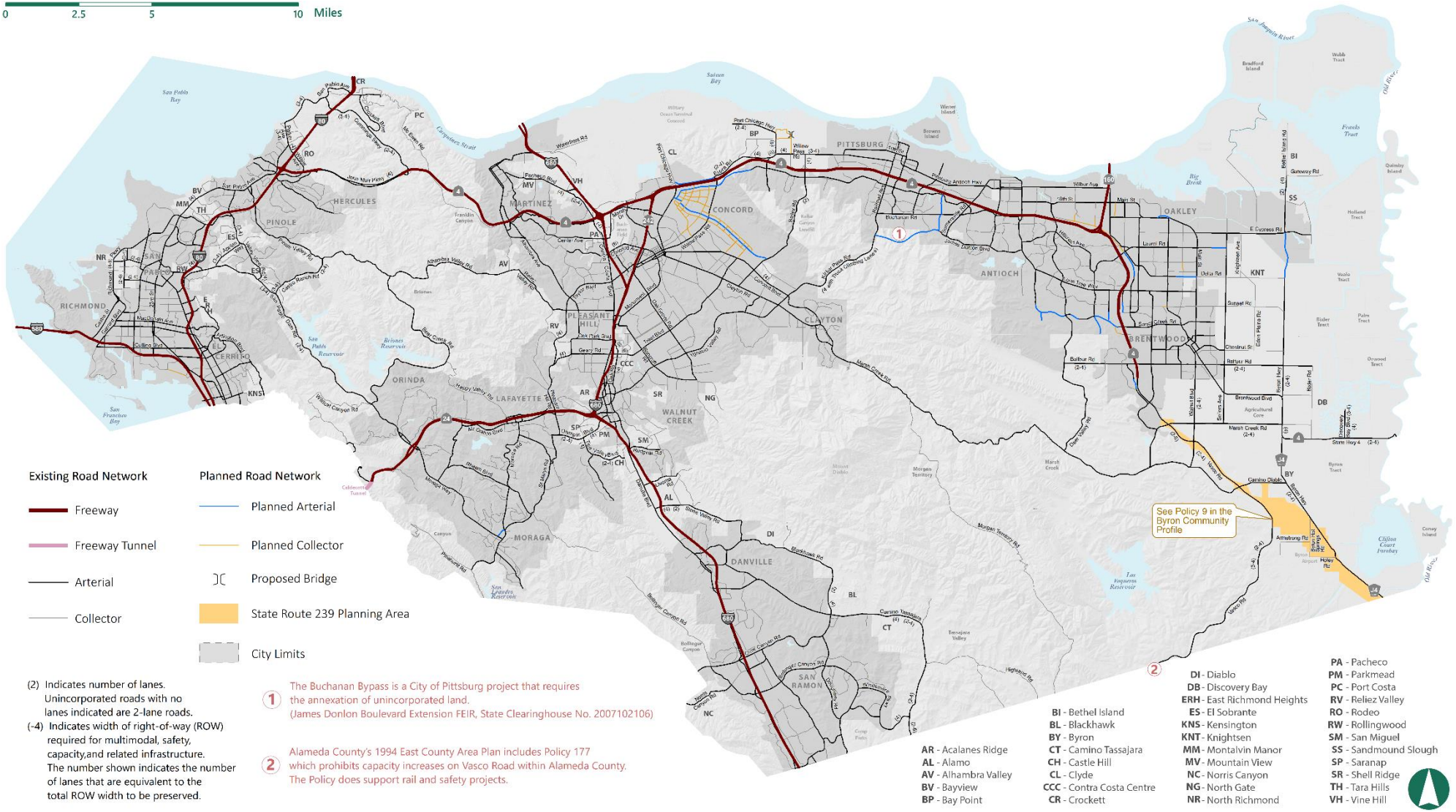
FIGURE TR-2 ROUTES OF REGIONAL SIGNIFICANCE



Source: Contra Costa Transportation Authority (CCTA)
2022 Countywide Routes of Regional Significance Multimodal Corridor Map. The corridors shown in this map are generalized to show multimodal conditions where they exist, and therefore include multiple facilities and routes within one corridor. The map also shows desired future conditions, meaning some facilities and routes shown are not yet complete and may not have an adopted plan.

FIGURE TR-3 ROADWAY CLASSIFICATIONS

0 2.5 5 10 Miles



(2) Indicates number of lanes. Unincorporated roads with no lanes indicated are 2-lane roads.
(-4) Indicates width of right-of-way (ROW) required for multimodal, safety, capacity,and related infrastructure. The number shown indicates the number of lanes that are equivalent to the total ROW width to be preserved.

1 The Buchanan Bypass is a City of Pittsburg project that requires the annexation of unincorporated land. (James Donlon Boulevard Extension FEIR, State Clearinghouse No. 2007102106)

2 Alameda County's 1994 East County Area Plan includes Policy 177 which prohibits capacity increases on Vasco Road within Alameda County. The Policy does support rail and safety projects.

AR - Acalanes Ridge
AL - Alamo
AV - Alhambra Valley
BV - Bayview
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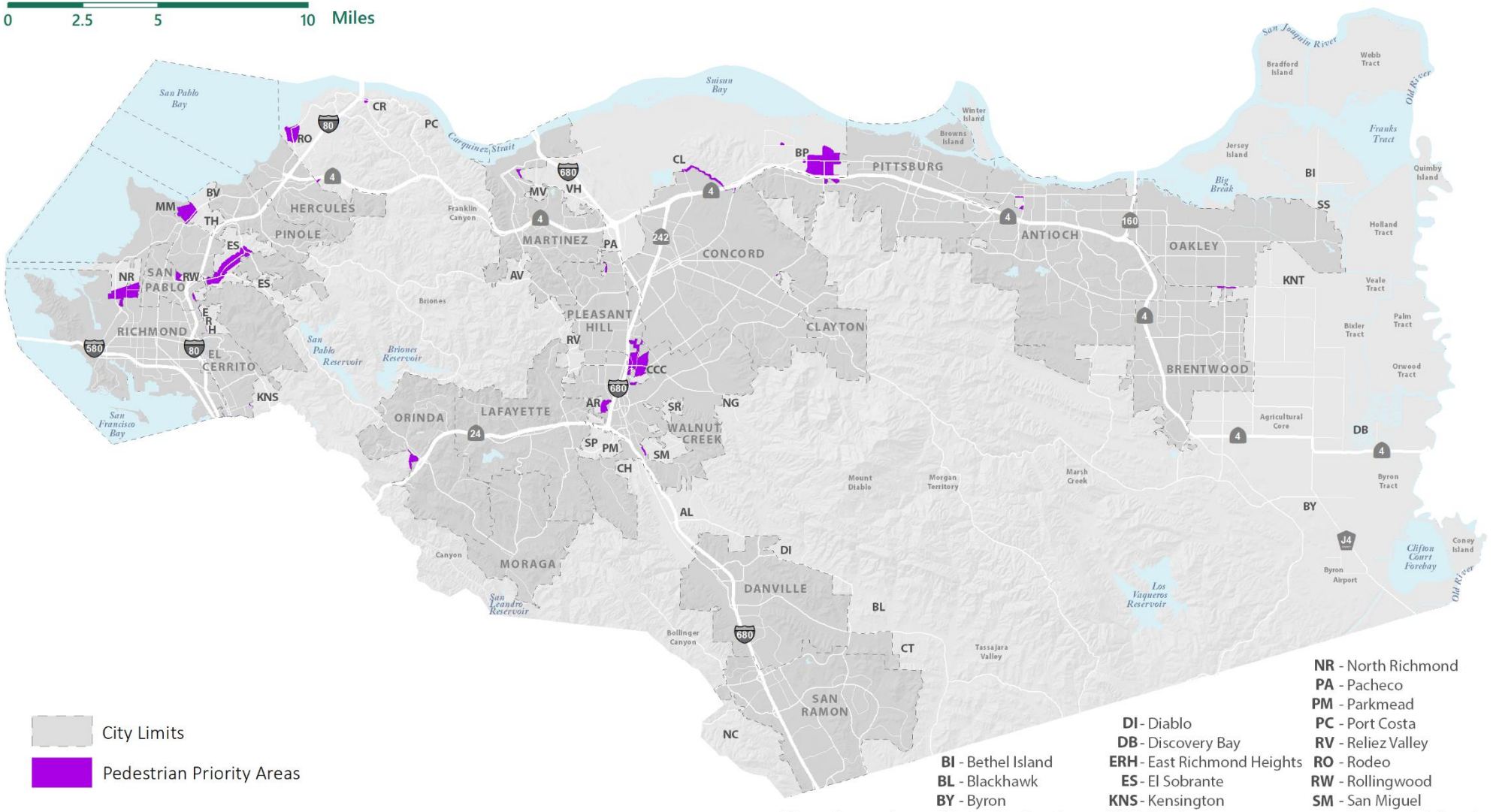
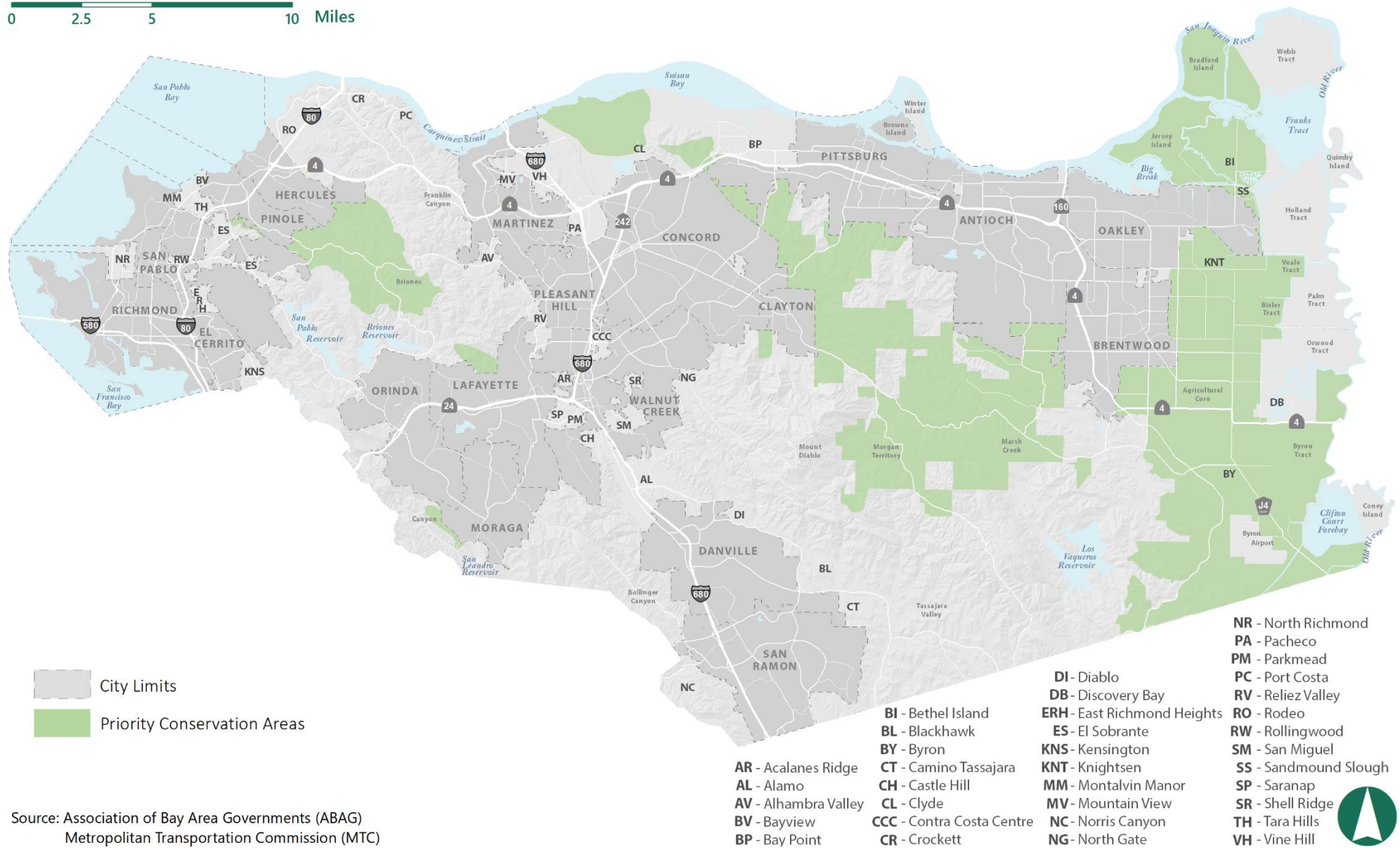
RV - Reliez Valley
RO - Rodeo
RW - Rollingwood
SM - San Miguel
SS - Sandmound Slough
SP - Saranap
SR - Shell Ridge
TH - Tara Hills
VH - Vine Hill

FIGURE TR-5 PEDESTRIAN PRIORITY AREAS



Source: Contra Costa Transportation Authority (CCTA)
2018 Contra Costa Countywide Bicycle and Pedestrian Plan

FIGURE COS-4 PRIORITY CONSERVATION AREAS



Source: Association of Bay Area Governments (ABAG)
Metropolitan Transportation Commission (MTC)

FIGURE COS-5 WATERBODIES AND NATURAL WATERCOURSES

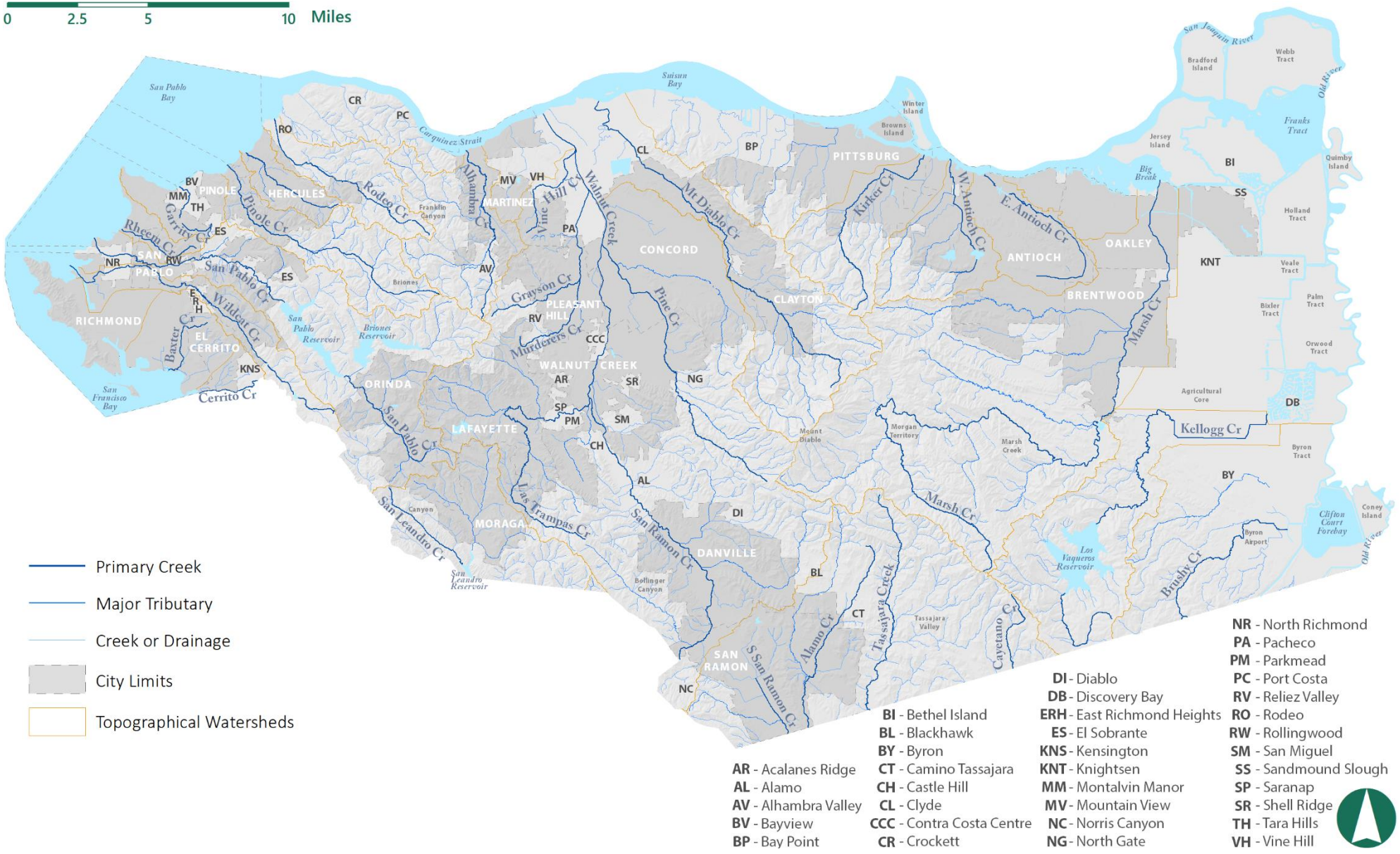


FIGURE COS-6 WATERSHEDS

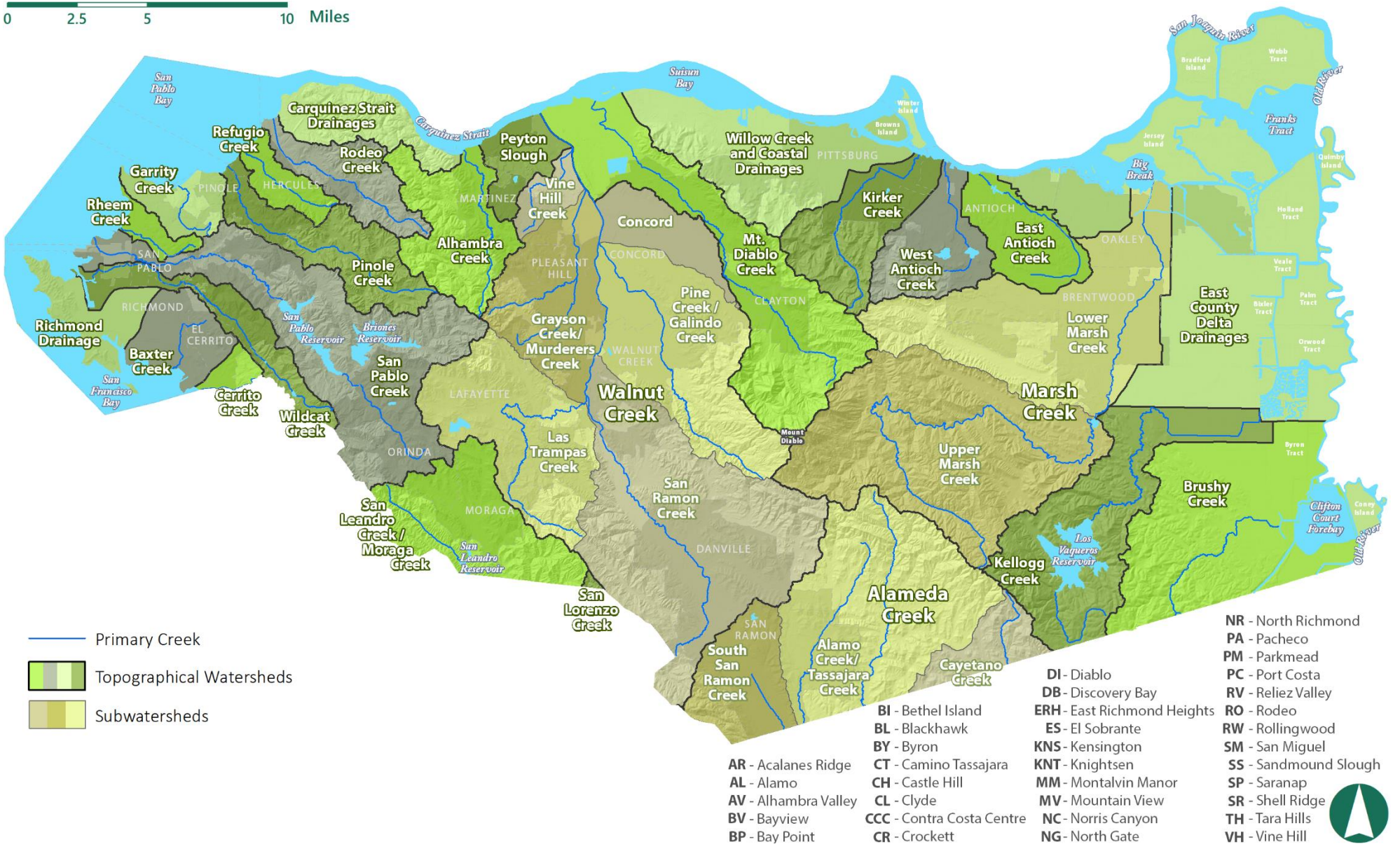
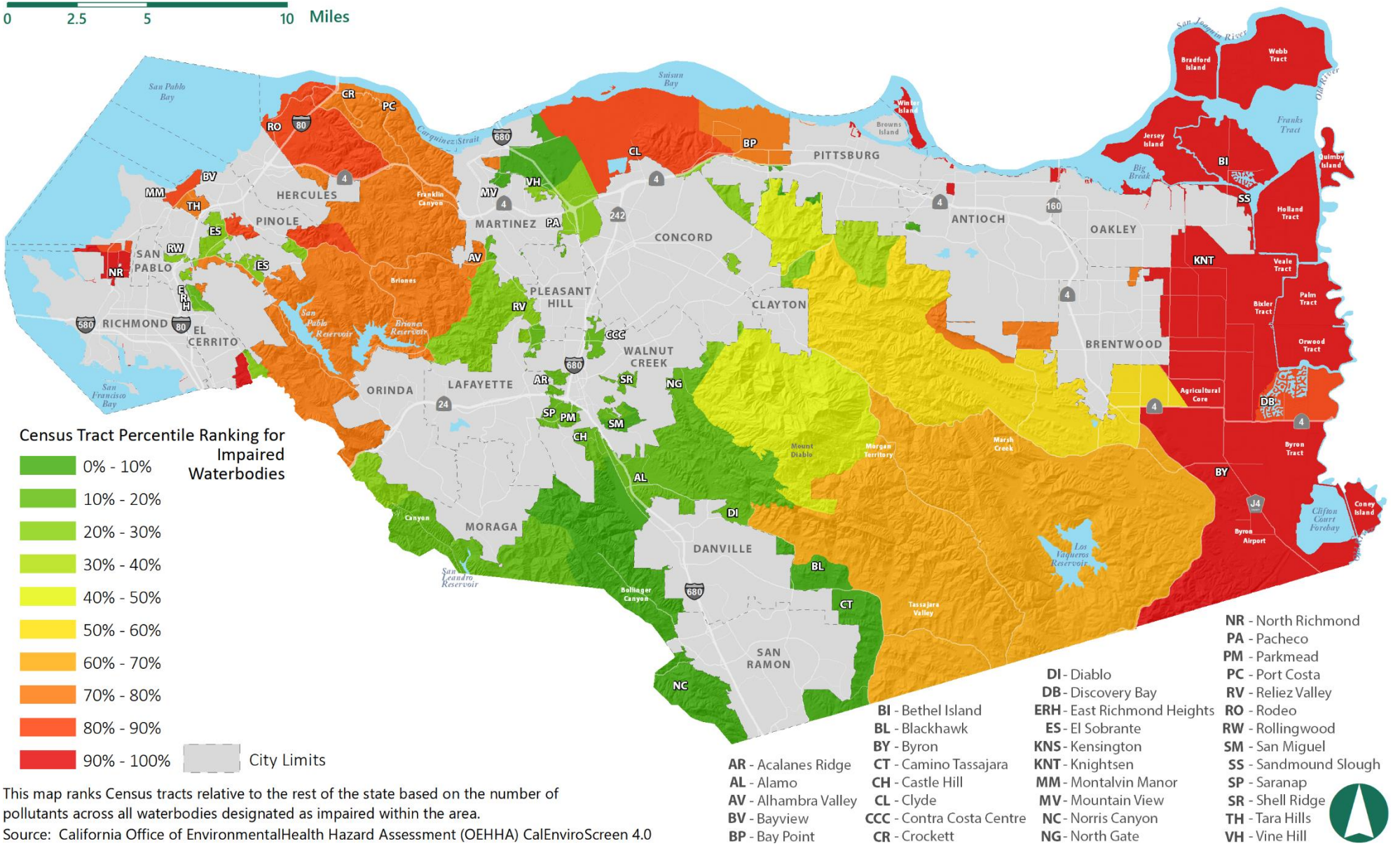
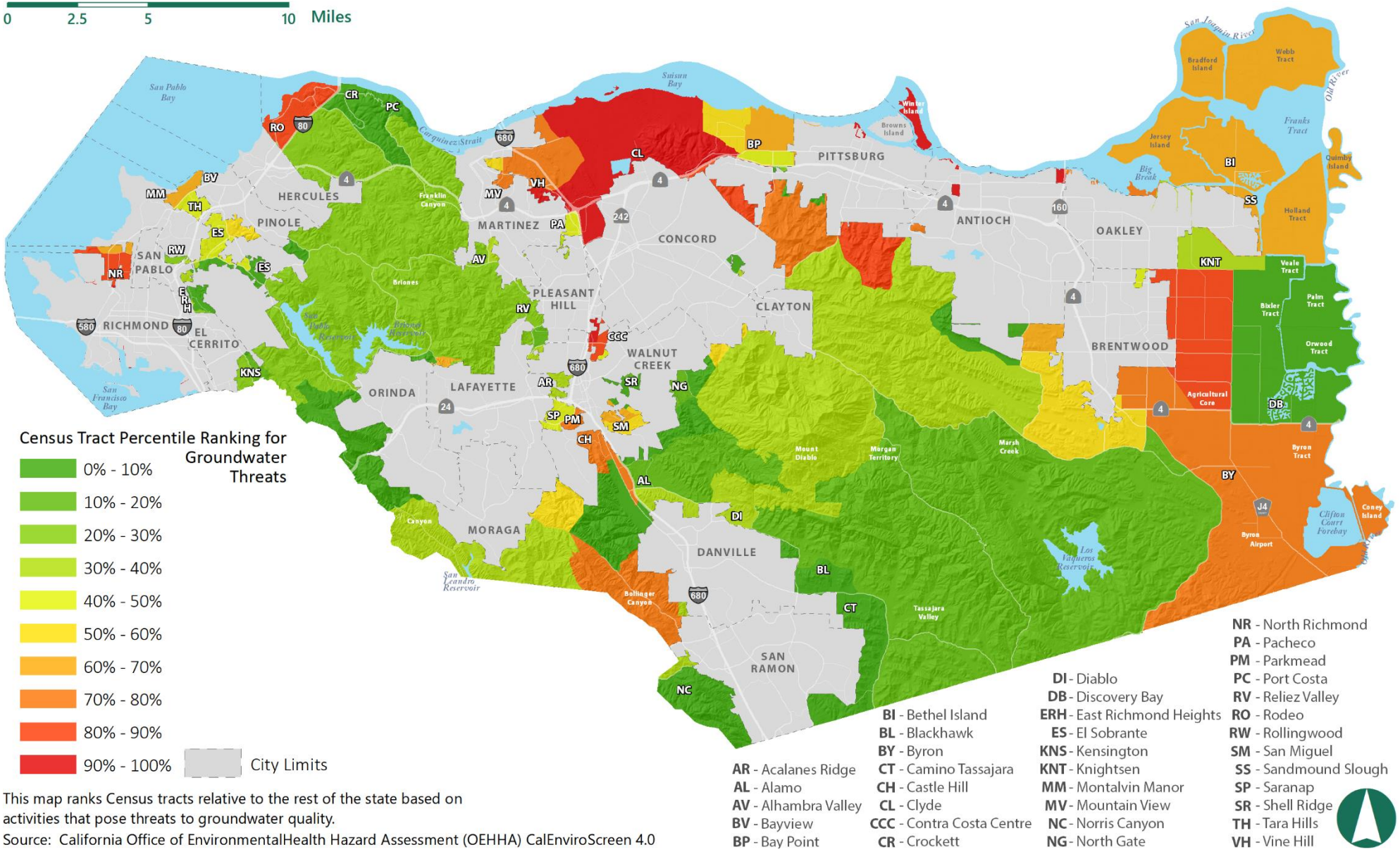


FIGURE COS-8 IMPAIRED WATERBODIES RANKINGS RELATIVE TO THE STATE



This map ranks Census tracts relative to the rest of the state based on the number of pollutants across all waterbodies designated as impaired within the area.
Source: California Office of EnvironmentalHealth Hazard Assessment (OEHHA) CalEnviroScreen 4.0

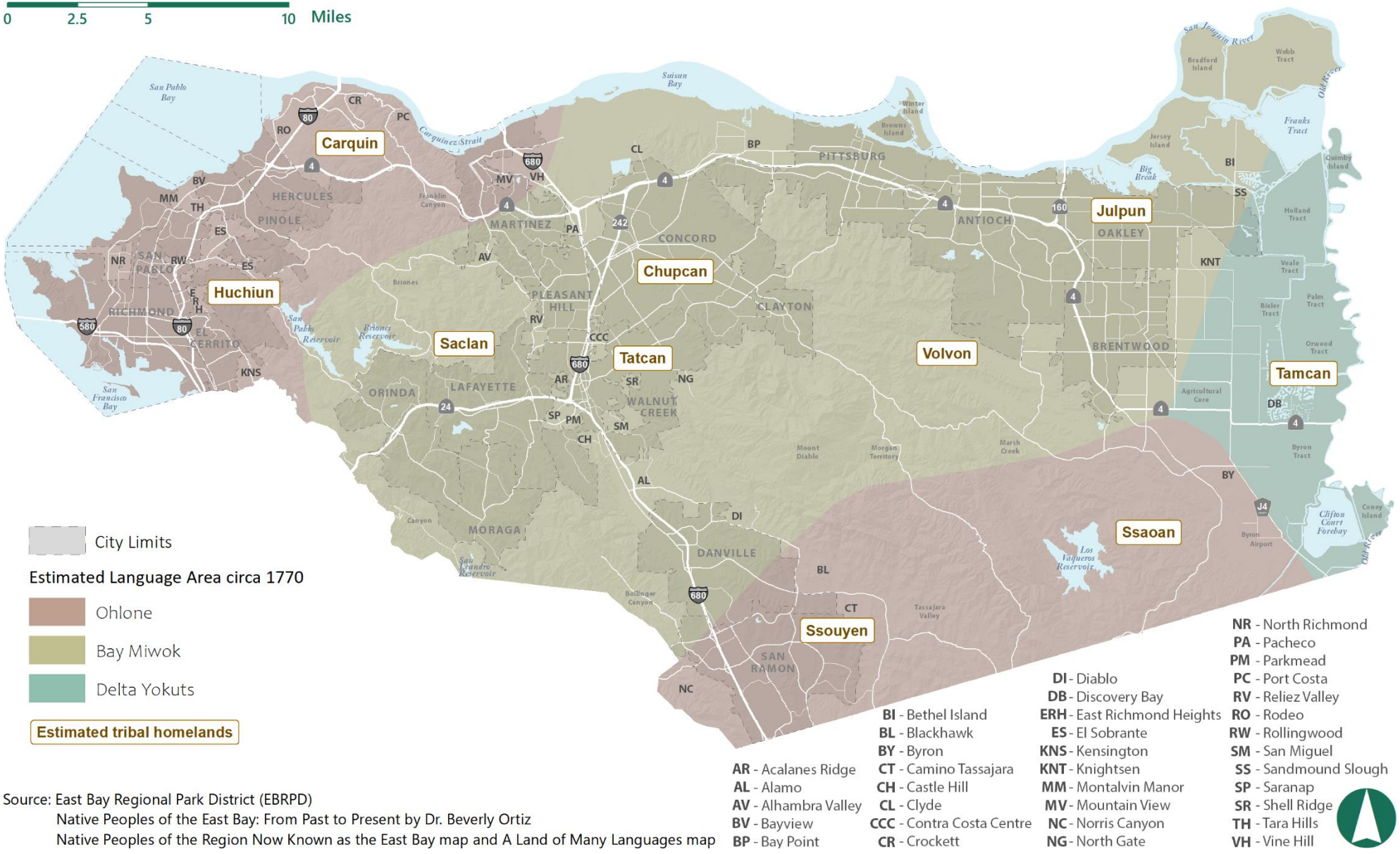
FIGURE COS-9 GROUNDWATER THREAT RANKINGS RELATIVE TO THE STATE



This map ranks Census tracts relative to the rest of the state based on activities that pose threats to groundwater quality.

Source: California Office of EnvironmentalHealth Hazard Assessment (OEHHA) CalEnviroScreen 4.0

FIGURE COS-11 ESTIMATED TRIBAL HOMELANDS AND LANGUAGE AREAS



Source: East Bay Regional Park District (EBRPD)
Native Peoples of the East Bay: From Past to Present by Dr. Beverly Ortiz
Native Peoples of the Region Now Known as the East Bay map and A Land of Many Languages map

FIGURE COS-13 MINERAL RESOURCE AREAS

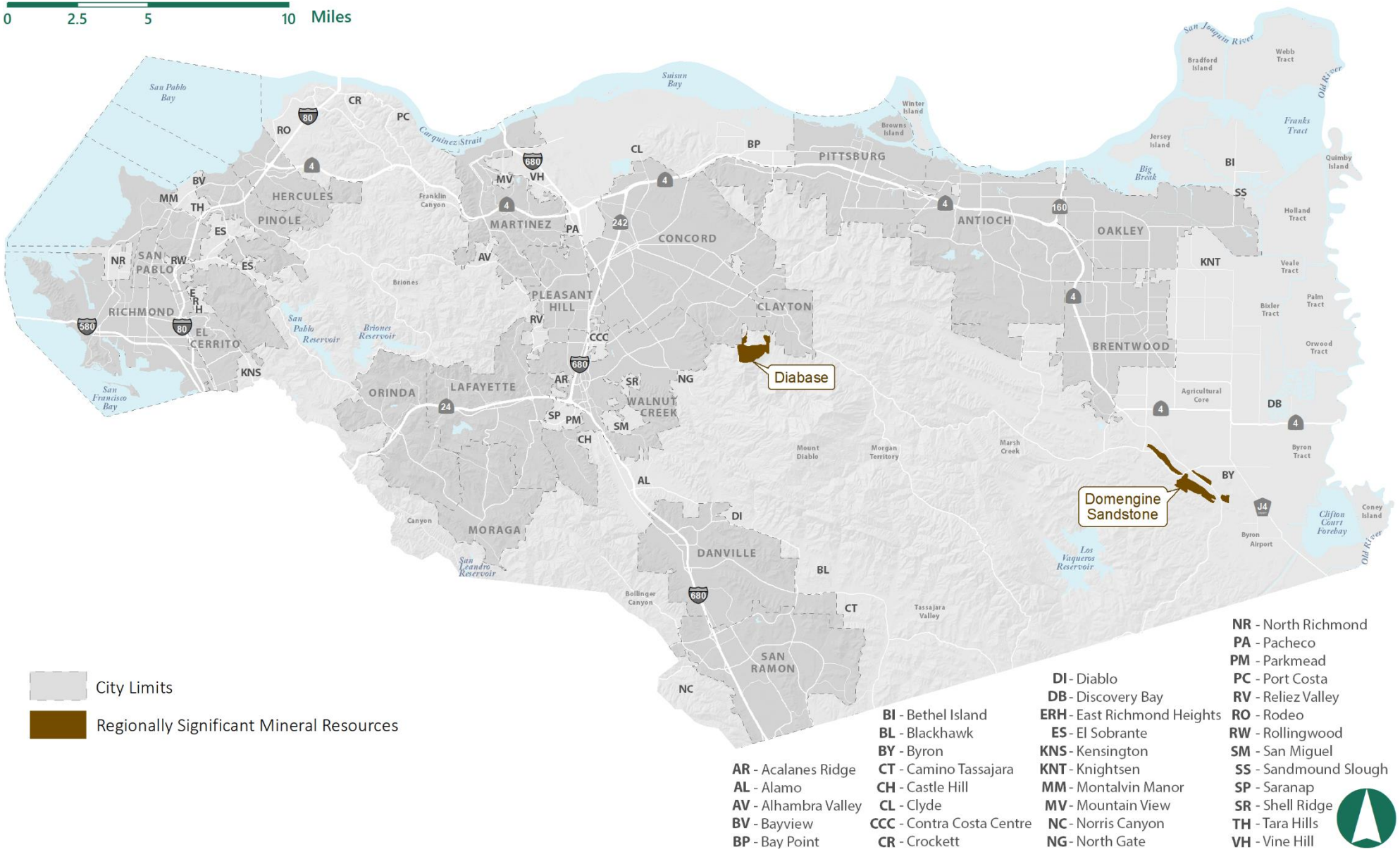
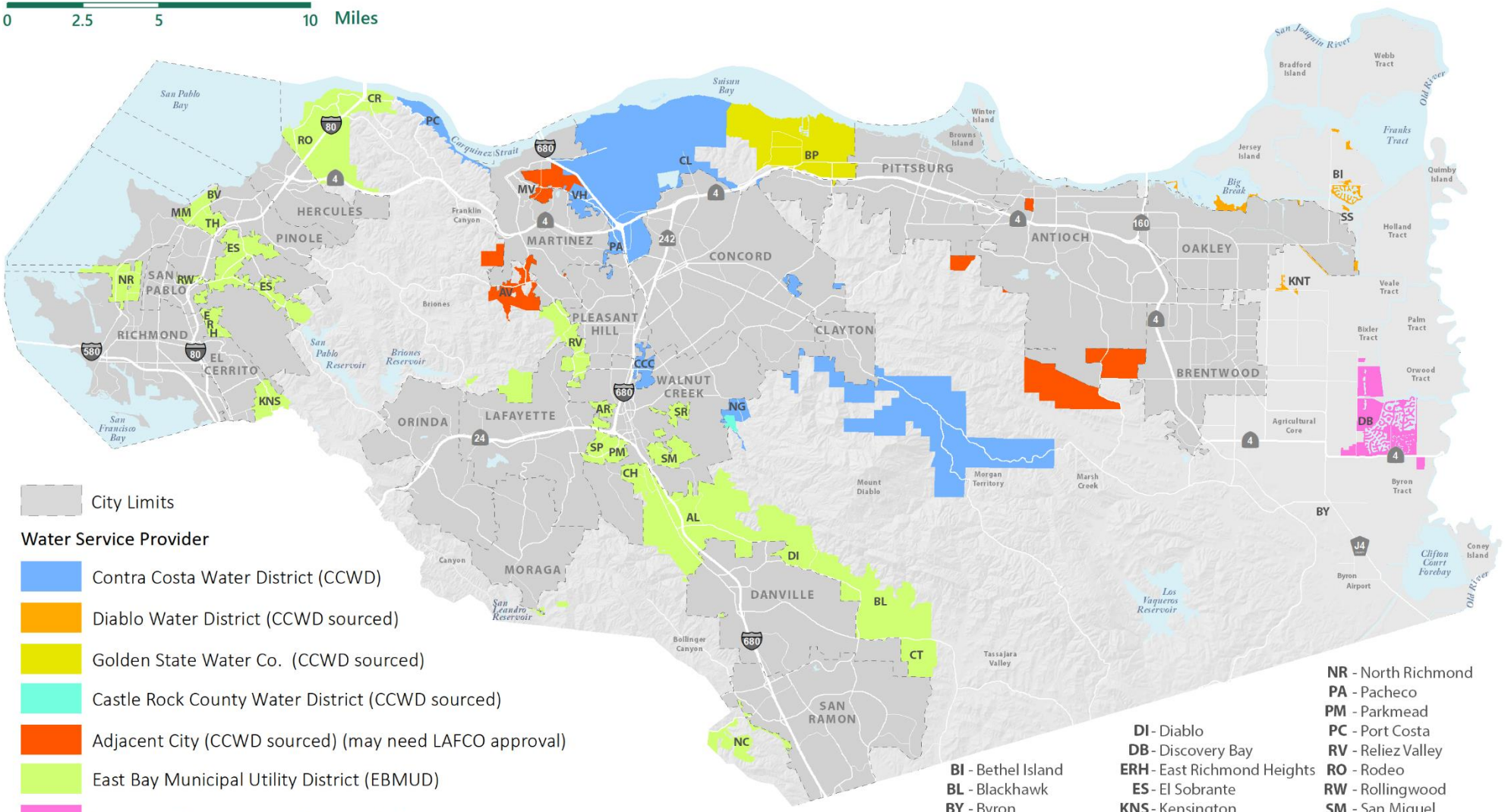
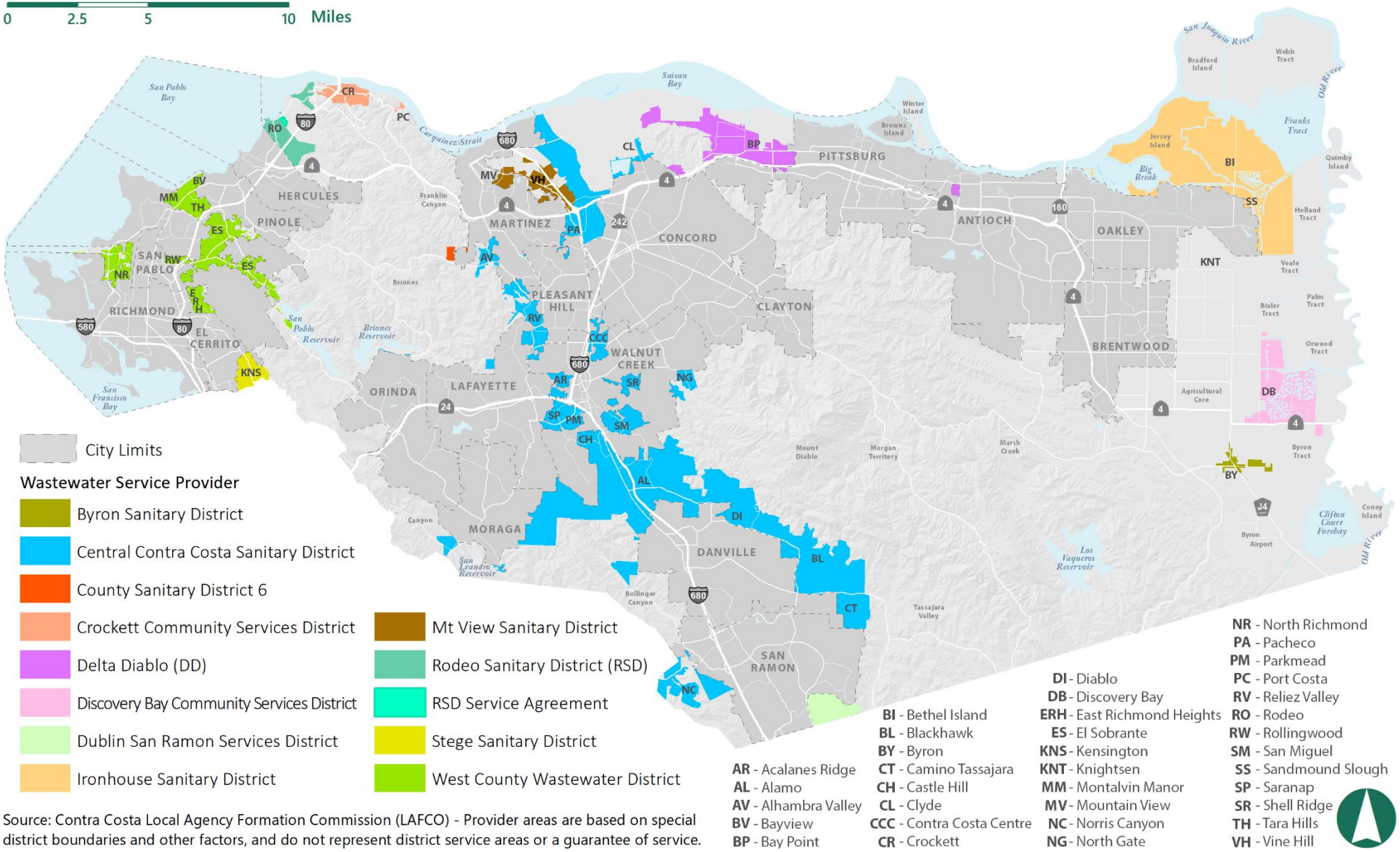


FIGURE PFS-2 WATER SERVICE PROVIDERS



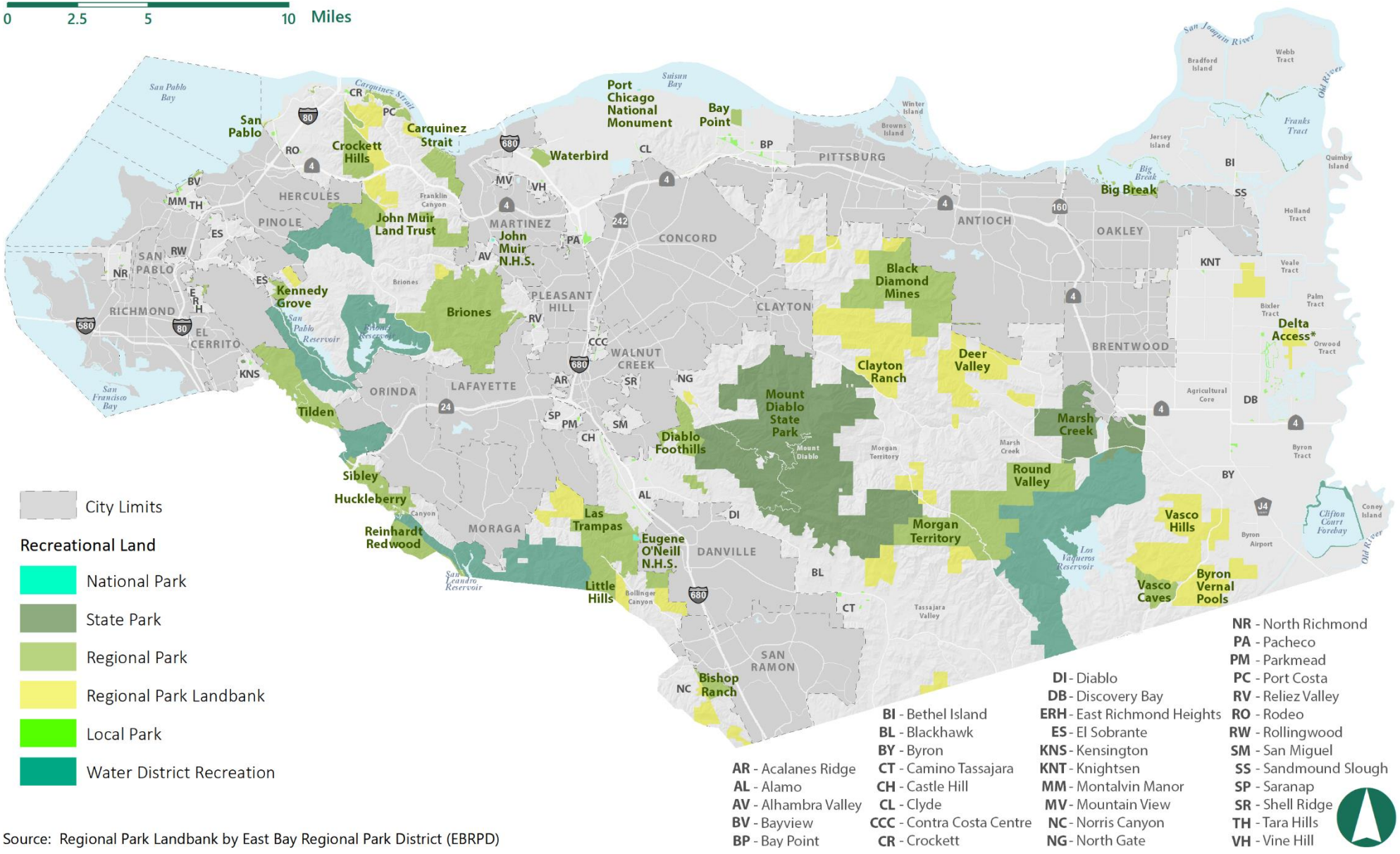
Source: Contra Costa Local Agency Formation Commission (LAFCO) - Provider areas are shown in the unincorporated area only. Some Water Service providers obtain source water from CCWD. Provider areas as shown are based on special district boundaries and other factors, and do not represent a guarantee of service.

FIGURE PFS-3 WASTEWATER SERVICE PROVIDERS



Source: Contra Costa Local Agency Formation Commission (LAFCO) - Provider areas are based on special district boundaries and other factors, and do not represent district service areas or a guarantee of service.

FIGURE PFS-7 FEDERAL, STATE, REGIONAL, AND LOCAL RECREATION LANDS

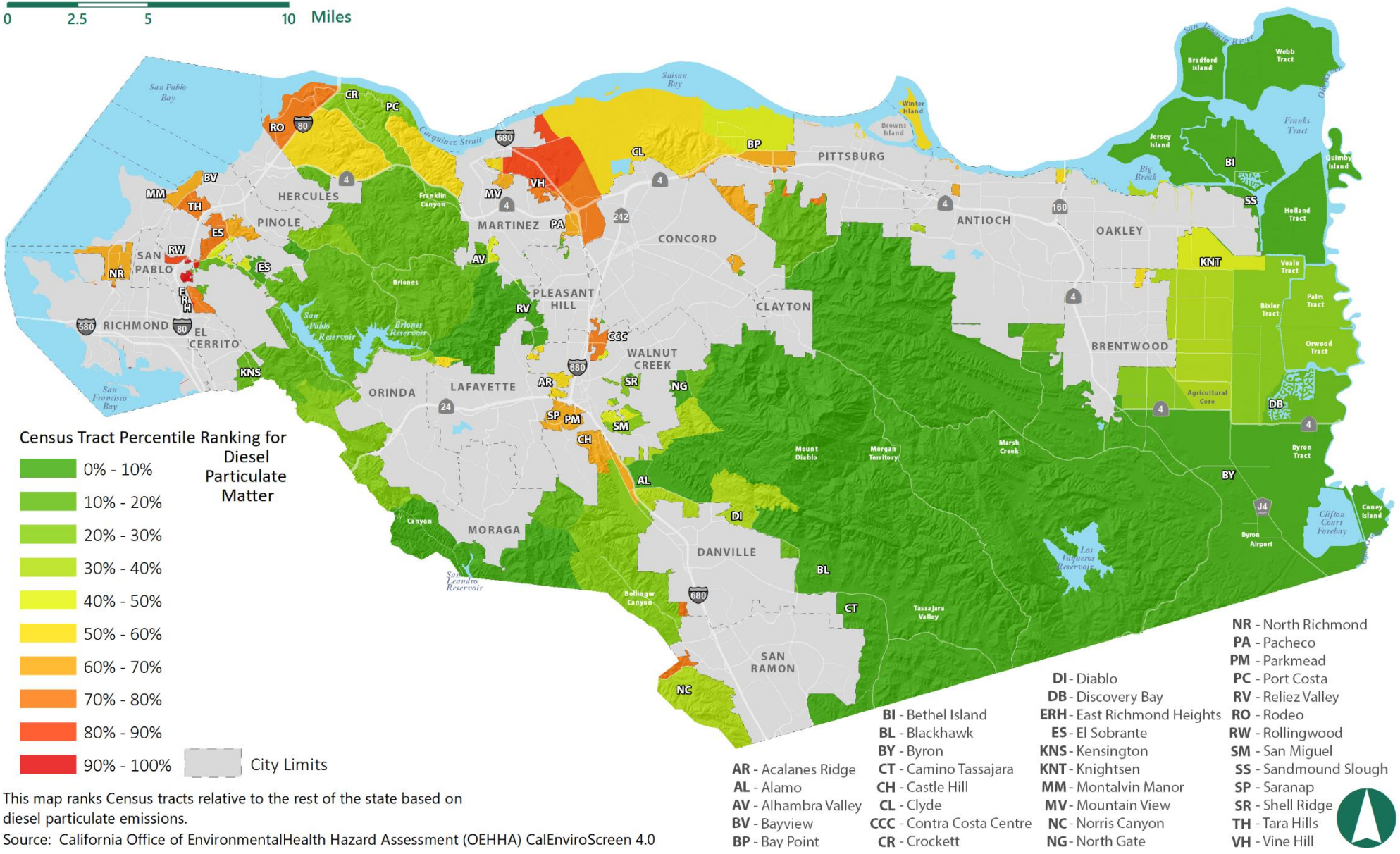


Source: Regional Park Landbank by East Bay Regional Park District (EBRPD)

FIGURE PFS-8 TRAILS NETWORK



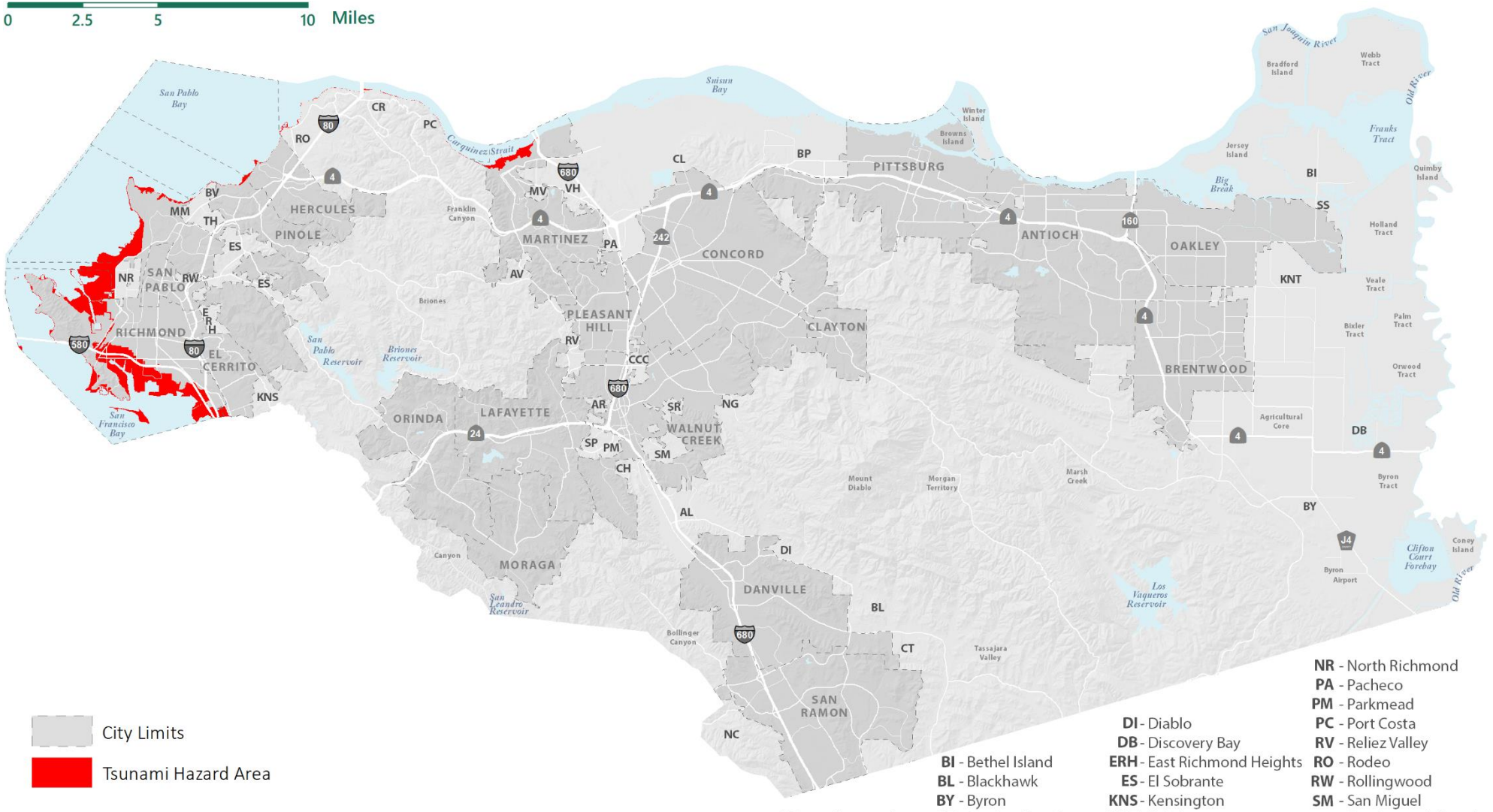
FIGURE HS-1 DIESEL PARTICULATE MATTER RANKINGS RELATIVE TO THE STATE



This map ranks Census tracts relative to the rest of the state based on diesel particulate emissions.

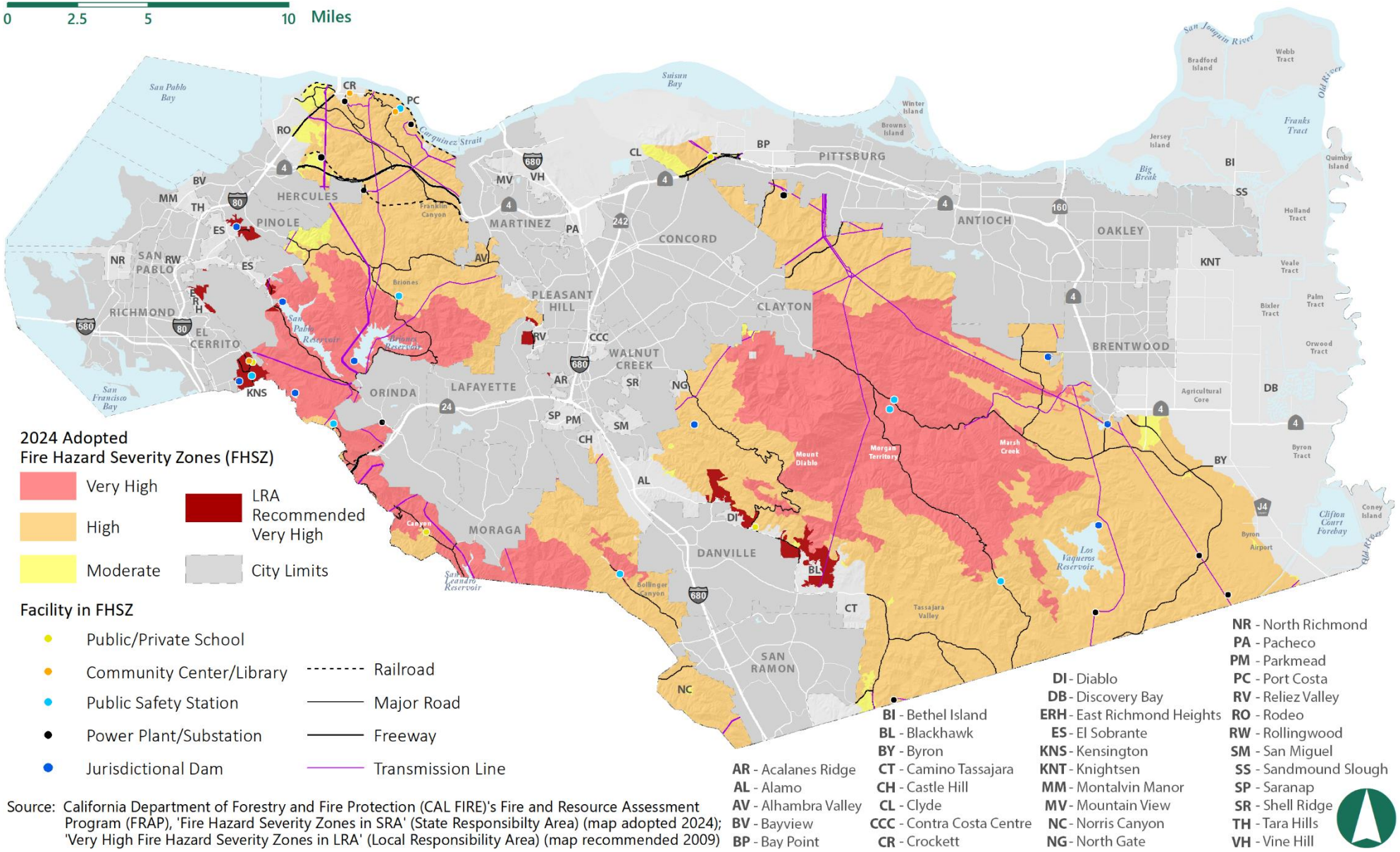
Source: California Office of EnvironmentalHealth Hazard Assessment (OEHHA) CalEnviroScreen 4.0

FIGURE HS-5 TSUNAMI HAZARD AREAS



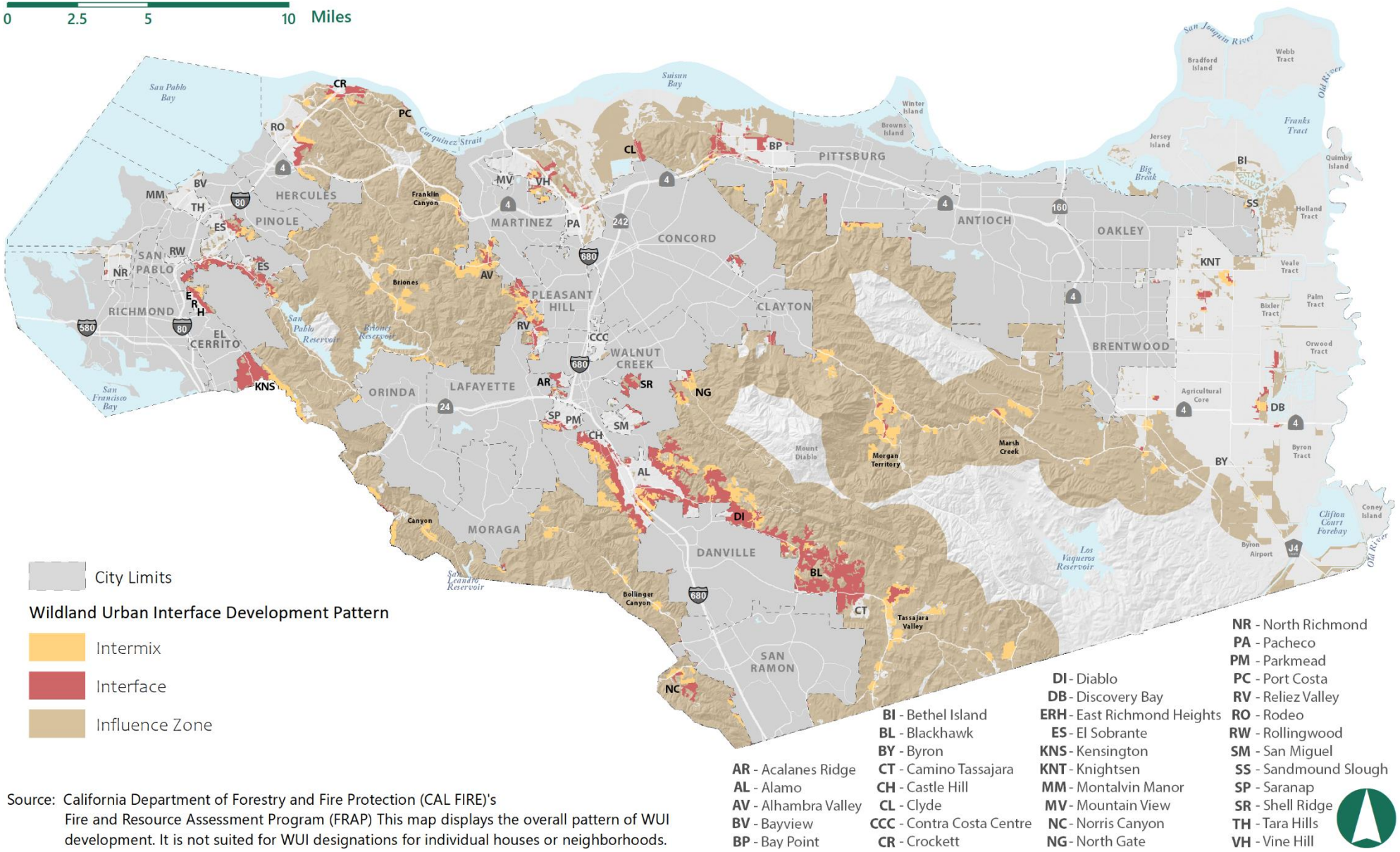
Source: California Department of Conservation - California Geological Survey (CGS) and California Office of Emergency Services (CalOES) Earthquake, Tsunami, and Volcano Program

FIGURE HS-10 FIRE HAZARD SEVERITY ZONES



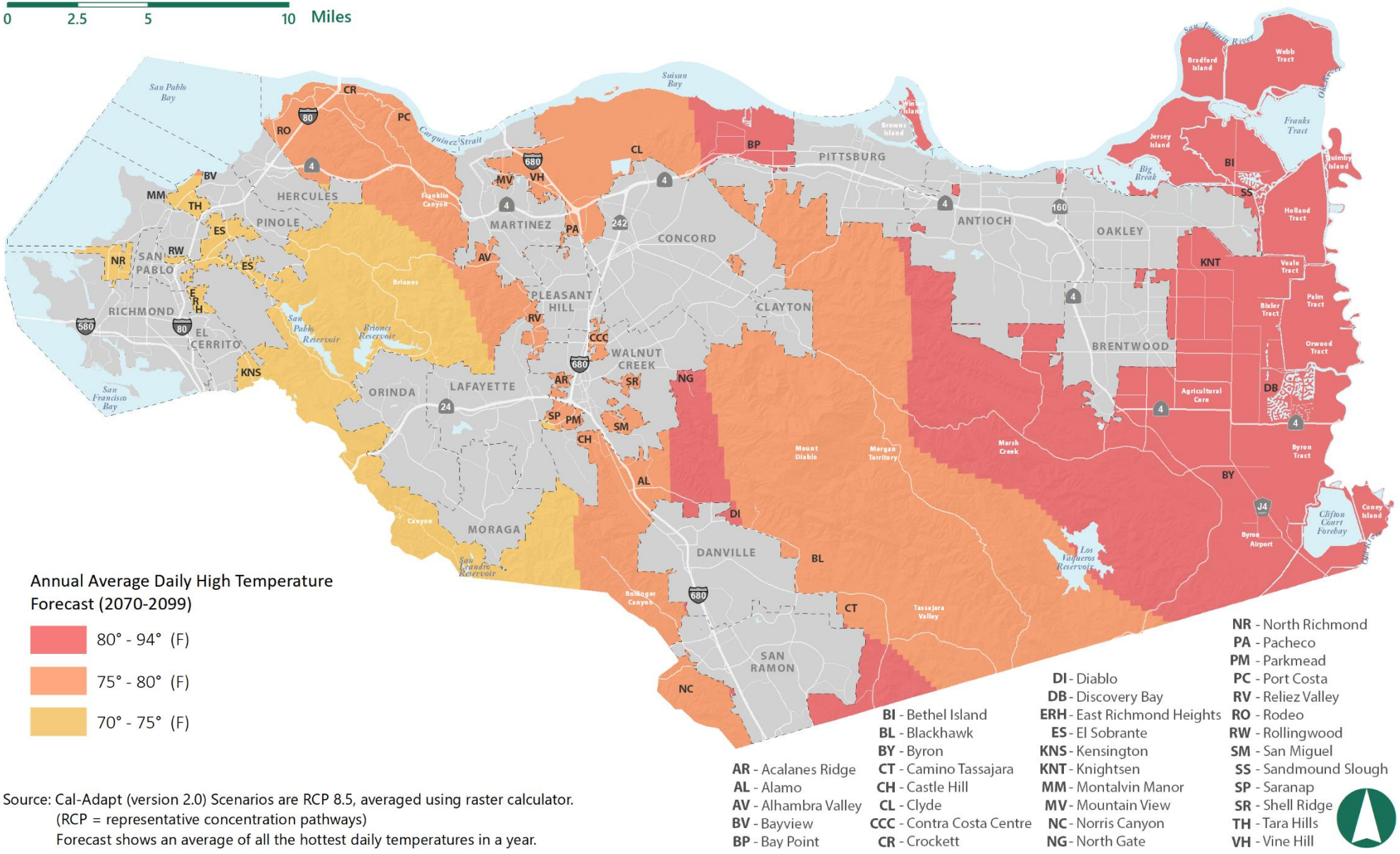
Source: California Department of Forestry and Fire Protection (CAL FIRE)'s Fire and Resource Assessment Program (FRAP), 'Fire Hazard Severity Zones in SRA' (State Responsibilty Area) (map adopted 2024); 'Very High Fire Hazard Severity Zones in LRA' (Local Responsibility Area) (map recommended 2009)

FIGURE HS-11 WILDLAND-URBAN INTERFACE DEVELOPMENT PATTERNS



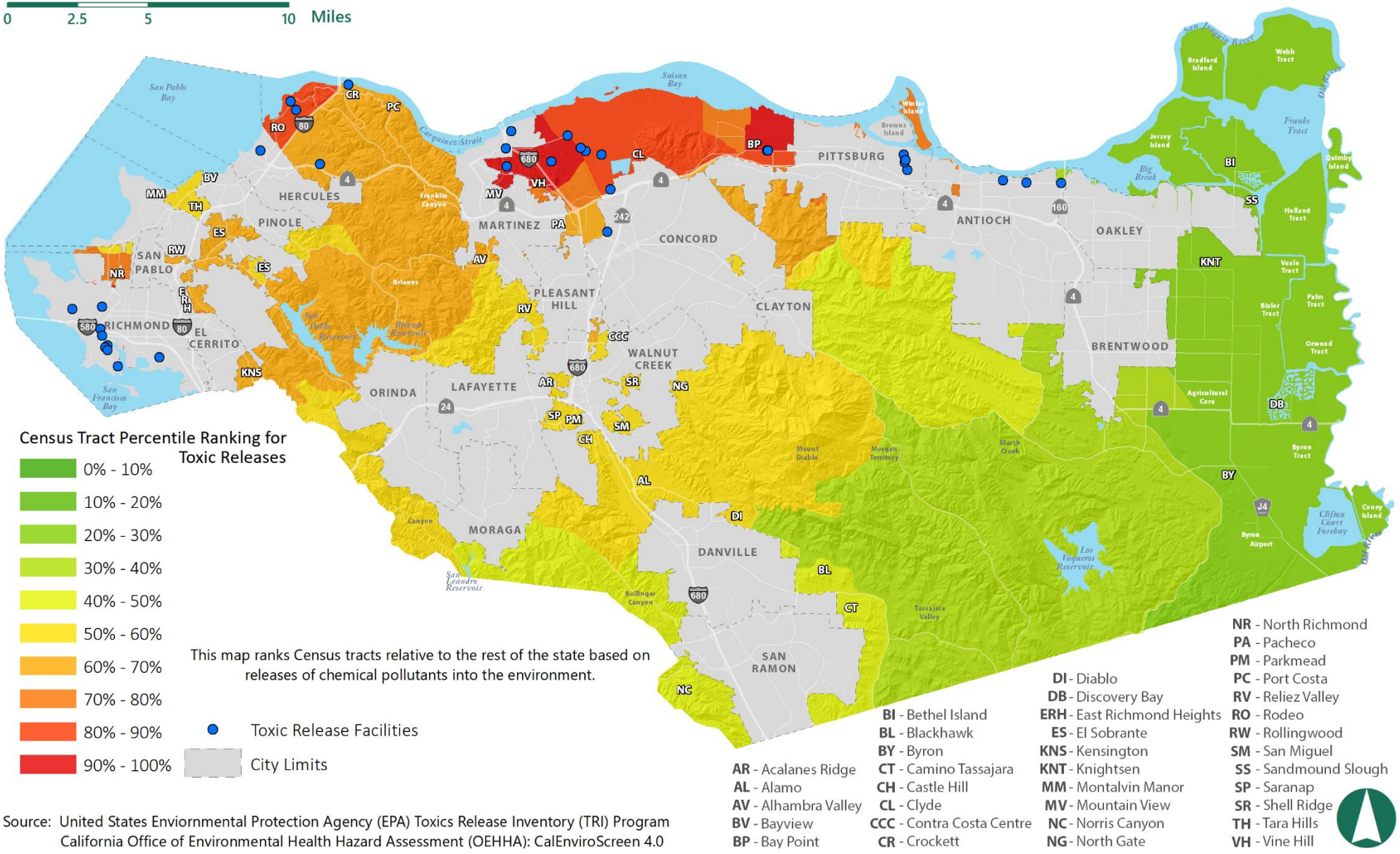
Source: California Department of Forestry and Fire Protection (CAL FIRE)'s Fire and Resource Assessment Program (FRAP) This map displays the overall pattern of WUI development. It is not suited for WUI designations for individual houses or neighborhoods.

FIGURE HS-13 TEMPERATURE FORECAST



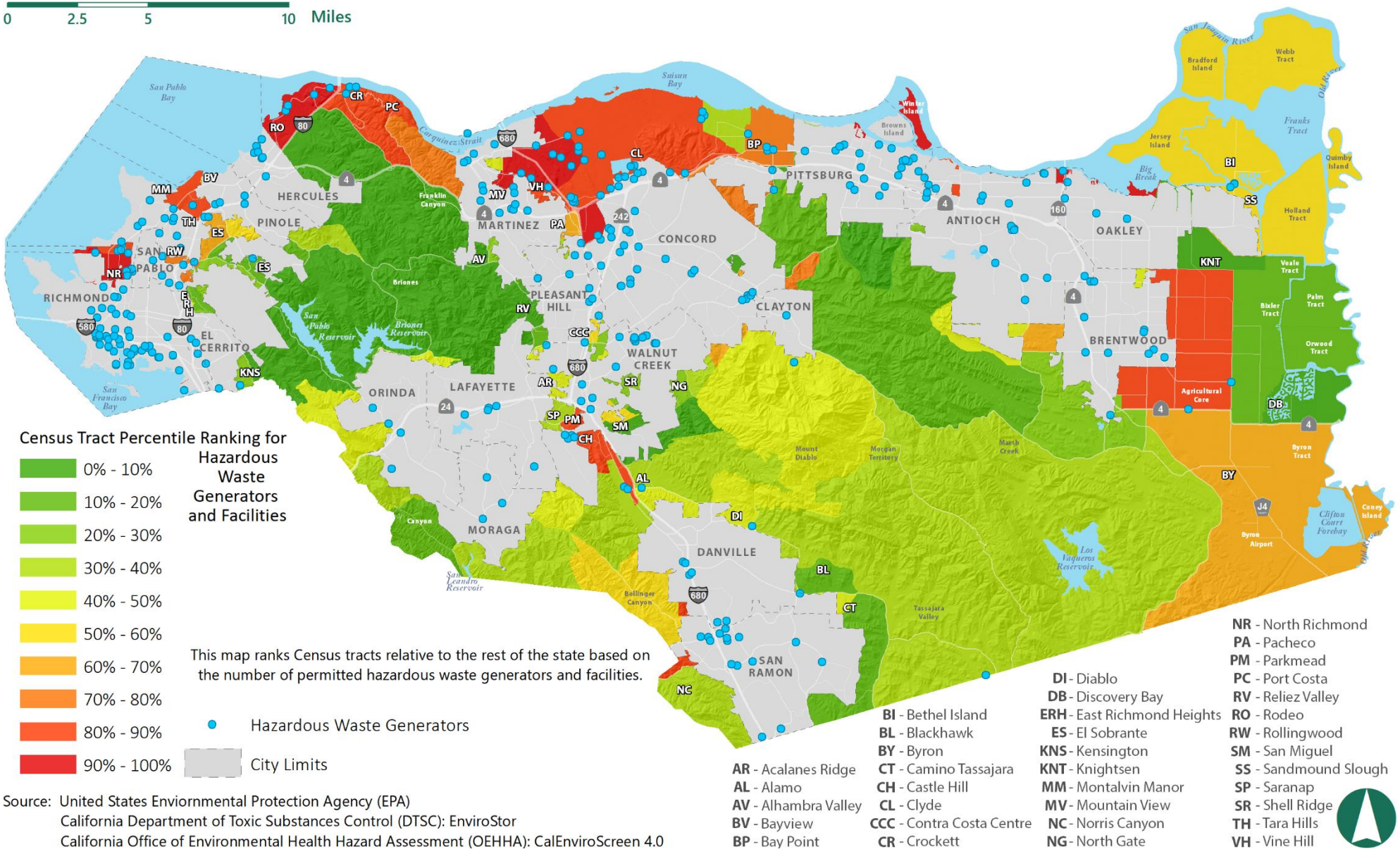
Source: Cal-Adapt (version 2.0) Scenarios are RCP 8.5, averaged using raster calculator.
(RCP = representative concentration pathways)
Forecast shows an average of all the hottest daily temperatures in a year.

FIGURE HS-14 TOXIC RELEASES RANKINGS RELATIVE TO THE STATE



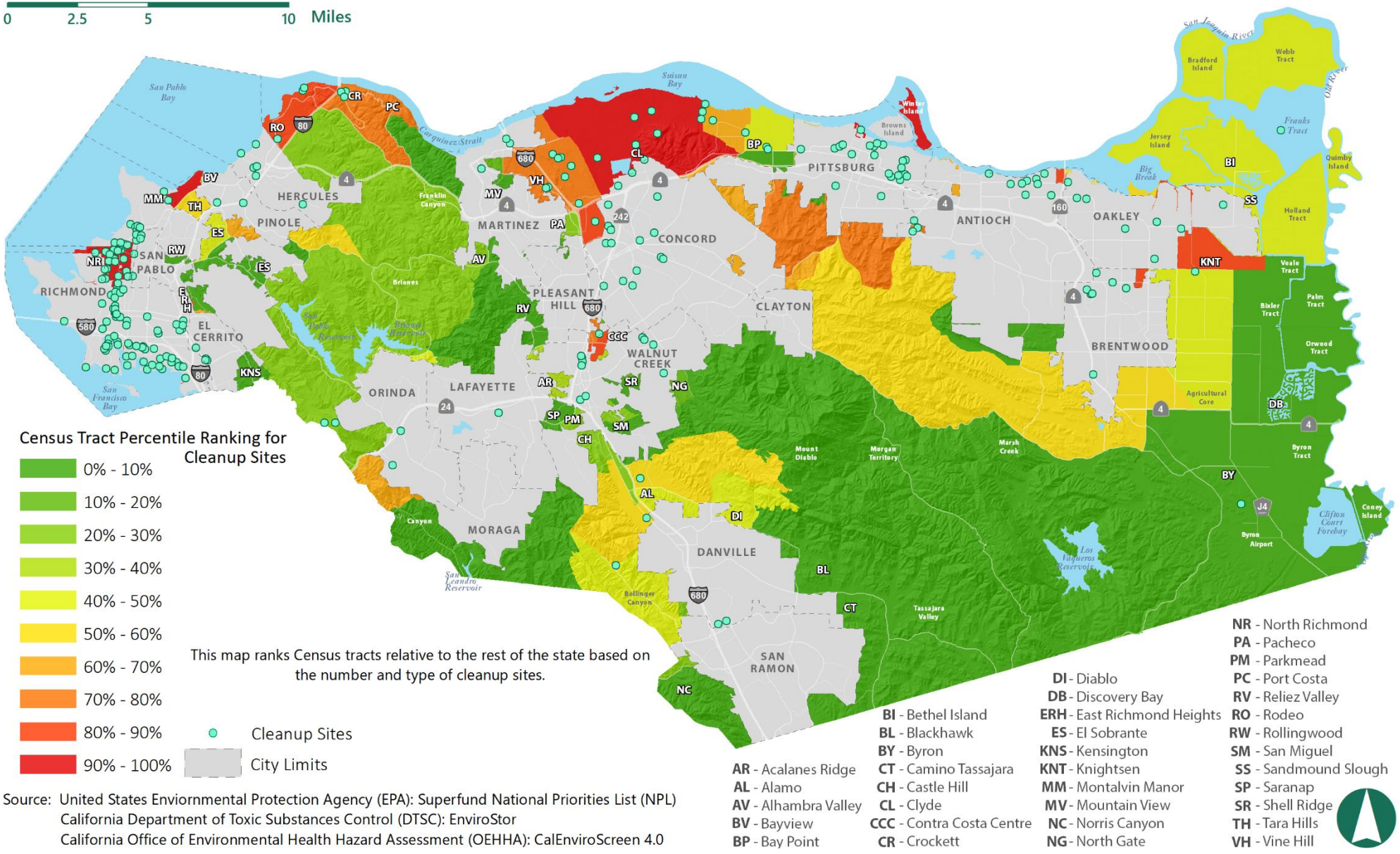
Source: United States Enviornmental Protection Agency (EPA) Toxics Release Inventory (TRI) Program
California Office of Environmental Health Hazard Assessment (OEHHA): CalEnviroScreen 4.0

FIGURE HS-15 HAZARDOUS WASTE GENERATORS AND FACILITIES RANKINGS RELATIVE TO THE STATE



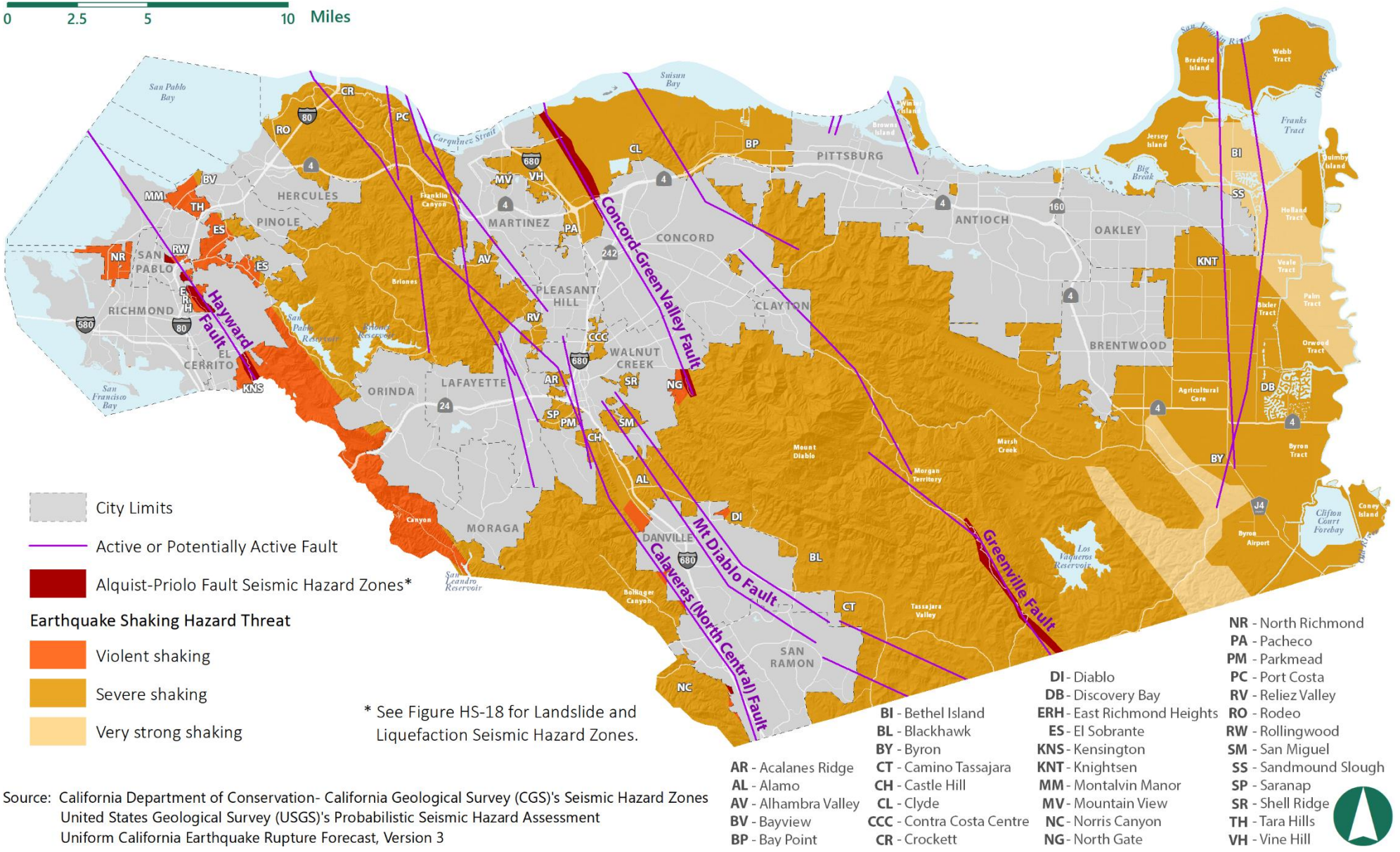
Source: United States Enviornmental Protection Agency (EPA)
California Department of Toxic Substances Control (DTSC): EnviroStor
California Office of Environmental Health Hazard Assessment (OEHHA): CalEnviroScreen 4.0

FIGURE HS-16 CLEAN-UP SITES RANKINGS RELATIVE TO THE STATE



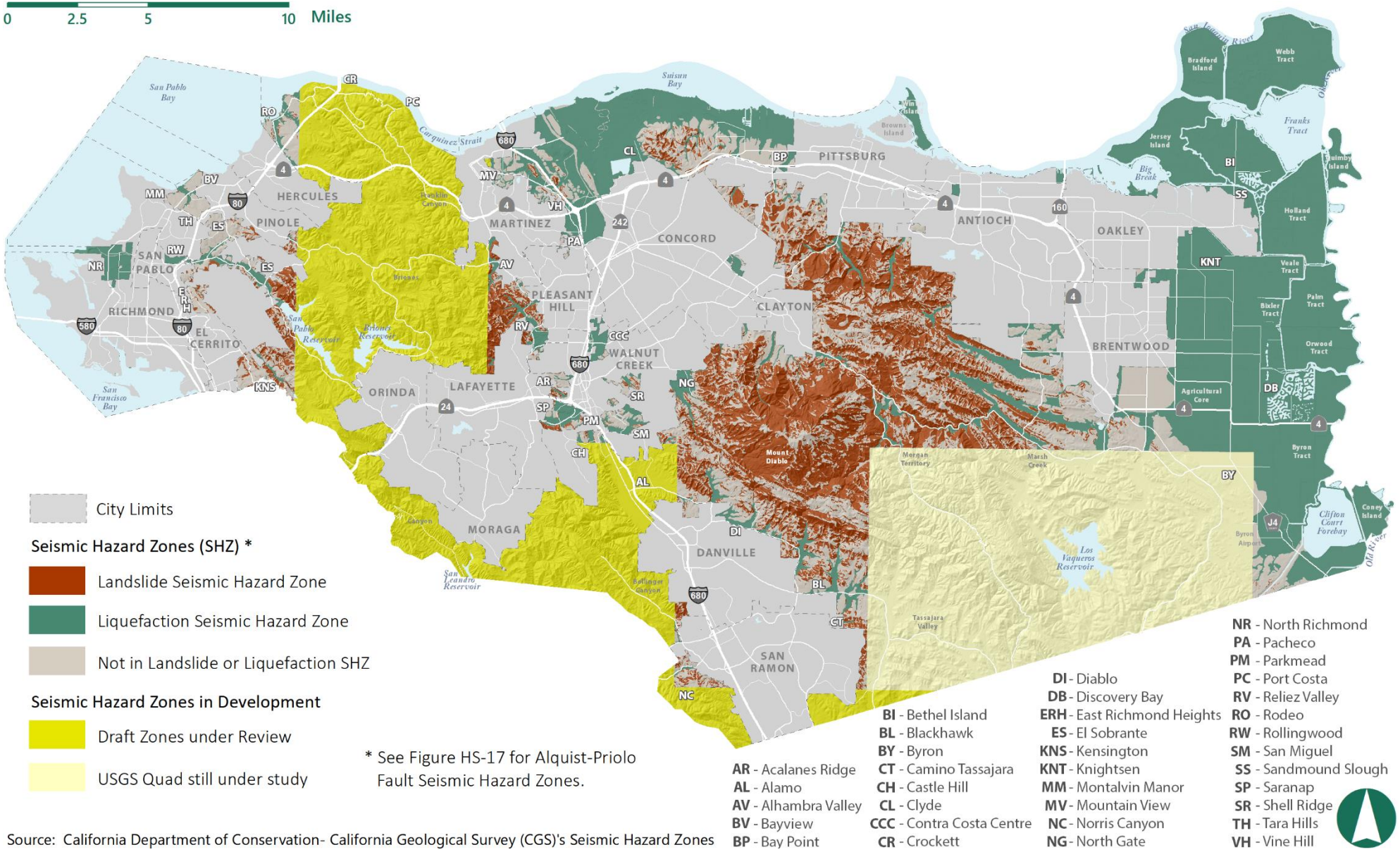
Source: United States Enviornmental Protection Agency (EPA): Superfund National Priorities List (NPL)
California Department of Toxic Substances Control (DTSC): EnviroStor
California Office of Environmental Health Hazard Assessment (OEHHA): CalEnviroScreen 4.0

FIGURE HS-17 EARTHQUAKE HAZARDS



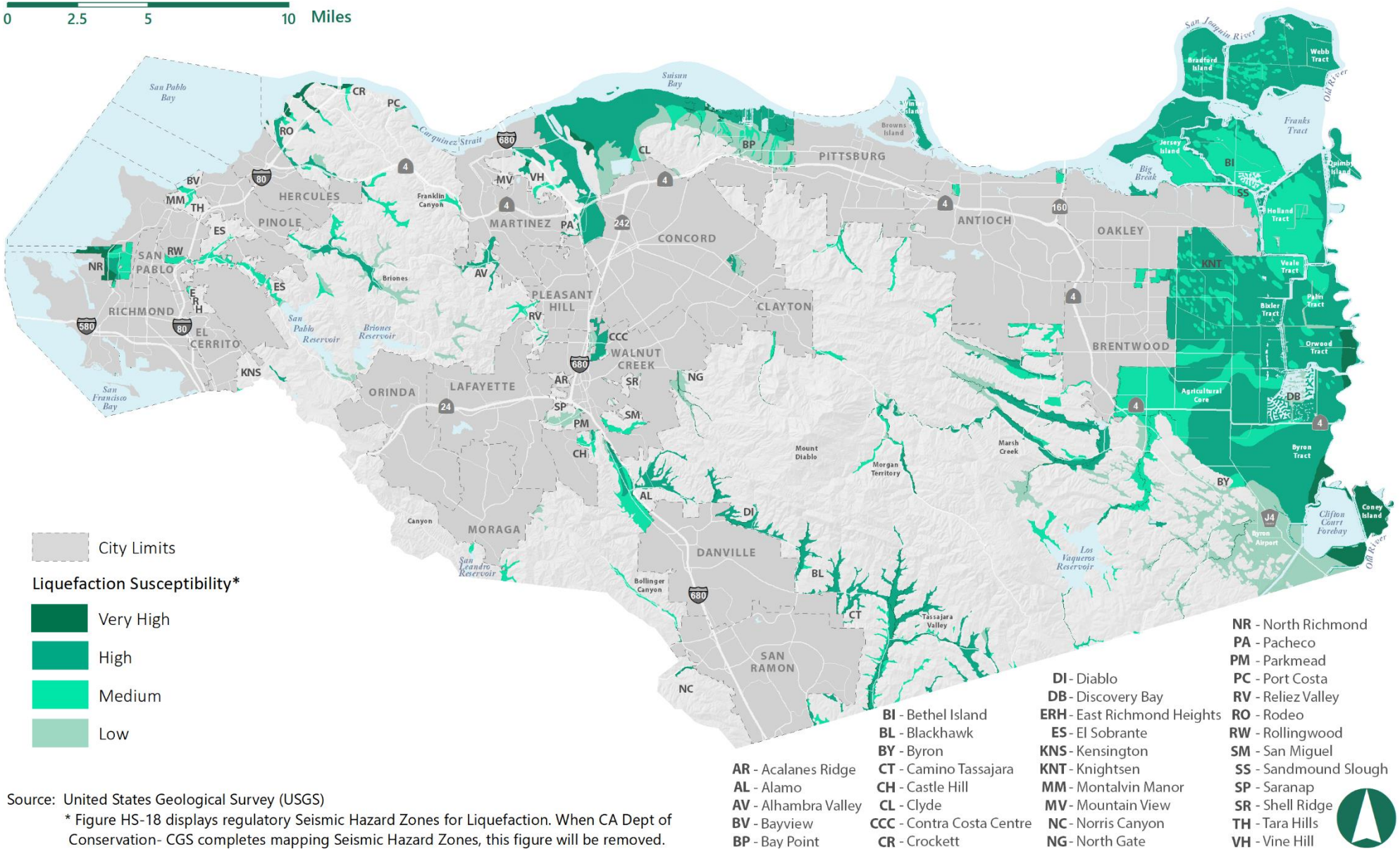
Source: California Department of Conservation- California Geological Survey (CGS)'s Seismic Hazard Zones
United States Geological Survey (USGS)'s Probabilistic Seismic Hazard Assessment
Uniform California Earthquake Rupture Forecast, Version 3

FIGURE HS-18 SEISMIC HAZARD ZONES



Source: California Department of Conservation- California Geological Survey (CGS)'s Seismic Hazard Zones

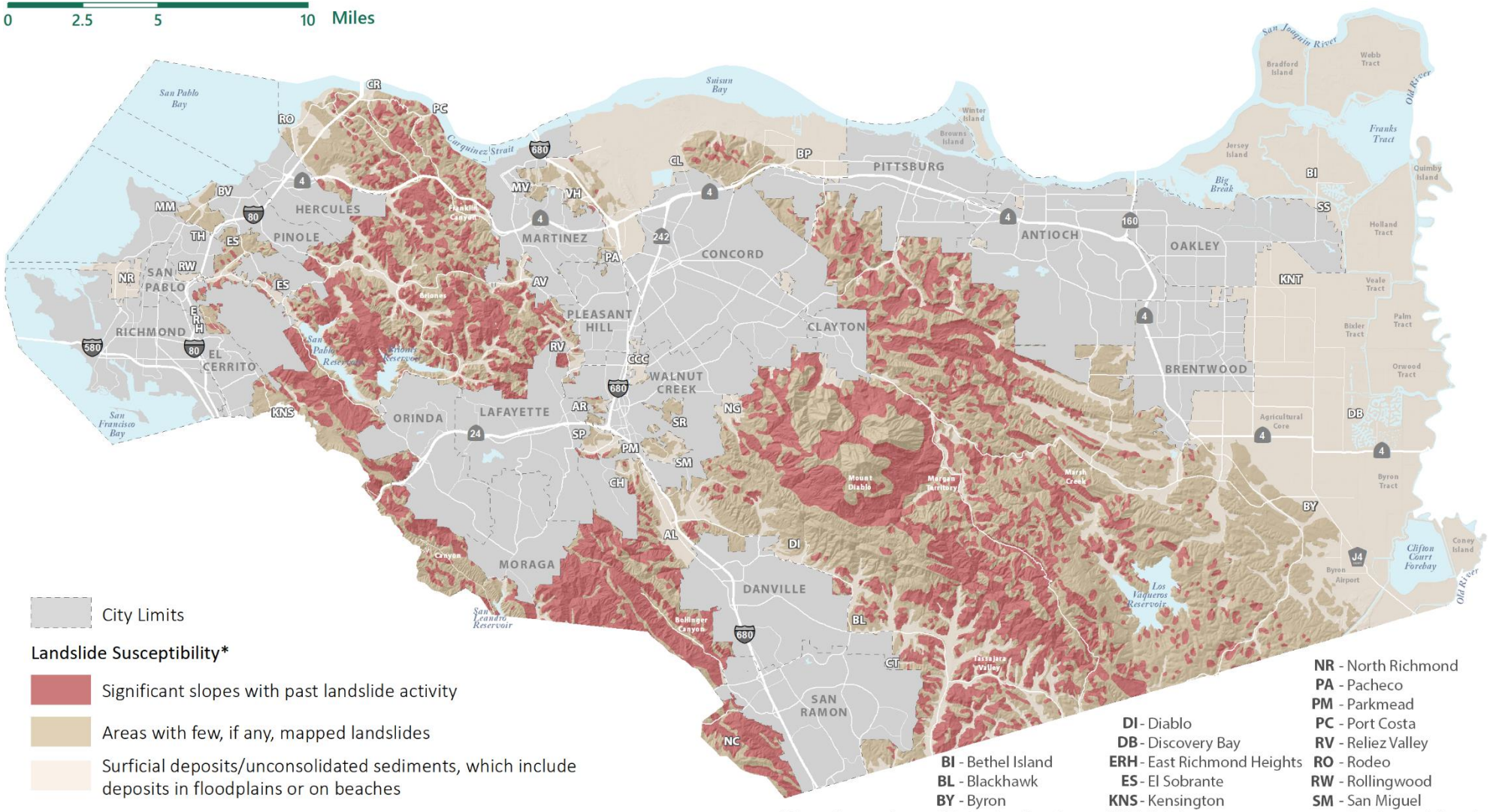
FIGURE HS-18A LIQUEFACTION SUSCEPTIBILITY



Source: United States Geological Survey (USGS)

* Figure HS-18 displays regulatory Seismic Hazard Zones for Liquefaction. When CA Dept of Conservation- CGS completes mapping Seismic Hazard Zones, this figure will be removed.

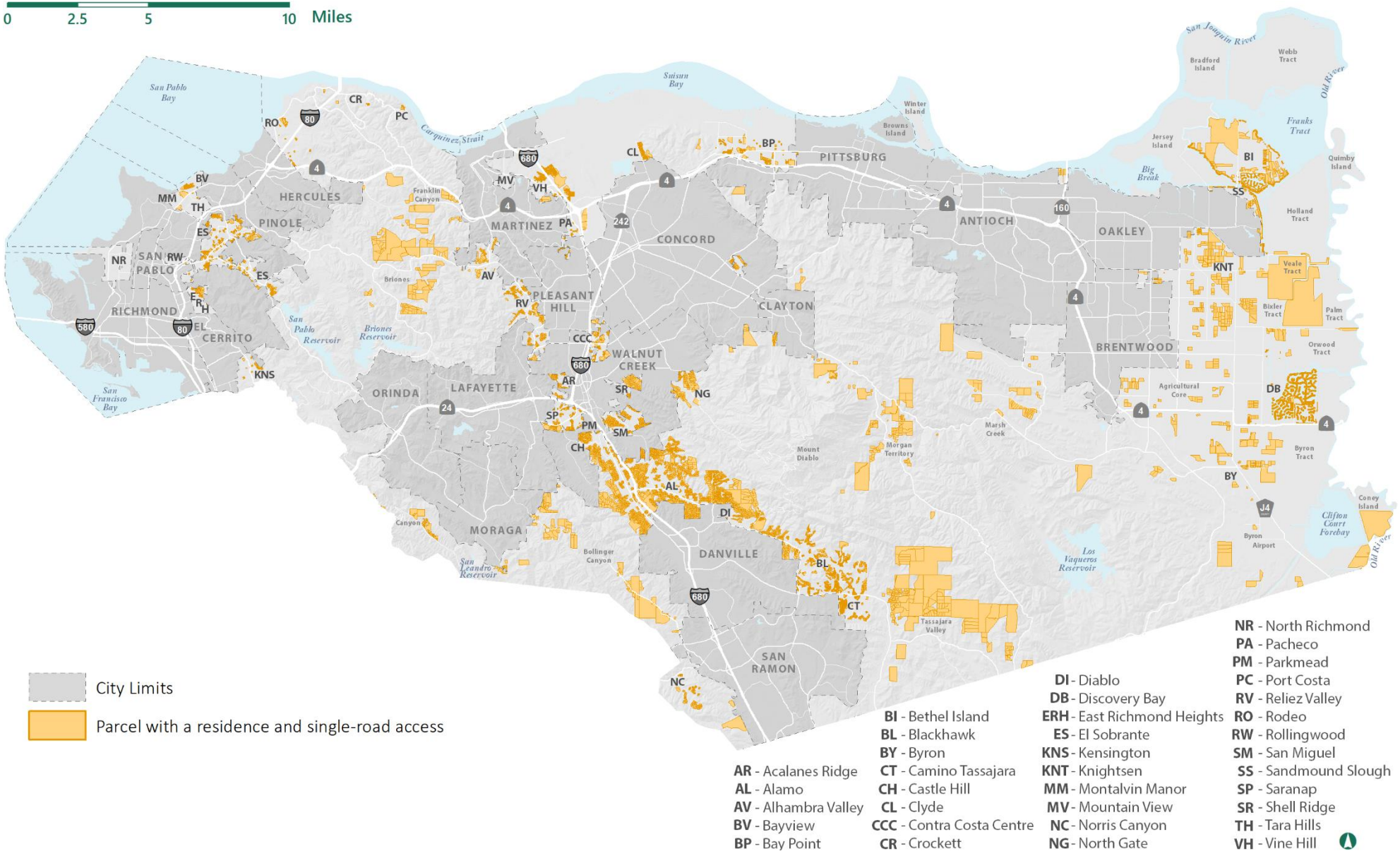
FIGURE HS-18B LANDSLIDE HAZARDS



Source: United States Geological Survey (USGS)

* Figure HS-18 displays regulatory Seismic Hazard Zones for Landslides. When CA Dept of Conservation- CGS completes mapping Seismic Hazard Zones, this figure will be removed.

FIGURE HS-20 SINGLE-ACCESS ROAD RESIDENTIAL AREAS



ATTACHMENT 3:

PUBLIC REVIEW DRAFT #2 CLIMATE ACTION AND ADAPTATION PLAN 2024 UPDATE



Contra Costa County

Climate Action and Adaptation Plan 2024 Update

August 2024

Public Review Draft #2

ENVISION CONTRA COSTA 2040


THE SEAL OF
CONTRA COSTA COUNTY CALIFORNIA

August 2024

Public Review Draft #2

Contra Costa County

Climate Action and Adaptation Plan 2024 Update

Prepared For:

Contra Costa County
1025 Escobar Street
Martinez, CA 94553

Prepared By: PlaceWorks

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ACKNOWLEDGEMENTS

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Emily Groth, Planner and Climate Corps Fellow, 2022 – 2023
Savannah McCarthy, Climate Corps Fellow, 2021 – 2022
Cindy Cortez, Climate Corps Fellow, 2019 – 2020

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John M. Gioia, District 1 Supervisor*
Candace Andersen, District 2 Supervisor
Diane Burgis, District 3 Supervisor
Karen Mitchoff, District 4 Supervisor (term expired 2022)
Ken Carlson, District 4 Supervisor (assumed office 2023)
Federal D. Glover, District 5 Supervisor*
**Indicates member of the Board Sustainability Committee*

Sustainability Commission

Shoshana Wechsler, Member, District 1
Erin Levine, Alternate, District 1, 2023 – 2024
Victoria Smith, Member, District 2
Christopher D. Easter, Alternate, District 2
Michael Moore, Member, District 3
Norman Cohen, Alternate, District 3
Brandon R. Matson, Member, District 4
Wesley Sullens, Alternate, District 4
Charles Davidson, Member, District 5
Renee Fernandez-Lipp, Alternate, District 5

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Sustainability Commission (continued)

Chuck Leonard, At-Large, Business Group
Susan Hurl, At-Large, Business Group
Luz Gomez, At-Large, Community Group
Howdy Goudey, At-Large, Community Group
Kimberly Hazard, At-Large, Education/Research
Kiara Pereira, At-Large, Environmental Justice
Sarah Foster, At-Large, Environmental Justice
Nick Despota, Member, District 1, 2017 – 2023
Ryan Buckley, Alternate, District 2, 2018 – 2021
John Sierra, Member, District 3, 2017 – 2021
Gretchen Logue, Alternate, District 3, 2017 – 2019
Samantha Moy, Alternate, District 3, 2020 – 2023
Travis Curran, Alternate, District 4, 2017 – 2021
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Doria Robinson, At-Large, Environmental Justice, 2017 – 2020
Isabella Zizi, At-Large, Environmental Justice, 2020 – 2023

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Cover page photo credit: Jennifer Groth.

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LIST OF ABBREVIATIONS

AB: Assembly Bill

BAAQMD: Bay Area Air Quality Management District

BARCAP: Bay Area Regional Climate Action Planning

BayREN: Bay Area Regional Energy Network

BCDC: Bay Conservation and Development Commission

CAP: Climate Action Plan

CAAP: Climate Action and Adaptation Plan

CARB: California Air Resources Board

CCTA: Contra Costa Transportation Authority

CEC: California Energy Commission

CERT: Community Emergency Response Team

CH_4: ~~M~~methane

CO_2: ~~C~~carbon dioxide

CO_{2e}: c~~C~~arbon dioxide equivalent

CPUC: California Public Utilities Commission

CRIPP: County Road Improvement and Preservation Program

CTP: Countywide Transportation Plan

DCD: Contra Costa County Department of Conservation and Development

e-bike: ~~E~~electric bicycle

EBMUD: East Bay Municipal Utilities District

EPP: Environmentally Preferable Purchasing

ESP: Electric Service Provider

EV: ~~E~~electric vehicle

EVSE: ~~E~~electric vehicle supply equipment

GHG: ~~G~~greenhouse gas

GSA: Groundwater Sustainability Agency

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List of Abbreviations

IPCC: Intergovernmental Panel on Climate Change

LCFS: Low Carbon Fuel Standard

MTCO$_2$e: ~~M~~metric tons of CO_2 equivalence

MWELO: Model Water Efficient Landscaping Ordinance

N$_2$O: ~~N~~nitrous oxide

PPD: ~~P~~pounds per person per day

PSPS: Public Safety Power Shutoff

RPS: Renewables Portfolio Standard

SGMA: Sustainable Groundwater Management Act

TNC: ~~T~~transportation network company

USEPA: United States Environmental Protection Agency

VMT: ~~V~~vehicle miles traveled

WUI: ~~W~~wildland-urban interface

ZEV: z~~Z~~ero-emission vehicle

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EXECUTIVE SUMMARY

> The Contra Costa Board of Supervisors has declared that climate change "threatens the long-term economic and social well-being, health, safety, and security of the County, and that urgent action by all levels of government is needed to immediately address this climate emergency".
> (Resolution No. 2020/256)

This 2024 Climate Action and Adaptation Plan (2024 CAAP) is part of Envision Contra Costa, the County's comprehensive update to the General Plan, Zoning Code, and Climate Action Plan. The 2024 CAAP, an update of the 2015 Climate Action Plan (CAP), is Contra Costa County's plan to achieve its vision for a sustainable future, adapt to changing climate conditions, and rapidly reduce greenhouse gas (GHG) emissions to support a pathway to statewide net-zero emissions by 2045. The 2024 CAAP is intended to serve as a companion to the Contra Costa County 2045 General Plan (2045 General Plan) and to mitigate GHG emissions in the unincorporated county that result from implementation of the General Plan. The 2024 CAAP features a planning horizon out to 2045 and provides updated information and an expanded set of GHG emissions reduction and climate adaptation strategies that apply to the unincorporated county.

This 2024 CAAP builds on the work that was established in the 2015 CAP and reflects the latest developments in county- and regional-level climate action planning initiatives, GHG emissions reductions in County operations, and climate action planning policies and practices at the State level. The 2024 CAAP allows the County's decision makers, staff, and communities to understand the sources and magnitude of local GHG emissions and the impacts of climate change on ~~unincorporated~~ communities in the unincorporated areas of Contra Costa County ("unincorporated communities"), prioritize steps to achieve long-term GHG emissions reduction goals, and increase resilience to climate change–related hazards consistent with the County's goals for land use, transportation, housing, and environmental justice.

The Contra Costa County Department of Conservation and Development led preparation of the 2024 CAAP at the direction of the County's Board of Supervisors. Preparation of the 2024 CAAP occurred from 2018 to 2024 as part of Envision Contra Costa and in collaboration with a consultant team, the Board Sustainability Committee, the County's Sustainability Commission, County departments, and community members.

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The County remains committed to achieving the ambitious GHG emission reductions adopted by the State of California in response to the increasing impacts and threat of climate change. The 2024 CAAP provides strategies and actions that support the State's GHG emissions reduction goals through 2045, as established by State laws and regulations, including:

- Reduce community-wide[1] GHG emissions by 40 percent from the 1990 levels[2] by 2030.
- Reduce community-wide GHG emissions by at least 85 percent from the 1990 levels by 2045 and be on a pathway to support statewide carbon neutrality by 2045.

The County's business-as-usual forecasted GHG emissions and associated emissions reduction goals ~~and associated emissions~~ are summarized in Table ES-1. The 2024 CAAP is designed to enable Contra Costa County to meet the State's regulatory emissions reduction goals while ~~, in addition to~~ attaining other County land use, economic growth, and environmental justice objectives.

TABLE ES-1. GHG EMISSIONS IN UNINCORPORATED CONTRA COSTA COUNTY AND EMISSION REDUCTION GOALS~~, 2019 TO 2045~~ ($MTCO_2e$)

	2019	2030	2045
~~Forecast~~ GHG emissions	986,310[1]	1,125,230[1]	1,288,490[1]
GHG Emissions Goal	N/A[2]	658,700	164,680
GHG emissions to be reduced	N/A[2]	466,530	1,123,810

Note: Numbers rounded to the nearest 10.

[1] GHG emissions for 2019 were inventoried, and GHG emissions for 2030 and 2045 are projected from 2019 based on growth assumptions in the General Plan.

[2] There is not an adopted GHG reduction goal for 2019.

[1] Community-wide is defined as operative or effective throughout the whole community. In this case, this means throughout the unincorporated areas of Contra Costa County.

[2] The State's Assembly Bill 32 Scoping Plan identifies 15 percent below 2005–2008 emissions levels as the local government equivalent of 1990 GHG emissions levels. The County uses 2005 as the baseline year.

CLIMATE ACTION STRATEGIES

The 2024 CAAP presents climate action strategies that build on the County's past achievements and will allow the County to attain its GHG emissions reduction goals while improving community resilience and achieving its goals for growth, economic development, and environmental justice. These climate action strategies include those that directly reduce GHG emissions and those that help lower emissions but are not as easy to directly track, as well as strategies to help improve community resilience to climate hazards through adaptation.

The 2024 CAAP includes goals, actions, and strategies for County operations and facilities. Some jurisdictions prepare a separate "municipal CAAP" document. Contra Costa County is including County operations in the CAAP to ensure the County is modeling its commitment to climate action and equity.

The 29 comprehensive strategies in the 2024 CAAP reflect input and feedback from communities and County staff and incorporate regional regulations and State laws that are expected to be enacted in the future. All strategies are listed in **Table ES-2**. Out of the 29 climate action strategies, 11 directly result in GHG emission reductions. The remaining 18 strategies are focused on climate hazard resilience, leadership, equity, and other sustainability goals. The 29 climate action strategies are organized into eight categories.

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TABLE ES-2. 2024 CLIMATE ACTION STRATEGIES

 **Clean and Efficient Built Environment (BE)** Homes, workplaces, and businesses in unincorporated Contra Costa County run efficiently on clean energy.
BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral. *
BE-2: Retrofit existing buildings and facilities in the unincorporated county, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-free~~neutral~~ fuels. *
BE-3: Increase the amount of electricity used and generated from renewable sources in the county. *
 **No Waste Contra Costa (NW)** Contra Costa County disposes of no more solid waste than 2.2 pounds per person per day (PPD).
NW-1: Increase composting of organic waste. *
NW-2: Reduce waste from County operations. *
NW-3: Increase community-wide recycling and waste minimization programs. *
NW-4: Reduce emissions from landfill gas. *
 **Reduce Water Use and Increase Drought Resilience (DR)** Contra Costa County uses less water and communities are prepared for drought.
DR-1: Reduce indoor and outdoor water use. *
DR-2: Ensure sustainable and diverse water supplies.
 **Clean Transportation Network (TR)** Contra Costa County's transportation network provides safe and accessible options for walking, biking, and transit. If residents and workers are driving, they are in zero-emission vehicles.
TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit for travel within, to, and from the county. *
TR-2: Increase the use of zero-emission vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030. *

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 **Resilient Communities and Natural Infrastructure (NI)** Contra Costa County will increase resilience to climate hazards and foster community health.
NI-1: Protect against and adapt to changes in sea levels and other shoreline flooding conditions.
NI-2: Protect against and adapt to increases in the frequency and intensity of wildfire events.
NI-3: Establish and maintain community resilience hubs.
NI-4: Sequester carbon on natural and working lands in Contra Costa County. *
NI-5: Minimize heat island effects through the use of cool roofs, ~~and~~ green infrastructure, tree canopy, cool paint and pavement, and other emerging strategies.
NI-6: Protect communities against additional hazards created or exacerbated by climate change.
 **Climate Equity (CE)** Contra Costa County will address environmental factors leading to health disparities, promote safe and livable communities, and promote investments that improve neighborhood accessibility.
CE-1: Provide access to affordable, clean, safe, and healthy housing and jobs.
CE-2: Invest in solutions to support climate equity.
CE-3: Increase access to parks and open space.
CE-4: Ensure residents have equitable, year-round access to affordable, local fresh food.
CE-5: Ensure that large industrial facilities act as good neighbors.
 **Leadership (L)** Contra Costa County is a model for how local government can take action on climate issues.
L-1: Establish Contra Costa County as a leader among local governments for addressing climate issues.
L-2: Continue to recognize the climate crisis as an emergency for Contra Costa County and make addressing climate change a top County priority.
 **Implementation (IS)** Contra Costa County will ensure it follows through to achieve the goals and actions in this Climate Action and Adaptation Plan.
IS-1: Monitor and report progress toward achieving Climate Action and Adaptation Plan goals on an annual basis.
IS-2: Continue collaborative partnerships with agencies and community groups that support Climate Action and Adaptation Plan implementation, with an emphasis on residents and community-based organizations from Impacted Communities.

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IS-3: Secure necessary funding to implement the Climate Action and Adaptation Plan.
IS-4: Continue to update the baseline emissions inventory and Climate Action and Adaptation Plan every five years.
IS-5: Maintain and update the Climate Action and Adaptation Plan to allow for greater resilience.
*Indicates strategy with quantified GHG emissions reductions.

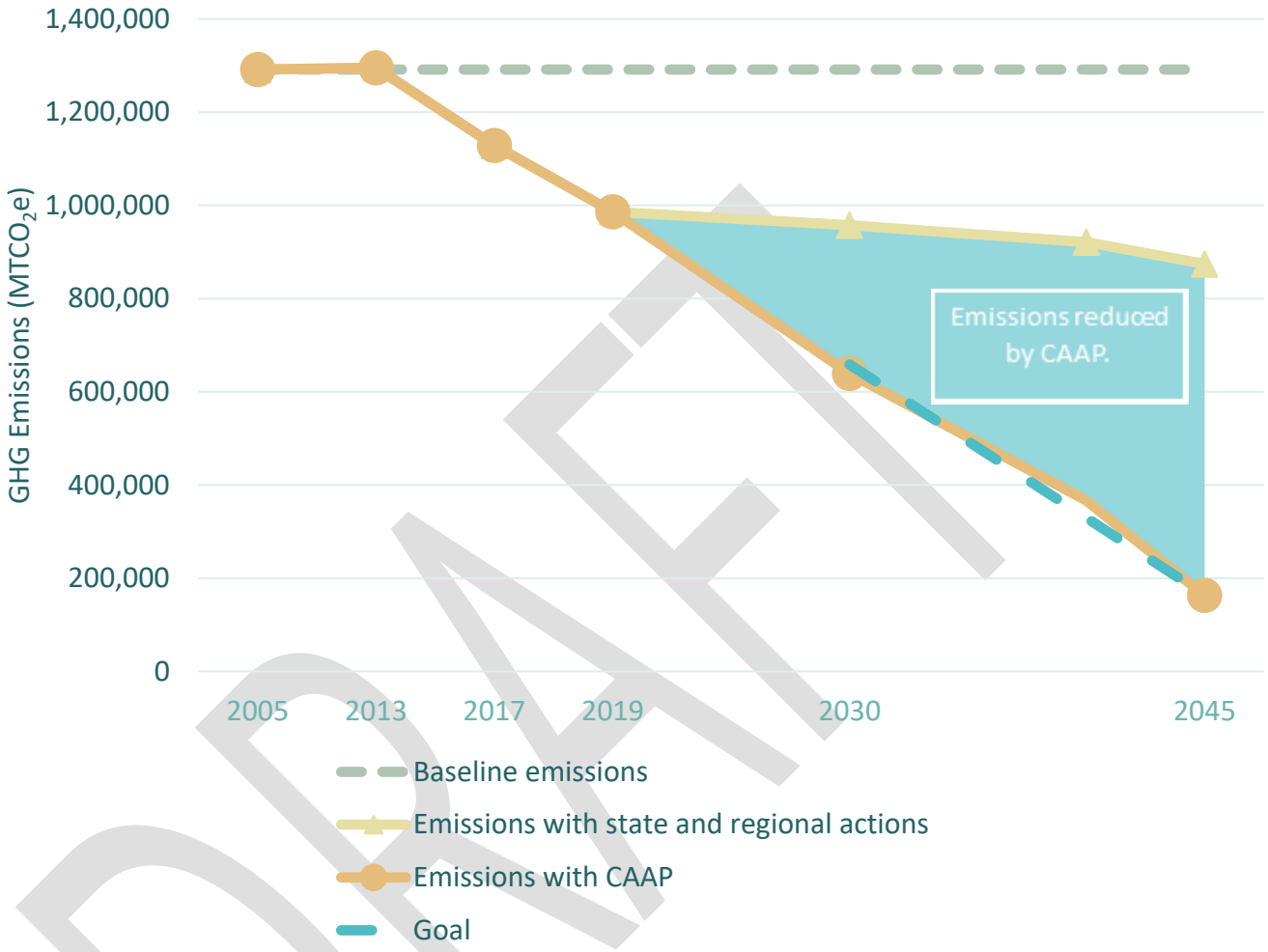
In conjunction with existing local and State programs, these climate action strategies provide a path to reduce the County's GHG emissions to 639,460~~58,300~~ $MTCO_2e$ by 2030 and to 163,130~~57,610~~ $MTCO_2e$ by 2045 and support statewide attainment of net carbon neutrality by 2045 (**Table ES-3** and **Figure ES-1).** With the reductions currently projected from the 2024 CAAP GHG emissions reduction strategies, 2045 GHG emissions for the unincorporated county are expected to be reduced to 85~~6~~ percent below 1990 levels, equal to 87~~8~~ percent below baseline 2005 levels and~~or~~ ~~85~~ 83 percent below 2019 levels. These reductions are predicted to occur across most GHG emission sectors, though emissions within the solid waste sector will continue to be affected by previously deposited waste continuing to decompose in landfills.[3] With these reductions as currently assessed, unincorporated Contra Costa County achieves the GHG emissions reduction goals for 2030 and 2045.

TABLE ES-3. GHG EMISSIONS AFTER 2024 CAAP IMPLEMENTATION

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG emissions goals	658,700	164,680
GHG emissions after CAAP implementation	639,460	163,130
Goal achieved after CAAP implementation?	Yes	Yes
~~Note: Due to rounding, totals may not equal the sum of the individual values.~~		

[3] The federal Resource Conservation and Recovery Act defines solid waste as "any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities. Nearly everything we do leaves behind some kind of waste. It is important to note that the definition of solid waste is not limited to wastes that are physically solid. Many solid wastes are liquid, semi-solid, or contained gaseous material".

FIGURE ES-1. GHG EMISSIONS WITH 2024 CAAP IMPLEMENTATION COMPARED TO REDUCTION GOALS



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IMPLEMENTATION

Climate change already touches all aspects of life, work, and play within unincorporated Contra Costa County. In the absence of focused, ambitious, and equitable climate action, these effects will only become more pronounced, disruptive, and harmful over time.

Contra Costa County is dedicated to making our communities cleaner and healthier for families, children, and future generations.

The County will use this document to help set climate action planning priorities, allocate resources to the communities and assets that are most vulnerable to climate change, and monitor and evaluate progress towards GHG emissions reduction goals and increases in community equity and resilience. The 2024 CAAP and 2045 General Plan provide a blueprint for how the County, its residents, and businesses can achieve a more sustainable, resilient future.

The County developed the 2024 CAAP with the support and coordination of communities, and continued collaboration between the County and community partners is central to the 2024 CAAP's successful implementation. Residents, workers, and business owners can use this document to better understand their personal and community-level vulnerability to climate change and for guidance on how to reduce their GHG emissions and improve their climate resiliency, including finding information about available financial and educational resources.

This 2024 CAAP guides new development by introducing strategies that will reduce GHG emissions associated with the built environment. The 2024 CAAP is a California Environmental Quality Act (CEQA)-qualified GHG Reduction Plan~~Climate Action Plan~~, which means that future development projects requiring environmental review under State law can streamline their GHG impact analyses by demonstrating consistency with the 2024 CAAP. This streamlining can save time and money during the environmental review process by allowing developers to reduce the number of steps involved in the environmental impact assessment process. Therefore, it is important that developers, landowners, planners, and others familiarize themselves with the strategies in the 2024 CAAP and comply with these strategies when designing, approving, and building new development.

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County staff will monitor progress and provide regular updates to communities to ensure the effectiveness of each strategy. To ensure that the implementation process is efficient and transparent, the 2024 CAAP includes a high-level implementation plan that identifies responsible County departments, partners, and time frames associated with each strategy. Implementation of the plan will occur over three~~four~~ time frames—near term (by 2026), mid-term (by 2028), and long term (by 2030). The strategies do not have end dates because they are intended to remain in effect into the future. County staff will lead 2024 CAAP implementation by collaborating with and supporting community organizations, residents, businesses, and stakeholders to create programs that accomplish the goals, strategies, and actions outlined in the 2024 CAAP. To set the 2024 CAAP up for success, the County will integrate the plan's goals, strategies, and actions into applicable County programs, plans, and initiatives. See **Table 12** for complete implementation details for each strategy.

The 2024 CAAP should be considered a living document that the County can modify to ensure that the GHG emissions reduction goals are achieved.

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1. PURPOSE



Photo credit: Ben Weise.

What is the Climate Action and Adaptation Plan?

The Contra Costa County Climate Action and Adaptation Plan (2024 CAAP) is the County's strategic plan to reduce greenhouse gas (GHG) emissions and to adapt to changing climate conditions in the unincorporated areas of the county. The 2024 CAAP demonstrates Contra Costa County's leadership and commitment to reduce GHG emissions and enhance community resiliency to long-term changes associated with climate-related hazards such as heat, flooding, droughts, and wildfires.

The 2024 CAAP is an update of the 2015 Climate Action Plan (CAP). It provides updated information, an expanded set of GHG emissions reduction strategies, climate adaptation strategies, and a planning horizon out to 2045. It also establishes an implementation program and a framework to monitor, track, and report progress over time.

The 2024 CAAP builds on several earlier sustainability and energy efficiency efforts and local accomplishments. The 2024 CAAP is intended to serve as a companion to the County's General Plan, Contra Costa County 2045 General Plan, and to mitigate GHG emissions that result from implementation of the General Plan. This approach supports a holistic view of climate action planning and sustainability—it works to reduce Contra Costa County's contribution to climate change while simultaneously preparing for the changes that cannot

be avoided. **Figure 1** depicts the relationship between reducing GHG emissions, also referred to as climate change mitigation, and climate change adaptation.

FIGURE 1. RELATIONSHIP OF CLIMATE CHANGE MITIGATION AND ADAPTATION

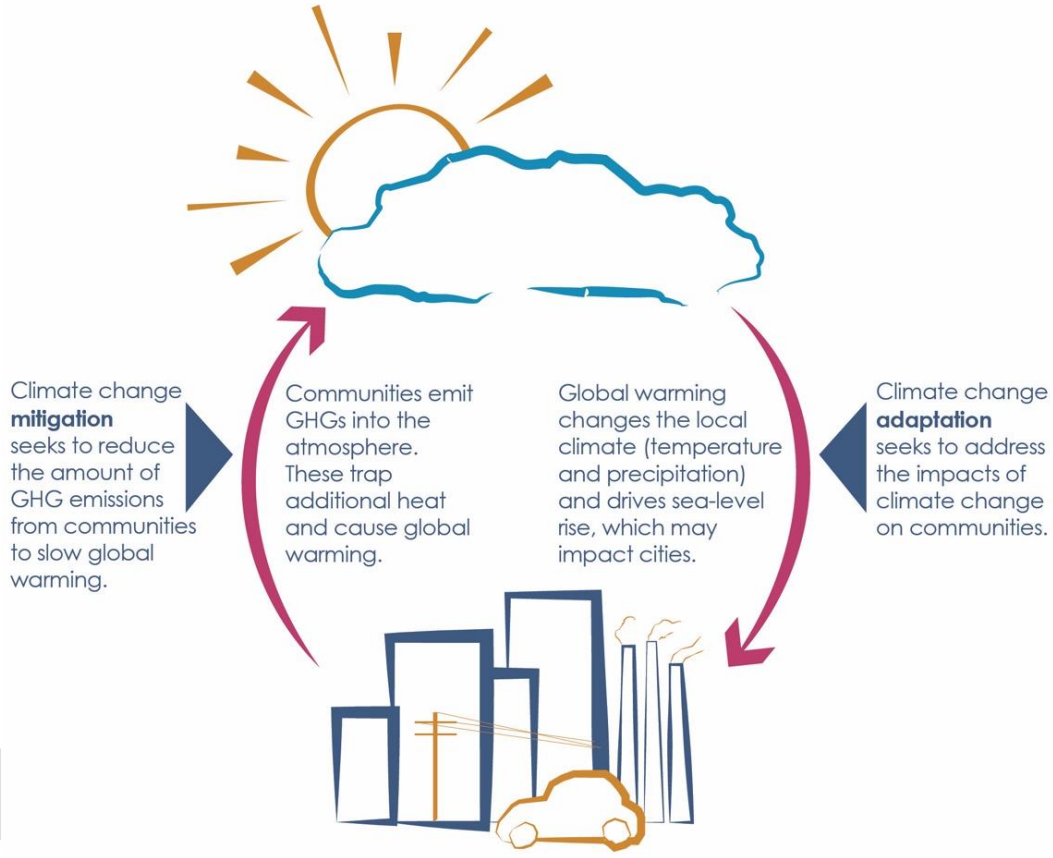
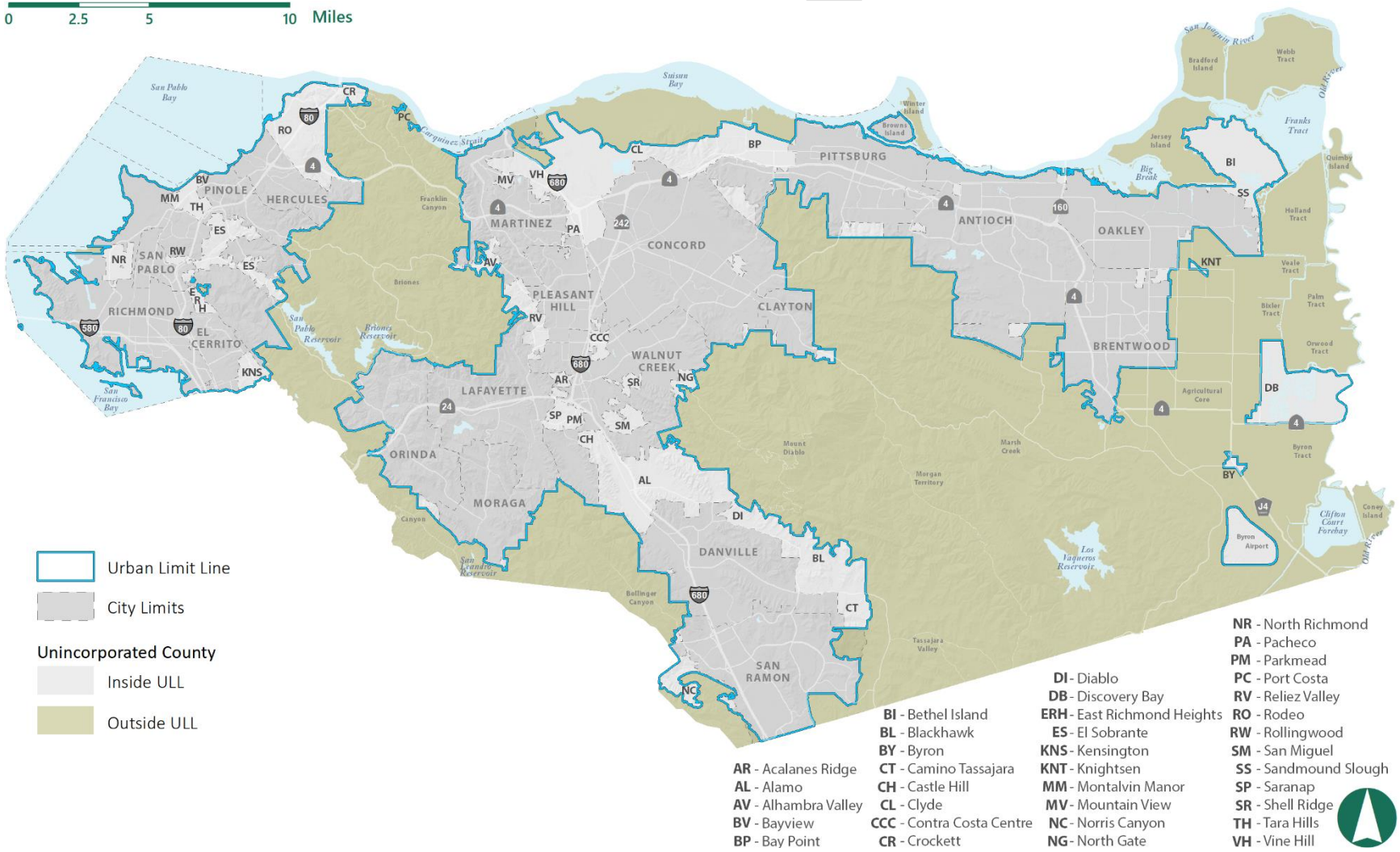


Image credit: California Adaptation Planning Guide.

The 2024 CAAP allows decision-makers, residents, businesses, and community stakeholders to understand the sources and magnitude of local GHG emissions from the energy, solid waste, water, and transportation sectors of the unincorporated county (see **Figure 2** for the jurisdiction of the 2024 CAAP[4]); establish goals to reduce GHG emissions; and prioritize steps to achieve reduction goals. The 2024 CAAP includes goals, strategies, and actions that the County and community can take to achieve significant GHG emission reductions in the unincorporated areas of the county and ensure that the County is on track to support the State's goal to achieve statewide net carbon neutrality by 2045.

[4] **Figure 2** shows the Urban Limit Line (ULL), which limits urban development to certain areas of the county and helps preserve farmland, open space, and habitat.

FIGURE 2. JURISDICTION OF CONTRA COSTA COUNTY CAAP (UNINCORPORATED COUNTY)



Contra Costa County is dedicated to making our communities cleaner and healthier for families, children, and future generations.

This 2024 CAAP includes strategies that directly reduce GHG emissions as well as strategies that help lower GHG emissions but are not as easy to directly track. The 2024 CAAP includes information about how climate change may affect natural hazards and identifies the populations, infrastructure, services, facilities, and natural resources in the unincorporated county that are most vulnerable to the effects of climate change. The 2024 CAAP has a suite of strategies to help improve community resilience to these hazards, also known as adaptation.

The County developed the 2024 CAAP between 2018 and 2024 as part of the County's General Plan update process, Envision Contra Costa. The Contra Costa County Department of Conservation and Development prepared the 2024 CAAP at the direction of the County's Board of Supervisors and in collaboration with a consultant team, the Board Sustainability Committee, the County's Sustainability Commission, County departments, and community members. This 2024 CAAP builds on the work that was established in the 2015 CAP and reflects the latest developments in county- and regional-level climate action planning initiatives, County GHG emissions reductions, and climate action planning policies and practices at the State level.

The County has continued its work on climate action as the CAAP and General Plan were under development. Interim climate action work plans for 2021-2022 and 2023-2024 have guided progress during this time. This work has been recorded and shared with the public in annual progress reports.

Climate Action and Equity

Climate action is closely intertwined with equity issues, and a comprehensive approach to addressing climate change must also address the entrenched inequities in our society. In Contra Costa County and elsewhere in California,

Equity: The state in which each individual or group is allocated the resources needed to reach an equal outcome.

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Impacted Communities[5], such as low-income, disabled, senior, and communities of color, have faced extensive discrimination, negligence, and economic disempowerment. Members of Impacted Communities often live in areas that are more at risk from climate change–related natural hazards. These persons also often lack the financial means and other resources or authority to act on climate change. These may include purchasing an electric vehicle, learning skills to pursue jobs in an emerging green economy, and if they own a home, retrofitting their home to better withstand climate change impacts, and renovating their home to improve energy efficiency, or installing solar panels on their house. As seen in **Figure 3**, Impacted Communities in the unincorporated county are concentrated along the county's northern waterfront.

The 2024 CAAP acknowledges such inequities and recognizes that Contra Costa County must play a role in resolving them. Though this 2024 CAAP cannot solve inequity by itself, it can contribute to a more equitable future by:

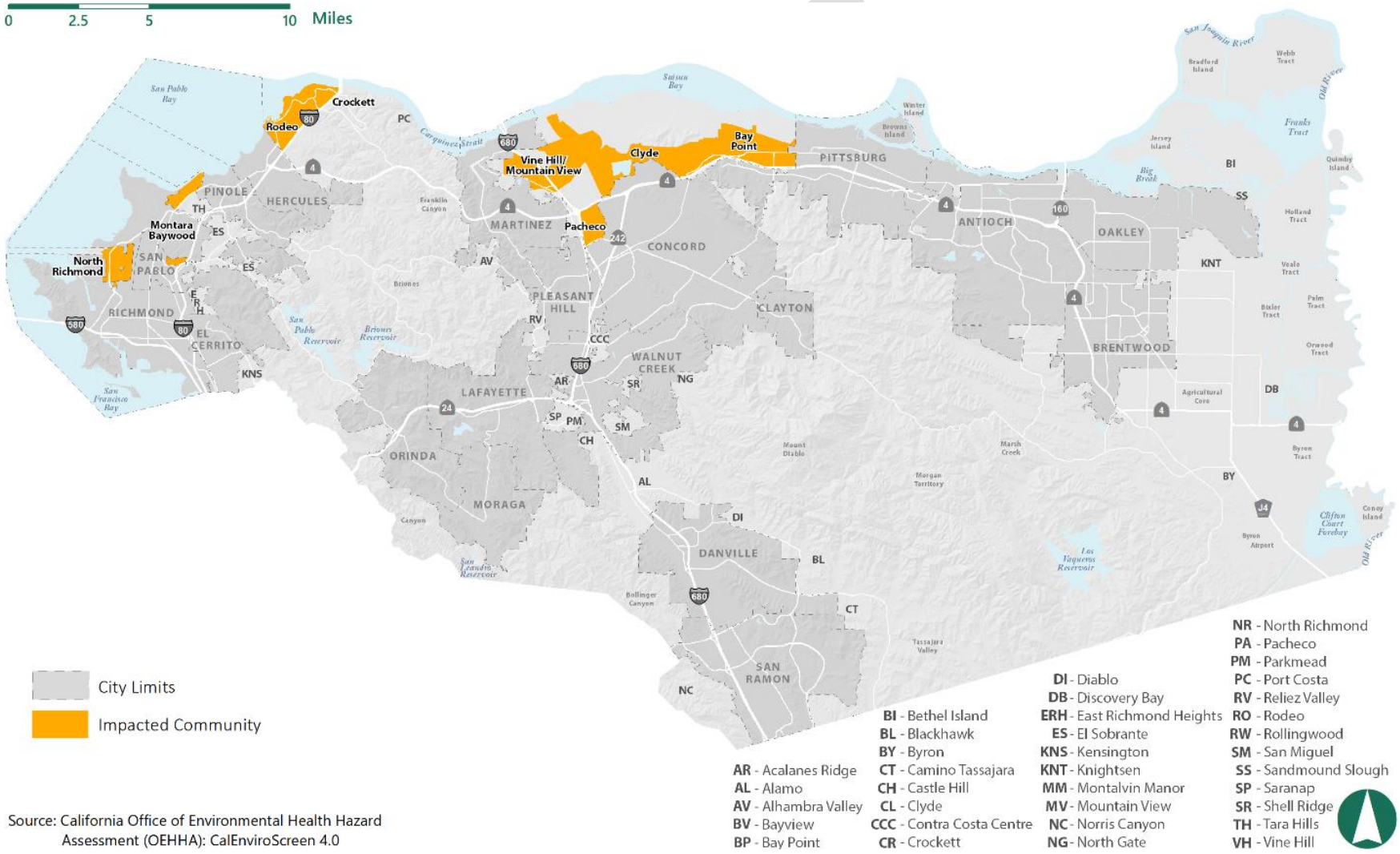
- Providing resources to persons and communities who have historically been denied them.
- Integrating equity considerations into County decision-making processes.
- Supporting Impacted Communities in taking action to address climate change.
- Creating a Just Transition that helps address the root causes of climate change and system inequities.
- Ensuring that Impacted Communities have a voice in climate action planning through community-driven planning.

Equity was a key priority of the County in developing the 2024 CAAP and 2045 General Plan. Many of the GHG emissions reduction and climate adaptation strategies in this 2024 CAAP help to improve community equity. Those strategies are marked with the icon ~~of a balance scale, as~~ shown ~~at~~ on the right.



[5] "Impacted Communities" refers to a designation developed by CalEPA. CalEPA has formally designated four categories of geographic areas as "disadvantaged": 1. Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; 2. Census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; 3. Census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; and 4. Lands under the control of federally recognized tribes. The term "Impacted Communities" was selected via community input.

FIGURE 3. IMPACTED COMMUNITIES IN THE UNINCORPORATED COUNTY



Source: California Office of Environmental Health Hazard Assessment (OEHHA): CalEnviroScreen 4.0

Equity vs. Equality

"Equity and equality are often used interchangeably, but equity and equality do not mean the same thing. Equality is about sameness—meaning that everyone receives the same thing regardless of any other factors. However, equality is only useful if everyone starts from the same place, which is often not the case. Lower-income populations and communities of color often have less access to healthy and energy-efficient housing, transit, or safe bicycling and walking routes. Equity, on the other hand, is about fairness, which is about ensuring that people have access to the same opportunities and have what they need to thrive and succeed. Equity is needed before equality can be reached. This understanding recognizes that people may have different starting points and may need different types and levels of support to flourish".

Reference: Urban Sustainability Directors' Network Guide to Equitable Community-Driven Climate Preparedness Planning, May 2017

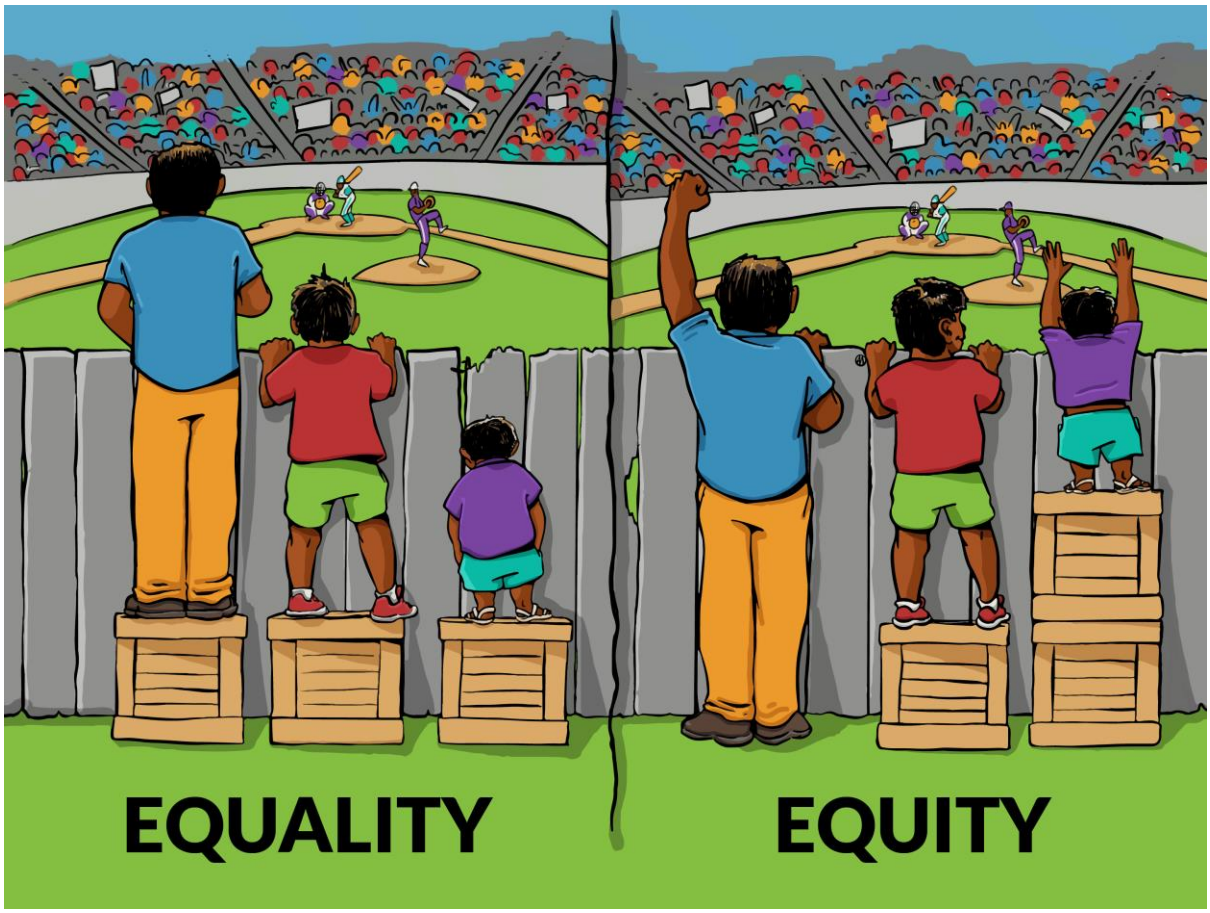


Image credit: Interaction Institute for Social Change | Artist: Angus Maguire

The CAAP and the General Plan

The County updated the CAAP in tandem with the update of the County's General Plan (2045 General Plan). The 2024 CAAP is intended to complement and help implement the General Plan.

There is some overlap in topics addressed by the 2045 General Plan and the 2024 CAAP; the concurrent preparation of the plans ensures they are consistent. The 2045 General Plan acknowledges this connection by highlighting policies that promote sustainability with a special icon: . The climate action strategies presented later in this CAAP include General Plan policies and actions that reduce GHG emissions or increase resilience and are cross-referenced with the General Plan policy or action number in parenthesis. The 2024 CAAP is thus linked with the General Plan in continuing the County's path towards sustainability.

> The Contra Costa County 2045 General Plan is the County's primary policy tool to guide physical changes in the unincorporated areas of the county. This General Plan looks over 20 years into the future and establishes a vision for development of our communities and stewardship of our natural environment. It is aspirational and long-range, but also practical, providing a useful, everyday guide for community planning.

Preparation of ~~T~~the 2045 General Plan ~~also~~ included~~s~~ completion of a climate change vulnerability assessment. This assessment considers climate changes likely to affect unincorporated Contra Costa County in the future and projected impacts on populations, assets, and community services. The County used findings from the vulnerability assessment to inform policies related to climate change resilience and adaptation, resource conservation, and energy use in both the 2045 General Plan and 2024 CAAP. The results of the vulnerability assessment are provided in **Chapter 3** and **Appendix C.**

The 2024 CAAP focuses on behaviors, regulations, and investment decisions that directly reduce GHG emissions and/or promote climate resilience and lays out an implementation and monitoring program to ensure that the County meets its State GHG emissions reduction goals. GHG emissions are highly dependent on County-level policies regulating land use, resource use and conservation, and transportation. A comparison of the topics addressed in the 2045 General Plan and the 2024 CAAP is provided in **Table 1**.

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TABLE 1. COMPARISON OF TOPICS IN THE 2045 GENERAL PLAN AND THE 2024 CAAP

UPDATED GENERAL PLAN	2024 CAAP
SHARED TOPICS	
• Agriculture • Air quality • Climate change resilience and adaptation • Economic development • Energy use and generation • Extreme heat • Flood hazards and sea level rise • Greenhouse gases • Solid waste management • Transportation • Water conservation and quality • Wildfire hazards	• Agricultural pests and diseases • Air quality • Climate change effects and vulnerabilities • Economic development and Just Transition • Energy use and generation • Extreme heat • Flooding, shoreline flooding, and sea level rise • Greenhouse gas emissions • Solid waste management • Transportation • Water conservation • Wildfires
DIFFERENT TOPICS	
• Community health • Emergency response and evacuation • Hazardous materials • Historic and cultural resources • Housing • Land use patterns • Mineral, oil, and natural gas resources • Noise • Open space and ecological preservation • Public facilities and infrastructure • Seismic and geologic hazards	• Carbon sequestration • Climate change resilience and adaptation • County investments • County leadership • Drought • Fog • Human health hazards • Landslides and debris flows • Severe storms

How To Use This Plan

Climate change already touches all aspects of life, work, and play within Contra Costa County. In the absence of focused, ambitious, and equitable climate action, these effects will only become more pronounced over time. The 2024 CAAP is intended for residents, workers, business owners, County staff, and policymakers to provide information about the science of climate change, to highlight what the County has already done to address climate change, and to establish a road map for further GHG emissions reductions and advances in community equity, adaptation, and resilience.

> The 2024 CAAP is intended for residents, workers, business owners, and policymakers to provide information about the science of climate change, to highlight what the County has already done to address climate change, and to establish a road map for further emissions reductions and advances in community equity and resilience.

The County will use this document to help set climate action planning priorities, allocate resources to the communities and assets that are most vulnerable to climate change, and monitor and evaluate progress towards GHG emissions reduction goals and increases in community equity and resilience.

Residents, workers, and business owners can use this document to better understand their personal and community-level vulnerability to climate change and for guidance on how to reduce their GHG emissions and improve their climate resiliency, including finding information about available financial and educational resources.

This 2024 CAAP guides new development by introducing strategies that will reduce GHG emissions associated with the built environment. The 2024 CAAP is a CEQA-qualified Climate Action and Adaptation Plan or GHG reduction strategy, which means that future development projects in the unincorporated county that require environmental review under State law will have the option to streamline their GHG impact analyses by demonstrating consistency with this CAAP. This streamlining can save time and money during the environmental review process by allowing developers to reduce the number of steps involved in the environmental impact assessment process. Therefore, it is important that developers, landowners, planners, and others familiarize themselves with the strategies in the 2024 CAAP and comply with these strategies when constructing new development.

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The remainder of this 2024 CAAP covers the following topics:

- **Chapter 2** (Climate Action Framework) discusses the State, regional, and local regulatory framework that informs the 2024 CAAP and related climate action planning efforts. It also highlights some of Contra Costa County's recent and ongoing efforts to reduce GHG emissions and improve resilience to climate change. Chapter 2 is supported by the Climate Change Policy and Legislation Appendix (**Appendix A**).
- **Chapter 3** (Climate Change and GHGs) presents the results of two analyses: the GHG inventory and forecast for unincorporated Contra Costa County, which assesses recent and projected future GHG emissions; a discussion of the County's consumption-based inventory; and a study of the expected future changes to climate change–related hazards.
- **Chapter 4** (GHG Emission Reduction Strategy) identifies the levels of GHG emissions reductions that the 2024 CAAP seeks to achieve and presents the County's set of strategies and actions to meet or exceed these reductions. It also shows the GHG emissions that have already been reduced through existing and planned State, regional, and local efforts. Chapter 4 is supported by the GHG Technical Appendix (**Appendix B**).
- **Chapter 5** (Climate Adaptation Strategy) presents the findings of the vulnerability assessment, which looks at how people and community assets may be harmed by climate change–related hazards. It lays out the County's strategies to improve resilience to these hazards and adapt to changing conditions. Chapter 5 is supported by the Vulnerability Assessment Technical Appendix (**Appendix C**).
- **Chapter 6** (Realizing the 2024 CAAP) presents the implementation details and high-level work plan of the 2024 CAAP, emphasizing the County's leadership on climate action planning.

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2. CLIMATE ACTION FRAMEWORK



Photo credit: Envision Contra Costa picture gallery

The 2024 CAAP builds on a legacy of climate action planning in California on the State level and at the regional and local level. ~~These~~ Existing State and regional plans, regulations, and programs inform future GHG emissions projections, GHG emissions reduction strategies, and climate action, adaptation, and resilience strategies that appear in this document. This chapter provides an overview of State actions and regulations that informed the development of the CAAP and climate action that is already underway at the local and regional level. GHG savings from these activities attributed to unincorporated Contra Costa County are presented in **Chapter 4**.

State Climate Action and Regulation

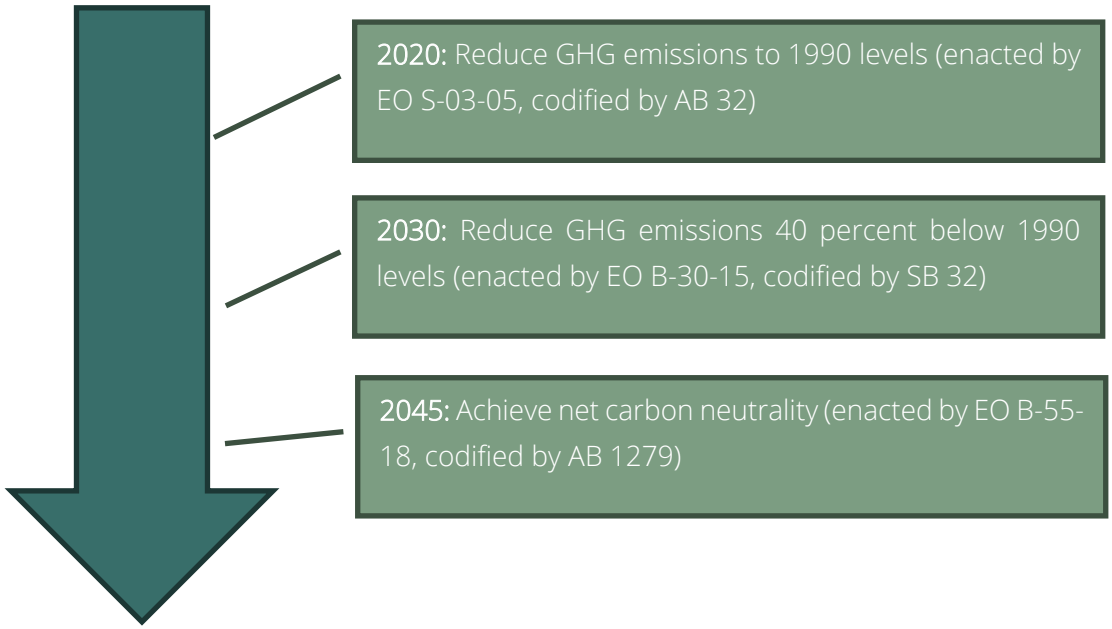
California has a history of enacting legislation aimed at reducing the state's GHG emissions and ensuring resiliency in the face of a changing climate.

California has a history of enacting legislation aimed at reducing the State's GHG emissions and ensuring resiliency in the face of a changing climate. California law first addressed climate change directly in 1988, when Assembly Bill (AB) 4420 directed the State to prepare a GHG inventory and study the impacts of climate change. Since then, California's

governors have signed several executive orders, and the legislature has adopted several laws to assess climate change, analyze GHG emissions and their effects, reduce emissions, and prepare for the impacts of climate change. Many of these laws and regulations affect local governments, but not all create specific requirements for individual communities.

This section provides brief summaries of key climate change legislation, and **Appendix A** provides more detailed descriptions of climate change legislation. The State's major goals are shown in **Figure 4**.

FIGURE 4. CALIFORNIA'S GHG EMISSIONS REDUCTION GOALS



EXECUTIVE ORDER S-03-05 AND ASSEMBLY BILL 32 – CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006

In 2005, former Governor Schwarzenegger issued Executive Order S-03-05, which established the first statewide GHG emissions reduction goals for California and directed the State to:

- Reduce emissions to 2000 levels by 2010.

- Reduce emissions to 1990 levels by 2020.[6]
- Reduce emissions 80 percent below 1990 levels by 2050.

In 2006, Governor Schwarzenegger signed Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006.[1] AB 32 codified the 2020 reduction goal, requiring California to reduce statewide GHG emissions to 1990 levels by 2020.

EXECUTIVE ORDER B-30-15 AND SENATE BILL 32

In 2015, former Governor Jerry Brown signed Executive Order (EO) B-30-15, which directed State agencies to take several steps to reduce statewide GHG emissions and adapt to changing climate conditions. One section of this executive order set a GHG emissions reduction goal for the State of 40 percent below 1990 levels by 2030. In 2016, the legislature passed, and the governor signed Senate Bill (SB) 32, which codified the 2030 GHG emissions reduction goal into law.

EXECUTIVE ORDER B-55-18

In 2018, Governor Brown issued Executive Order B-55-18, which established an additional statewide goal of achieving carbon neutrality (no net GHG emissions) by 2045. Under this goal, any GHGs that are emitted by California must be fully offset by other activities by 2045. This goal does not yet have the force of law, but it does indicate the direction that the State is moving in and may be a reference point for future legislative action.

Net carbon neutrality

A net carbon neutral goal means that any GHG emissions produced by the community are balanced out through carbon sequestration, offsets, or other activities that remove GHG emissions from the atmosphere, so that the community's net GHG emissions are zero. Ideally, the community will reduce its own emissions as much as possible, and then balance out the remainder. The scenario in the State's 2022 Scoping Plan would reduce emissions to approximately 85 percent below 1990 levels and then offset the remaining emissions, as required by AB 1279.

[6] According to an assessment of GHG emissions trends conducted by the Air Resources Board in 2022, statewide GHG emissions dropped below the 2020 GHG emissions limit in 2014 and have remained below the limit since that time.

ASSEMBLY BILL 1279

In 2022, Governor Newsom signed AB 1279, the California Climate Crisis Act, which requires the State to achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter. The bill also requires California to reduce statewide GHG emissions by 85 percent compared to 1990 levels and directs the California Air Resources Board (CARB) to work with relevant State agencies to achieve these goals.

CLIMATE CHANGE SCOPING PLAN

The Climate Change Scoping Plan[2] (Scoping Plan) was first adopted in 2008 and was updated in 2014, 2017, and 2022. The Scoping Plan describes the strategies that California will implement to reduce the State's emissions to achieve the emission reduction goals required by statute. It identifies GHG emissions reduction strategies to achieve the State's goals, including direct regulations, alternate compliance mechanisms, incentives, voluntary actions, and market-based approaches like a cap-and-trade program.

~~Although~~ While the Scoping Plan has a statewide focus, it identifies local governments as strategic partners to achieving the State goals. Each version of the Scoping Plan has provided guidance for local government actions to reduce GHGs. The 2008 Scoping Plan noted that the statewide goal of reducing emissions to 1990 levels by 2020 was comparable to reducing emissions 15 percent below "existing" emissions by 2020 for local governments. Although "existing emission levels" was not formally defined by the Scoping Plan, agencies throughout California have interpreted it as referring to emissions between 2005 and 2008. As a result, Contra Costa County's GHG emissions reduction strategies used 2005 emissions as the "existing" or baseline level to inform the 2020 goal in the 2015 CAP, which in turn informs the 2030 and 2045 goals in the 2024 CAAP. The 2022 update to the Scoping Plan recommends that local governments support statewide efforts to achieve net carbon neutrality.

The 2022 Scoping Plan employs a variety of GHG emissions reduction strategies that include direct regulations, alternative compliance mechanisms, incentives, voluntary actions, and market-based approaches like a cap-and-trade program. Carbon neutrality takes it one step further by expanding actions to capture and store carbon, including through natural and working lands and mechanical technologies, while drastically reducing

anthropogenic sources of carbon pollution at the same time.[7] The 2022 Scoping Plan focuses on the outcomes needed to achieve carbon neutrality statewide by assessing paths for clean technology, energy deployment, natural and working lands, and others. It is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

The 2022 Scoping Plan identifies strategies that would be most impactful at the local level for ensuring substantial progress towards the State's carbon neutrality goals. The 2022 Scoping Plan notes, "These areas and strategies are designated as 'priority' because they are the GHG emissions reduction opportunities over which local governments have the most authority and that have the highest GHG emissions reduction potential". This CAP integrates feasible GHG emissions reductions from the 2022 Scoping Plan.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act (CEQA)[3] requires many proposed development projects to conduct an environmental review that identifies how the project may impact the environment, including changes to GHG emissions. The State CEQA Guidelines include provisions for local governments to use adopted plans for reducing GHG emissions to address the cumulative impacts of individual future projects on GHG emissions (see State CEQA Guidelines Section 15183.5(b)(1)).

Consistent with the State CEQA Guidelines, lead agencies may use adopted GHG emissions reduction plans, such as a CAP, to assess the cumulative impacts of projects on climate change at a programmatic level. If the adopted plan is consistent with State CEQA Guidelines Section 15183.5, the analysis and GHG emissions reduction efforts in the plan may be applied to individual projects, meaning that the projects would not have to conduct separate GHG analyses and project-specific environmental documents may tier from and/or incorporate by reference the existing programmatic review.

A future project-specific environmental review that relies on this 2024 CAAP for its cumulative impact analysis must show consistency with the plan by preparing a Consistency Checklist, identify specific GHG emissions reduction strategies from the 2024 CAAP that are applicable to the project, and demonstrate how the project will implement

[7] The County's 2023 *Healthy Lands, Healthy People* study identifies strategies for using natural and working lands to capture and store carbon. A Sustainable Agricultural Lands Conservation Grant from the State of California funded the study.

these strategies. Project applicants and County staff will identify which specific strategies are applicable to each project during project review. If applicable strategies are not otherwise binding and enforceable, they must be incorporated as mitigation strategies for the project. Projects that have cumulative impacts on GHG emissions may still need to prepare a separate GHG analysis and environmental review.

This 2024 CAAP meets the requirements in the State CEQA Guidelines that allow it to be applied to individual projects by:

- Quantifying emissions, both existing and projected over a specified period, resulting from activities within a defined geographic area, as discussed in **Chapter 3.**
- Establishing a level, based on substantial evidence, below which the contribution of emissions from activities covered by the plan would not be cumulatively considerable. **Chapter 3** of this 2024 CAAP identifies the County's GHG emissions reduction goals, consistent with the State's regulatory goals, which are:
  - Reduce emissions to 40 percent below 1990 levels by 2030.
  - Reduce emissions to 85 percent below 1990 levels by 2045.
  - Support statewide net carbon neutrality by 2045.
- Identifying and analyzing the emissions resulting from specific actions or categories of actions anticipated within the geographic area, as discussed in **Chapter 4**.
- Specifying strategies or a group of strategies, including performance standards that, if implemented on a project-by-project basis, substantial evidence demonstrates they would collectively achieve the specified emissions level, as discussed in **Chapters 4** and **5** and **Appendix B**.
- Establishing a mechanism to monitor the plan's progress toward achieving specific levels and to require amendment if the plan is not achieving those levels, as discussed in **Chapter 6**.
- Including an environmental review of the 2024 CAAP. The 2024 CAAP is evaluated by the Contra Costa 2045 General Plan Environmental Impact Report.

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Regional Climate Action

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

The Bay Area Air Quality Management District (BAAQMD) regulates stationary sources of air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties. The 24-member Board of Directors that governs BAAQMD includes four representatives from Contra Costa County, including two members of the County Board of Supervisors. BAAQMD's Clean Air Plan (2017) provides a regional strategy to protect public health and the climate via continued progress toward all State and federal air quality standards, and to eliminate health risk disparities from exposure to air pollution among Bay Area communities. It includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants; to reduce emissions of methane and other GHGs that are potent climate pollutants in the near-term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion. BAAQMD's Clean Air Plan defines a vision for transitioning the region to the post-carbon economy needed to achieve ambitious GHG emissions reduction goals for 2030 and 2050 and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG emissions reduction goals.

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In addition to fulfilling its role as a regulatory agency, BAAQMD plays a vital role in supporting climate action across the Bay Area. In 2018, BAAQMD provided a Climate Protection Grant Program grant to Contra Costa County that allowed the County, in partnership with the Cities of Antioch, San Pablo, and Walnut Creek, and the community organization Sustainable Contra Costa, to launch the Cleaner Contra Costa Challenge. The Cleaner Contra Costa Challenge is an online platform that allows county residents to take actions in their everyday lives that reduce GHG emissions.

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BAAQMD has offered funding for public agencies for trip reduction; bicycle parking and bikeways; and clean vehicle projects including electric vehicle charging stations, green fleets, and replacement of off-road and heavy-duty vehicles and equipment. BAAQMD's Climate Tech Finance program provides loans for public agencies looking to invest in green technology and pilot projects.

On April 20, 2022, the BAAQMD Board of Directors adopted *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans* (2022 CEQA Guidelines).[4] Appendix B of the 2022 CEQA Guidelines, *CEQA Thresholds for Evaluating the Significance of Climate Impacts*, presents BAAQMD's thresholds of significance for use in determining whether a proposed project will have a significant impact on climate change and provides the substantial evidence that lead agencies will need to support their use of these thresholds. The ~~proposed~~ thresholds require that long-range plans, such as the General Plan and 2024 CAAP, must either meet the State's goals to reduce emissions to 40 percent of 1990 levels by 2030 and carbon neutrality by 2045 or must be consistent with a local GHG strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b). BAAQMD's 2022 CEQA Guidelines also includes Appendix C, *Guidance for Greenhouse Gas Reduction Strategies,* which Contra Costa County followed during preparation of this CAAP.

In March 2023, BAAQMD adopted amendments to Regulation 9, Rules 4 and 6. These revisions require that, when existing natural-gas-powered space heaters and water heaters reach the end of their operational life, they be replaced with electric-powered models. These requirements are scheduled to take effect in 2027 to 2031 for water heaters (depending on the capacity of the unit) and in 2029 for space heaters.

The 2024 CAAP supports BAAQMD's Clean Air Plan, *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans*, and revisions to Regulation 9 as well as many other BAAQMD programs and initiatives aimed to reduce regional GHG emissions.

In 2023, BAAQMD received funding from the U.S. Environmental Protection Agency's (USEPA's) Climate Pollution Reduction Grant program, to lead the Bay Area Regional Climate Action Planning (BARCAP) initiative, an eight-county climate action planning process to position the region to compete for $4.3 billion in implementation funding. This planning effort identifies specific, implementation-ready climate measures in high-priority sectors that provide significant GHG reductions and benefit frontline communities. Contra Costa County is a participating agency in the BARCAP initiative and assisted in the development of the Priority Climate Action Plan for the Northern and Central Bay Area Region.

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CONTRA COSTA TRANSPORTATION AUTHORITY

The Contra Costa Transportation Authority (CCTA) maintains the Countywide Transportation Plan (CTP).[5] The CTP is updated approximately every five years. CCTA conducts extensive outreach to the public, cities, and the County during the update process.

The Countywide Transportation Plan helps support the County's climate action planning vision by advancing goals to reduce vehicle miles traveled (VMT), increase the use of active transportation modes, promote transit-oriented development, promote advances in vehicle technology, increase transit capacity, and ensure that the transportation system is resilient in the face of climate change.

The CTP provides the overall direction for achieving and maintaining a balanced and functional transportation system within Contra Costa County while strengthening links between land use decisions and transportation. It outlines CCTA's vision for future transportation and establishes goals, policies, strategies, projects, and actions for achieving that vision. The CTP is also the detailed plan which helps inform and direct transportation funding allocated throughout Contra Costa County. The CTP helps support the County's climate action planning vision by advancing goals to reduce vehicle miles traveled (VMT), increase the use of active transportation modes, promote transit-oriented development, promote advances in vehicle technology, increase transit capacity, and ensure that the transportation system is resilient in the face of climate change. Implementing these policies will help the County meet its GHG emissions reductions and climate resiliency goals in a way that is consistent with other regional planning efforts.

CCTA also oversaw the creation of Contra Costa County's Electric Vehicle Readiness Blueprint. This document prepares Contra Costa County for the electric vehicle (EV) future by identifying the best locations for charging infrastructure; helping cities to adopt development standards and ordinances that encourage EV adoption; preparing the workforce of the future to maintain EVs and charging infrastructure; and identifying where improvements to the electricity distribution infrastructure are necessary to support electric-ready mobility hubs and zero-emission bus fleets. The Electric Vehicle Readiness Blueprint was adopted in July 2019.

The CCTA's INNOVATE 680 seeks to implement a suite of projects that, when operating together, will address corridor-wide congestion, travel delays, and long-standing operational challenges along Interstate 680 (I-680). INNOVATE 680 projects address part-time transit lanes, express lane completion, shared mobility hubs, mobility on demand, and

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automated driving systems. For additional detail on the projects implemented as part of INNOVATE 680, see: https://ccta.net/projects/innovate-680/.

Climate Action in Contra Costa County

Since the early 2000s, Contra Costa County has initiated several efforts to address climate change, including efforts to measure and reduce GHG emissions, prioritize climate change mitigation in local government, and employ natural ecosystems for GHG mitigation. The 2024 CAAP, with its emphasis on mitigation, measurement, and resilience and adaptation, is the most recent chapter of the County's climate change response and mitigation journey. Highlights of the County's initiatives are shown in **Figure 5** and further described in this section.

Over the years, county voters have supported many strategies that improve the quality of life and the environment. In 1990, Contra Costa County voters approved an Urban Limit Line (ULL) for a period of 20 years. The ULL restricts urban development to certain areas of the county and helps to preserve farmland and open space. In 2006 it was adopted for another 20 years from that date. About 47 percent of the land in the county is inside the urban limit lines and urban growth boundaries adopted by the County and the 19 cities in the county.

The East Contra Costa County Habitat Conservancy is a joint exercise of powers authority formed by Contra Costa County and the Cities of Brentwood, Clayton, Oakley, and Pittsburg to implement the East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan (HCP/NCCP). Formed over a ten-year planning and permitting process, the HCP/NCCP began implementation in 2007. The HCP/NCCP provides a framework to protect natural resources in eastern Contra Costa County while improving and streamlining the environmental permitting process for impacts on endangered species. The HCP/NCCP avoids project-by-project permitting that is generally costly and time consuming for applicants and often results in uncoordinated and biologically ineffective mitigation. The conservation strategy of the HCP/NCCP provides for comprehensive species, wetlands, and ecosystem conservation and contributes to the recovery of listed species in northern California.

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FIGURE 5. TIMELINE OF CLIMATE ACTION PLANNING IN CONTRA COSTA COUNTY

2005	» Publication of the County's first Climate Protection Report.
2008	» Adoption of Municipal Climate Action Plan.
2013	» Interim County Operations GHG inventory.
2015	» Adoption of 2015 Climate Action Plan. » Adoption of County Green Building Standards. » Creation of Board Ad Hoc Sustainability Committee. » Release of County Heat Vulnerability Assessment.
2016	» Creation of County Sustainability Coordinator position.
2017	» Creation of County Sustainability Commission.
2019	» Ad Hoc Sustainability Committee becomes a standing committee of the Board of Supervisors.
2020	» Declaration of Climate Emergency Resolution. » Creation of Interdepartmental Climate Action Task Force. » Adoption of Contra Costa Transportation Guidelines.
2021	» Preparation of 2021-2022 Interim CAP Work Plan. » Authorization of $500,000 in Measure X funds for sustainability planning work, growing sustainability staff to 5 full-time-equivalent positions.
2022	» Adoption of Ordinance 2022-02 for all-electric new construction.
2023	» Preparation of 2023-2024 Interim CAP Work Plan. » Creation of Board of Supervisor's Contra Costa Resilient Shoreline Ad-Hoc Committee.
2024	» Board of Supervisors provides direction to replace all-electric new construction requirement with an energy performance requirement.

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Over the years, voters have approved funding for the East Bay Regional Park District to maintain and expand its network of regional parks and other facilities in Contra Costa County. This includes Measure FF, a $12/year parcel tax extension of Measure C, which was approved in 2004.

The County partners closely with the Contra Costa Resource Conservation District on a range of conservation programs and projects, including habitat preservation, strategies for supporting agriculture, and related topics.

Contra Costa County began taking significant steps to address climate change in 2005 with the publication of its first Climate Protection Report, which provided an estimate of the County's GHG emissions, reported existing County efforts to reduce GHG emissions, and listed potential actions that could reduce GHG emissions in the future. In February 2007, the Board of Supervisors directed County staff to prepare a GHG emissions inventory of community-wide and County government operations GHG emissions. In October 2007, the Board of Supervisors adopted a resolution to complete a climate action plan for the County's municipal facilities and operations funded by the BAAQMD.

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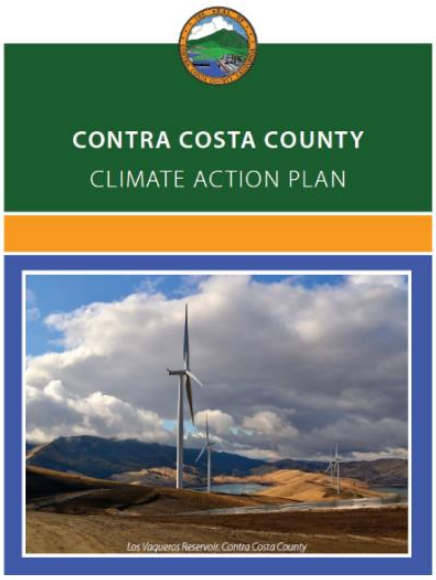
In December 2008, the Board of Supervisors adopted a Municipal Climate Action Plan, which established formal GHG emissions reduction goals, GHG emissions reduction strategies, and methods for analysis and monitoring of GHG emissions reduction strategies for emissions from the County's operations. The County conducted an interim GHG inventory in 2013 to direct priorities toward achieving a goal of reducing the GHG emissions of government operations to 15 percent below 2005 levels by 2020.

2015 CLIMATE ACTION PLAN



The cover of the County's 2015 Climate Action Plan.

On December 15, 2015, the Board of Supervisors adopted a Climate Action Plan (2015 CAP) to reduce community-wide GHG emissions in the unincorporated areas of Contra Costa County. The 2015 CAP included sections covering the scientific and regulatory environment, an updated GHG inventory and forecast, and a climate change health risk assessment. Strategies in the 2015 CAP addressed GHG emissions reductions, promoting healthy communities, and facilitating CAP implementation. The County created its first full-time sustainability staff position, the Sustainability Coordinator, to oversee implementation of the 2015 CAP. The County Board of Supervisors' Sustainability Committee and the County Sustainability Commission were created to support implementation of the strategies in the 2015 CAP.

Since 2015, the County has implemented a variety of actions to help meet the goals set forth in the 2015 CAP. **Appendix D** provides more detail on progress made in meeting 2015 CAP goals. The County has reduced community-wide emissions associated with electricity use by joining the community choice energy program MCE and promoting the use of MCE's Deep Green and Local Sol products, which allow residents and businesses to purchase 100 percent renewable electricity and 100 percent locally produced solar, respectively. This also includes promoting energy efficiency incentive programs offered within the County by MCE, the Bay Area Regional Energy Network, and others. County facilities that do not have solar panels subscribe to MCE's Deep Green product.

In 2018, through a grant from the Strategic Growth Council, the County developed a Renewable Resource Potential Study that identifies the potential to generate clean energy

in Contra Costa County. Among other things, the study found significant opportunity for solar energy, both on existing rooftops and parking lots in developed areas, and on undeveloped "greenfield" parcels in rural areas. In 2020, the County adopted a solar overlay zone to allow commercial solar energy facilities in certain areas, including commercial, industrial, and some agriculturally zoned parcels that are not prime agricultural land.

As described later in this chapter, in 2023, the County completed *Healthy Lands, Healthy People*[6] through a Sustainable Agricultural Lands Conservation grant from the California Department of Conservation. This study identifies strategies for storing carbon in the diverse land uses in Contra Costa County.

Since 2015, the County has adopted and is implementing policies for complete streets and Vision Zero and adopted an Active Transportation Plan. The County is constantly seeking funding to implement these policies.

BOARD SUSTAINABILITY COMMITTEE

The County Board of Supervisors' Sustainability Committee oversees implementation of the CAP. The Sustainability Committee has played a role in several sustainability initiatives, including promoting the installation of EV charging stations in County facilities and converting the County fleet to all-electric, tracking the development of environmental justice goals and initiatives, promoting energy use management and efficiency programs, reviewing environmental justice and sustainability themes in the ongoing update to the General Plan, and raising awareness about climate change among residents and County officials.

COUNTY SUSTAINABILITY COMMISSION

In 2017, the County Board of Supervisors established the Sustainability Commission, a citizen advisory body, that advises County staff and the Board of Supervisors on the successful implementation of the CAP, including suggestions on how the work can be performed more efficiently and effectively;

The Sustainability Commission has addressed topics in the sectors of energy use and green buildings; transportation; water conservation; solid waste; and climate adaptation, resilience, and environmental justice.

opportunities to realize equity and fairness across the diverse communities of Contra Costa County in sustainability programs that support the CAP; and provide suggestions on how to better engage residents and businesses on sustainability issues and implementation of the CAP.

The Sustainability Commission, which reports to the Board Sustainability Committee, has addressed topics in the sectors of energy use and green buildings; transportation; water conservation; solid waste; and climate adaptation, resilience, and justice. In addition to supporting preparation of the 2024 CAAP, the Sustainability Commission has advised on implementation of the 2015 CAP, Climate Emergency Resolution, and Electric Vehicle Readiness Blueprint, which promote climate resilience, plan for a Just Transition of oil refineries on the Contra Costa County shoreline, examine how to transition to all-electric and carbon-neutral buildings materials, and provide outreach and education on sustainability to Contra Costa County residents and businesses.

East Bay Energy Watch

The East Bay Energy Watch (EBEW) was a partnership between the Pacific Gas and Electric Company (PG&E) and local governments in the East Bay region, including Contra Costa County. EBEW provided support for member agencies to conduct energy efficiency outreach to residents and businesses, retrofit existing government facilities to improve energy efficiency, and provide training to agency staff. EBEW also prepared a series of GHG inventories and provided GHG emission tracking for all member jurisdictions. The GHG inventories presented in Chapter 3 of the 2024 CAAP are based on the inventories EBEW prepared. EBEW ceased operations in 2020 when PG&E elected not to renew the organization's funding, although similar partnerships remain active in other parts of California.

TRANSPORTATION ANALYSIS GUIDELINES

In June 2020, the County adopted the Contra Costa Transportation Guidelines. These guidelines are intended to establish a uniform approach, methodology, and tool set to evaluate the impacts of land use decisions and related transportation projects on the County transportation system. The guidelines use VMT to assess impacts to the transportation system and require the development of mitigation measures to offset traffic impacts that are found to have exceeded CEQA's identified threshold(s) of significance.

COUNTY REACH CODES

The County has adopted building and energy provisions that go beyond the State's building and energy codes. These amendments to the State codes are commonly called "reach codes".

Section 74-4.006 of the Contra Costa County Code of Ordinances, adopted in 2015, amends the California Green Building Standards Code by setting requirements for installation of EV charging stations at new multifamily and nonresidential construction. For most new multifamily dwellings, if residential parking is provided, 10 percent of the total number of parking spaces at the dwelling site are required to be EV spaces. Half of the EV spaces, but not less than one, must be equipped with fully operational electric vehicle supply equipment (EVSE). The remaining EV spaces are required to be capable of supporting future EVSE. New nonresidential construction is required to provide EV spaces in accordance with the amount of available parking.

On January 18, 2022, the County Board of Supervisors adopted Ordinance 2022-02, an All-Electric (New Construction) Ordinance, to amend the 2019 California Energy Code to require the following building types to be all-electric: residential (including single-family and multifamily buildings), detached accessory dwelling units, hotel, office, and retail. On February 27, 2024, the County Board of Supervisors suspended its enforcement of Ordinance 2022-02, because of a decision on January 2, 2024, by the U.S. Court of Appeals 9th Circuit that invalidated a City of Berkeley ordinance that prohibited natural gas infrastructure in new buildings, precluding cities and counties from adopting ordinances that prohibit the installation of gas plumbing in buildings. On June 4, 2024, the County Board of Supervisors authorized staff to prepare an ordinance amending the County building code to replace its All-Electric (New Construction) Ordinance with a new ordinance to increase energy-efficiency standards for certain residential and nonresidential buildings. This action is reflected in this CAAP's discussion of future GHG emissions.

In November 2022, the County Board of Supervisors adopted Ordinance 2022-35, which adopts and amends, among others, the 2022 California Building Code. Amendments include revisions to Section 420.14 to expand requirements for the installation of EV charging infrastructure at newly constructed nonresidential and multifamily residential buildings. ~~It also carries forward the all-electric requirements first adopted in Ordinance 2022-02.Federal courts struck down the City of Berkeley's all-electric ordinance in January of 2024, and County legal experts believed that Contra Costa County's ordinance would be vulnerable under the Court's ruling. The following month, the County suspended enforcement of the all-electric requirements first adopted in Ordinance 2022-02 and modified by Ordinance 2022-35. The County Board of Supervisors has directed County staff to work on a replacement ordinance that would encourage all-electric buildings without being vulnerable to the same legal challenges, and this action is reflected in this CAAP's discussion of future GHG emissions. The County's ordinance that sets additional standards for EV charging stations remains in effect.~~

CLIMATE EMERGENCY RESOLUTION

On September 22, 2020, the Board of Supervisors adopted Resolution No. 2020/256,[7] declaring that climate change "threatens the long-term economic and social well-being, health, safety, and security of the County, and that urgent action by all levels of government is needed to immediately address this climate emergency". The resolution prioritizes the urgent implementation of the County's 2024 CAAP to achieve GHG emissions reductions and to consider equity and social justice issues in the implementation of the plan, and directs that health, socioeconomic, and racial equity considerations be included in policymaking and climate solutions at all levels. The Climate Emergency Resolution also calls for establishing an ongoing task force of County department heads to focus on implementing the 2024 CAAP, planning for a Just Transition away from an economy based on fossil fuels, and adopting an all-electric ordinance for new construction.

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INTERDEPARTMENTAL CLIMATE ACTION TASK FORCE

When the Board of Supervisors declared a climate emergency in 2020, one of the actions identified to address the emergency was the creation of an Interdepartmental Climate Action Task Force that includes all department heads or their senior deputies. The task force is directed to focus on urgently implementing the CAP and to identify additional actions, policies, and programs the County can undertake to reduce and adapt to the impacts of a changing climate.

The Task Force is directed to focus on urgently implementing the County's Climate Action and Adaptation Plan and to identify additional actions, policies, and programs the County can undertake to reduce and adapt to the impacts of a changing climate.

The Task Force is directed to report to the Board of Supervisors twice a year. The first of these reports, released in March 2021, recommended that the Board establish a Sustainability Fund to support improvements to County facilities and operations that reduce GHG emissions. The Board of Supervisors has directed the Department of Public Works to manage the fund, including the identification and implementation of projects and tracking savings, with the task force serving as an advisory committee to the fund. The Sustainability Committee recommended that the initial focus of the fund be used to install the first tranche of electric vehicle charging stations, an ongoing priority.

The Task Force has also worked on scaling and implementing Green Business Program best practices in each of the County departments. Most County departments have nominated volunteers for the Green Government Group (G3) Champions program. The G3 Champions form a network of over 75 County employees across 18 departments who are focused on making Contra Costa County a cleaner, healthier place to live and work. The G3 Champions meet ~~every other month~~regularly to discuss climate action work happening in their departments and develop strategies and activities to educate and engage their colleagues in sustainability.~~learn about different topics and take action to educate their colleagues and implement change.~~

The Green Government Group (G3) Champions logo.

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ENVISION CONTRA COSTA

Every county and incorporated community in California is required to adopt and occasionally update a document called a general plan, which is a comprehensive and long-range plan for the jurisdiction's land use policies and related matters for how communities will grow and develop. State law requires that each general plan includes the following topics:

- Land use
- Circulation
- Housing
- Conservation
- Open space
- Noise
- Safety
- Environmental justice (for communities that meet criteria)

The County's process to update its current General Plan~~,~~ is referred to as Envision Contra Costa. Envision Contra Costa began in late 2018 and included the 2045 General Plan, a zoning code update, and this 2024 CAAP. The 2045 General Plan and the 2024 CAAP are organized around four specific topics: environmental justice, sustainability, community health, and economic development.

HEALTHY LANDS, HEALTHY PEOPLE CARBON SEQUESTRATION STUDY

In 2023~~1~~, the County ~~began~~ completed a feasibility study—*Healthy Lands, Healthy People*—to identify strategies for storing carbon in the diverse land uses in Contra Costa County. The County received a Sustainable Agricultural Lands Conservation grant from the State that funded the project. The County partnered with the Contra Costa Resource Conservation District, the University of California Cooperative Extension, and a consultant team to develop *Healthy Lands, Healthy People*. The study ~~, completed in 2023, will~~ informs next steps to increase investments in trees, gardens, agricultural practices, and other activities that can use natural and working lands to address climate change.

COMMUNITY LEVEL ACTION

Just as climate change touches on all aspects of community life in Contra Costa County, all community members can take personal and collective action to reduce GHG emissions and advance resilience. Many community organizations, businesses, and individuals have already acted. The 2024 CAAP builds on these initiatives while engaging all members of the Contra Costa County community in climate action.

As described previously, i~~I~~n 2018, the County partnered with the cities of Antioch, San Pablo, and Walnut Creek and Sustainable Contra Costa to launch the Cleaner Contra Costa Challenge. A Climate Protection grant from the Bay Area Air Quality Management District provided funds to build an online platform tailored to Contra Costa communities that allows residents to take actions to create a cleaner, healthier place to live, work, and play. The two-year grant provided an opportunity to pilot the program before launching it more widely. Sustainable Contra Costa now operates the program across the county.

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3. CLIMATE CHANGES AND GHGS



Photo credit: Envision Contra Costa picture gallery

Climate Science

WHAT IS CLIMATE CHANGE?

Climate is the long-term average of weather conditions, such as temperature and precipitation. It is normal for Earth's climate system to experience long-term shifts, but human activity is causing global climate change at a much more rapid pace than in the past.

Human-caused climate change is largely attributable to the burning of fossil fuels, which causes greenhouse gases (GHGs) ~~called GHGs~~ to build up in the atmosphere and trap heat close to the Earth's surface, a phenomenon known as the greenhouse effect. Most GHGs are naturally occurring gases, such as water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), that absorb heat radiated from the Earth's surface. Some GHGs can persist in the atmosphere and trap heat for thousands of years once they are emitted.

Human-caused climate change is largely attributable to the burning of fossil fuels.

As the levels of GHGs in the atmosphere increase because of human activity, more heat is trapped, increasing the temperature of the Earth's surface at an unprecedented rate. Because Earth's climate system is driven by the movement of heat in the atmosphere and in the oceans, more heat creates shifts in the global climate system, causing climate change. The effects of climate change vary in different geographic locations, and often include significant changes to temperatures, precipitation patterns, and storm activity.

EFFECTS OF CLIMATE CHANGE

Globally, the effects of human-caused climate change have been observed as:

- Increases in global surface temperatures.
- Increases in precipitation over land and increases in storm intensity.
- Retreat of glaciers.
- Ocean acidification.
- Warming of the global upper ocean.
- Increase in global mean sea level.[8]

> Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. According to the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report, global warming of 1.5°C and 2°C will be exceeded during the 21st century unless we make great reductions in CO_2 and other ~~greenhouse gas~~ GHG emissions in the coming decades.

Extreme heat days have become more frequent and more intense across most land regions since the 1950s, and extreme cold events have become less frequent. The frequency and intensity of heavy precipitation events have increased since the 1950s over most land areas, and drought has become more frequent in some areas due to increased evapotranspiration (water evaporation from land to sky).

CLIMATE CHANGE IN CALIFORNIA

In California and western North America, observations of the climate have shown: (1) a trend toward warmer temperatures with an increase in extremely hot days and nights; (2) an increase in the area burned by wildfires; (3) a smaller fraction of precipitation falling as snow; (4) an increase in frequency of drought and an increase in consecutive dry years; and (5) sea level rise is expected to continue to increase flooding and erosion on beaches, bluffs, and cliffs.[9] Research suggests that California will continue to experience hotter and

drier conditions, reductions in winter snow and increases in winter rains, sea level rise, significant changes to the water cycle, and an increase in extreme weather events.

These changes in climate will affect economic systems throughout California, including Contra Costa County. To refrain from action is costly and risky; the California Fourth Climate Change Assessment estimates that taking no action to address the potential impacts of climate change will lead to economic losses of "tens of billions of dollars per year in direct costs" and "expose trillions of dollars of assets to collateral risk". **Table 2** summarizes potential impacts in California due to climate change.

TABLE 2. CLIMATE CHANGE IMPACTS IN CALIFORNIA

Climate Impact	Historical Trends	Future Direction of Change	Confidence for Future Change
Temperature	Warming	Warming	Very High
Sea Level Rise	Rising	Rising	Very High
Snowpack	Declining	Declining	Very High
Annual Precipitation	No significant trends	Unknown	Low
Intensity of Heavy Precipitation Events	No significant trends	Increasing	Medium-High
Frequency of Droughts	No significant trends	Increasing	Medium-High
Marine Layer Clouds	Some downward trends	Unknown	Low
Acres Burned by Wildfire	Increasing	Increasing	Medium-High

Source: Louise Bedsworth et al. 2018, "Statewide Summary Report," in *California's Fourth Climate Change Assessment*, publication no. SUMCCCA4-2018-013, 2018.

CLIMATE CHANGE IN CONTRA COSTA COUNTY

Climate change is expected to alter many aspects of the county's climate, including temperature, precipitation patterns, and sea levels, potentially exacerbating both the severity and geographic scope of climate hazards. Contra Costa County is most vulnerable to hazards associated with pests and diseases, changes in air quality, drought, extreme heat, flooding, fog, human health hazards, landslides and debris flows, severe storms, sea level rise, shoreline flooding, and wildfire. These climate stressors are described in the following paragraphs.

Agricultural pests and diseases



Nunn Vineyard. Photo credit: Stan Muraoka.

The farms and ranches of Contra Costa County face risks from assorted pests and diseases that may affect crop plants, trees, and livestock. These pests and diseases can reduce or delay plant and animal growth, inflict such damage that agricultural products are less appealing and harder to sell, or cause plant or animal death. To manage greater pest and disease pressure, farmers may also need to increase pesticide applications.

Many pests and organisms that carry diseases are most active during warmer months, so the threat of infection or infestation is usually higher during these months. As the climate changes, temperatures are expected to get warmer earlier in the year and remain warmer until later in the year, creating a wider window for agricultural and urban pests and diseases to be active.

Both evergreen and oak woodlands in the county can be damaged by forestry pests and diseases, such as Sudden Oak Death and redwood bark beetles. These diseases severely harm ecosystems, including both woodlands and the animals that depend on them to provide habitat and foraging, such as coyote, gray fox, barn owl, red-tailed hawk, and Cooper's hawk.

Air quality

The primary determinants of air quality in Contra Costa County are ozone pollution from vehicle exhaust, particulate matter from industrial centers and diesel trucks, and allergen distribution. Higher temperatures can increase surface ozone concentrations, and increased water vapor can trap ozone in already-polluted areas. Ground-level ozone is associated with a variety of negative health outcomes, including reduced lung function, pneumonia, asthma, cardiovascular diseases, and premature death.

> Ozone concentrations are projected to increase in most places that already experience high ozone levels, such as eastern Contra Costa County.

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Drought

A drought happens when conditions are drier than normal for an extended period, making less water available for people (especially if local water supply depends on surface water), agricultural uses, and ecosystems. Communities in Contra Costa County may experience water shortages during drought conditions and mandatory water restrictions for domestic and agricultural uses. Farmers may need to cut back on irrigation, and ranchers may need to reduce the number of their livestock. Farmers may also be forced to plant varieties that are more drought tolerant or alter the timing and location of fields to ensure that irrigation water is available at critical times. Land may be left fallow if irrigation water is not available, which may increase the pressure to develop prime agricultural land.

Less precipitation could lower water levels, decrease water quality, and raise water temperatures at streams and lakes. These conditions can cause algal blooms in Delta areas and harm salmonid populations and other aquatic species, such as the California red-legged frog and western pond turtle. Droughts are a regular occurrence in California; however, scientists expect that climate change will lead to more frequent and more intense droughts statewide.

Extreme heat

Contra Costa County has different thresholds for extreme heat in different parts of the county. An extreme heat day is where temperatures reach 94 degrees Fahrenheit in Rodeo, 99 degrees Fahrenheit in Alamo, and 102 degrees Fahrenheit in Knightsen. [10]Extreme heat temperatures for the western part of the county are lower, but any higher-than-usual temperature can be harmful to people and assets that are not accustomed to it.

Historically, Contra Costa County has experienced an average of four extreme heat days a year. This number is expected to increase dramatically because of climate change, as illustrated in **Figure 6.**

By the middle of the 21st century (2040 to 2070), Contra Costa County is likely to have an average of 15 to 20 extreme heat days per year. By the end of the century, the county is projected to experience an average of 21 to 37 extreme heat days per year.

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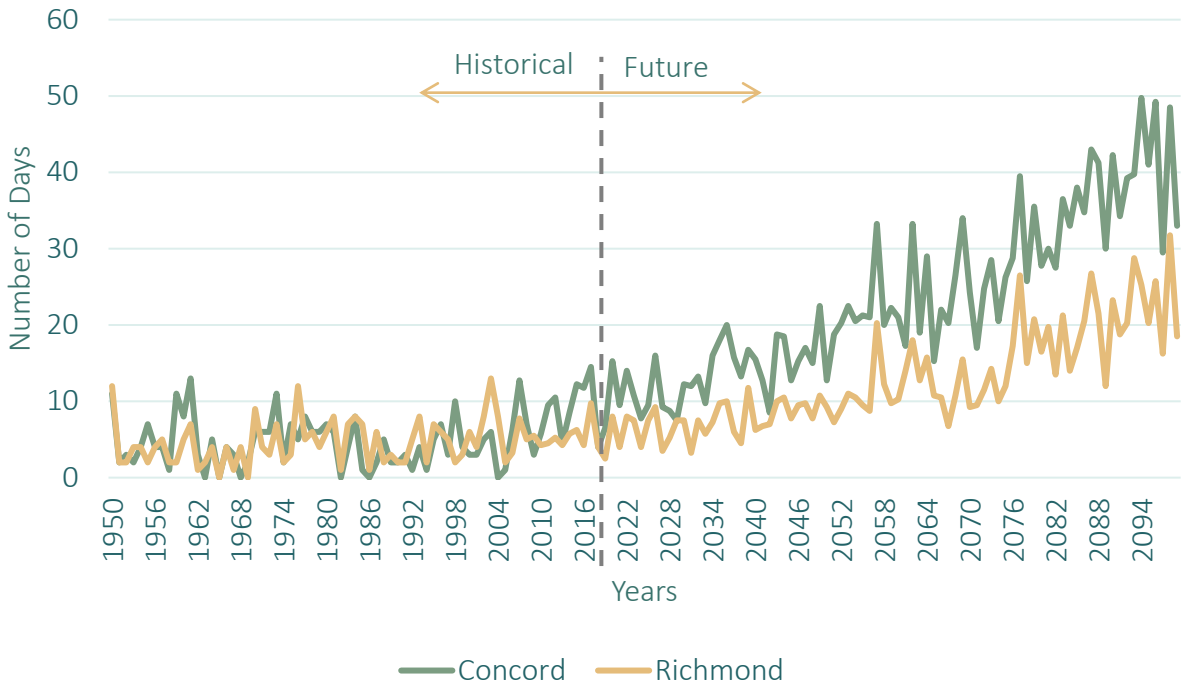
FIGURE 6. FREQUENCY AND PROJECTION OF EXTREME HEAT DAYS IN CONCORD AND RICHMOND



Source: Cal-Adapt. https://cal-adapt.org/. Historical data is available through 2020.

Extreme heat can cause heat-related illnesses, such as heat cramps, heat exhaustion, and heat stroke. High temperatures can harm animals and plants that are not adapted to them. Some types of infrastructure, including power lines and roadways, experience greater stresses during high temperatures, making failure more likely. People are less likely to venture outside in very high temperatures, hurting economic sectors that depend on outdoor activities. Extreme heat can also increase the risk of wildfires by drying out plant material, and prolonged high temperatures contribute to drought conditions.

An example of health inequity tied to climate change is that Black Americans have been found to be at a higher risk of illness and death from heat. However, there is no biological basis for this. Instead, this finding has been linked to social factors such as poverty, neighborhood conditions, access to air conditioning, and vehicle ownership. These factors are also associated with higher rates of chronic health conditions among the Black community, including cardiovascular disease and hypertension. Long-standing patterns of racial residential segregation and institutional racism mean that Black individuals disproportionately live in high-poverty, disinvested neighborhoods, regardless of income. The Contra Costa County communities with the highest proportions of Black residents are

the unincorporated community of North Richmond and the cities of Antioch, Pittsburg, and Richmond.

These conditions exist in Contra Costa County for other low-income residents of impacted communities. Extreme heat also can create vulnerability for workers whose jobs are outdoors, such as those in agriculture or construction, and those who work in poorly ventilated buildings and/or buildings that lack air conditioning.

Analysis conducted as part of the 2015 Contra Costa County ~~Health~~ Extreme ~~h~~Heat ~~v~~Vulnerability ~~a~~Assessment determined that the neighborhoods most vulnerable to heat are Bethel Island, East County, the Monument Corridor in Concord, the Rossmoor Area in Walnut Creek, and West County. These results are found in a summary of the assessment, *2015 Climate Change Vulnerability in Contra Costa County: A Focus on Heat*.[11]

Air Conditioning

Air conditioner ownership helps protect against extreme heat events. However, while air conditioners allow households to adapt to extreme heat, increased household air conditioning could strain energy capacity and counter mitigation goals by leading to ~~greenhouse gas~~GHG emissions. Identifying areas where few households have air conditioners is important to ensure that these communities are adequately served by cooling centers. Low-income households are less likely to have or use air conditioning, and a lack of air conditioning may be one of the drivers of racial inequalities in morbidity and mortality during heat waves. I~~With~~in Contra Costa County, households in historically cooler areas and areas with older housing stock are less likely to have home air conditioning. All-electric heat pumps can provide both air conditioning and heating services, reducing the need for natural gas service, and helping to address this inequity.

Extreme weather may also lower water quality and cause water temperatures to rise, which can lead to algal blooms and declines in aquatic populations. Native fish species may have a more difficult time surviving in warmer waters and non-native species may out-compete native species.

Flooding



Flooding happens when there is too much water in inland areas to be held in local bodies, carried away by drains or creeks, or soaked into the soil. This water can build up and wash into normally dry areas and significantly harm buildings, people, and habitats. Floodwaters can be deep enough to drown people and may move fast enough to carry away people, cars, or even homes. Floodwaters

can carry contaminants into communities, impacting public health, ecosystem health, and water quality. Floods can be caused by heavy rainfall, extended periods of moderate rainfall, or clogged drains during periods of rainfall. Flash floods can be especially dangerous because they happen so fast that they give little or no warning.

Although climate change is expected to increase the frequency and intensity of droughts, scientists also project that it will increase the frequency and intensity of heavy rain and associated floods in Contra Costa County.

Fog

Fog is a very low cloud, usually low enough to touch the ground. It forms when air near the surface reaches the right temperature to form water vapor, which condenses into a cloud. In Contra Costa County, fog usually forms in two areas—western Contra Costa County along the bayfront and eastern Contra Costa County as part of the Central Valley. Western Contra Costa County experiences coastal fog that flows in from the Pacific Ocean. Eastern Contra Costa experiences tule fog, which usually forms after heavy rain between late autumn and early spring in the Central Valley. The cool air brought in by fog is necessary for the productivity of agriculture in the region and the growth of many tree-dominated habitats on the hillsides of Contra Costa County.

The cool air brought in by fog is necessary for the productivity of agriculture in the region and the growth of many tree-dominated habitats on the hillsides of Contra Costa County.

The impacts of climate change on fog are less clear. There has been close to a 50 percent reduction in tule fog in California's Central Valley since the 1980s. Coastal fog is projected to decline by 12 to 20 percent between 1900 and 2070. Climate scientists believe that the warmer temperatures created by climate change make it harder for the air to become cool enough to create fog, and warmer temperatures are more likely to evaporate any fog that does form.

In agriculture, many varieties of fruit and nut trees require winter chill (measured as a number of chill hours) for high fruit and nut quality and yield. Research has shown that the warmer air that is replacing seasonal fog decreases the number of these important chill hours. This reduces the yield and quality of the cherries, almonds, walnuts, and other stone fruit that are grown in Contra Costa County.

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Redwoods depend on the coastal fog for water in the summer months. The absence of coastal fog may cause higher evapotranspiration rates and increase the demand for water in woodland ecosystems during the drier summer months.

Human health hazards

There are several diseases that are linked to climate change and can be harmful to the health of Contra Costa County community members. Examples of these diseases include hantavirus pulmonary syndrome, Lyme disease, and West Nile virus, which can be debilitating or fatal for some of the population. These diseases are carried by animals such as mice and rats, ticks, and mosquitos. Climate change can increase the rate of infection because, with warmer temperatures earlier in the spring and later in the winter, these animals can be active for longer, widening the window for disease transmission. Warmer temperatures and more intense rainfall can lead to larger populations of animals such as mosquitos, rodents, and ticks, increasing the risk of contracting diseases carried by these animals.

As described previously in the section on Agriculture, as the climate changes, temperatures are expected to get warmer earlier in the year and remain warmer until later in the year, creating a wider window for agricultural and urban pests and diseases to be active.

Landslides and debris flows



Landslides occur when a slope, such as the side of a hill or mountain, becomes unstable, causing soil and rocks to slide down the slope. Landslides are most common on steep slopes made up of loose soil and other materials and are often triggered by precipitation. The types of landslides caused by precipitation are typically debris flows (a landslide made of a wet mix of rock, soil, and other materials) and mudflows (or mudslides, which are primarily made of wet soil). Because they are so fluid, debris flows and mudflows can flow for long distances past the base of the slope and affect large areas. Landslides can damage or destroy buildings and infrastructure, block roadways, disrupt sensitive ecosystems, and injure or kill people in their path.

Climate change does not directly cause more frequent or intense landslides. However, it is expected to increase the conditions that can lead to landslides, such as an increase in heavy storms that saturate the ground and make a landslide more likely. These events can cause significant damage to important infrastructure in Contra Costa County, as happened during the Morgan Territory landslide in 2017. After large storm events in January and February of that year, the resulting landslide snapped a water main and collapsed a section

of Morgan Territory Road, leaving homes without water for a week and closing the road for months. Wildfires also increase the likelihood of a landslide by removing vegetation that supports slopes and slows down water. Wildfires can alter soil conditions, increasing erosion and water runoff, further exacerbating slope instability. Because climate change is projected to increase wildfire activity, it is possible that this could also increase the size and/or intensity of future landslides.

Severe storms

Severe storms include strong winds, hail, and lightning. Severe weather is usually caused by intense storm systems, although some types of strong winds can occur without a storm. Hail can damage buildings and plants (and in extreme cases, injure people), and lightning can spark fires, injure people, or cause fatalities. There have been no reported damage or injuries from lightning in Contra Costa County, although hail up to 0.75 inches in diameter fell in portions of Contra Costa County in April of 1983. Severe winds, such as the Diablo Winds that blow in northern California in the spring and fall, can damage or destroy buildings, knock over trees, and damage power lines and electrical equipment (potentially causing wildfires). In some cases, strong winds can reach between 40 and 80 miles per hour, causing trees to fall and damage power lines. Strong winds are the most common type of severe weather in Contra Costa County. In winter 2023, a series of severe storms triggered high wind, flooding, and freeze warnings across the county. Felled trees and debris caused power outages, the cold temperatures caused delays on BART, and slick roads made driving more dangerous.[12]

The connection between climate change and severe storms is not as well established as other weather events, but new evidence suggests that severe storms may happen more often and more intensely than in the past. Climate change may affect strong winds that are not associated with intense storms, but scientists are not clear on how these wind patterns might change.

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Sea level rise

As global temperatures rise, glaciers and other land ice near the north and south poles melts. The water flows into the ocean, increasing sea levels across the globe. Higher temperatures also cause water to expand in oceans, further raising sea levels.

In California, sea levels may increase in most places by 6 to 10 inches by 2030, 13 to 23 inches by 2050, and 41 to 83 inches by 2100, relative to the average sea levels between 1991 and 2009. However, it is possible that sea level may increase faster than these projections.

Eventually, sea levels may increase enough to permanently flood low-lying areas near the Bay shoreline and Delta areas. Sea level rise threatens buildings, infrastructure, and ecosystems that may be temporarily or permanently flooded by water in the shoreline areas and Delta of Contra Costa County. Structures built above the increased sea level can still be harmed if the higher level of the water erodes away the rock or soil supporting the structure, potentially making it unsafe and at risk of collapse. Sea level rise can also promote saltwater intrusion into the Delta aquatic systems and groundwater basins, which would negatively affect water quality and aquatic habitats. Aquatic habitats may be harmed if industrial or oil facilities are inundated, as hazardous materials could be released into the soils and water.

Shoreline flooding

Rising sea levels mean that shoreline floods can become more severe and more frequent along shoreline communities and areas in the Delta. Because the ocean is at a higher level during new normal conditions, shoreline floods such as king tides can reach further onto land. Higher sea levels can also give a "boost" to smaller floods that would not have been large enough to flood dry land during past normal conditions, making shoreline flooding more frequent.



Shoreline facilities, such as this marina, are at particular risk from shoreline flooding. Photo credit: Lisa Gorrell.

During strong storms and king tides, shoreline flooding can damage or destroy buildings in low-lying areas, disrupt transportation routes, and harm important economic assets such as the oil refineries and the Delta. The communities facing

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the greatest risk in the unincorporated areas of the county are North Richmond, Rodeo, Crockett, Bay Point, Bethel Island, and Discovery Bay. Shoreline flooding could also damage water infrastructure and interrupt regional and statewide water services.

Wildfire



Wildfires are a regular feature of the landscape in much of California. Winter rains support plant growth, and the summer dry season dries out vegetation, increasing the potential for ignition during the late summer and fall when temperatures are high. Wildfires are defined as fires burning in natural areas, but they can easily spread into the developed areas between urban and wildland zones, known as the wildland-urban interface. Large sections of Contra Costa County are considered to be high or very high fire hazard severity zones by CAL FIRE. This exposes people and property to the flames, increasing the risk of injury, death, and property damage or destruction. The smoke and ash from wildfires can increase air and water pollution levels and create a significant health risk in the region, particularly under weather conditions that prevent smoke from clearing, as happened during the Camp Fire in Butte County in Northern California (2018) and LNU Lightning Complex Fire in Northern California wine country areas (2020).

> Fire activity is projected to increase where development expands in the wildland-urban interface, in addition to the dry hills around the Mount Diablo region in Contra Costa County.

Local ecosystems can be harmed by wildfire. Chaparral and scrub ecosystems are in high fire hazard severity zone areas. Although wildfires naturally occur in chaparral ecosystems, fires more than every 20 years can reduce the biodiversity of chaparral habitat and cause the ecosystem to convert to a grassland or scrub habitat. Riparian ecosystems can be harmed by wildfires due to loss of canopy and changes in soil structure, erosion, and shifts in specific composition due to changes in habitat structure. Large fires can cause widespread devastation throughout woodland areas in Contra Costa, particularly if trees have been weakened or killed by drought, extreme heat, or pest infestation.

Climate change is expected to lead to an increase in wildfires throughout California. Warmer temperatures, an increase in drought conditions, and forestry pests and diseases are likely to create more fuel in State and federal wildlands and a greater chance that a spark will grow into a potentially dangerous blaze. Excessive heat and dry conditions have already contributed to the rapid spread of wildfires in Contra Costa County during events

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such as the 3,700-acre Morgan Fire on Mount Diablo (2013); the 396,624-acre SCU Lightning Complex fires (2020), which impacted six counties; and the Franklin Fire (2022). Climate change is also expected to extend the fire season throughout much (or even all) of the year. Because wildfires burn the trees and other vegetation that help stabilize a hillside and absorb water, increases in fire activity may also lead to an increase in landslides and floods.

GHG Inventory and Forecast

INTRODUCTION

A GHG inventory is an estimate~~accounting~~ of the GHG emissions attributable to a particular community over the course of a specific year. A GHG forecast takes information from the GHG inventory as well as predictions of future demographic trends and the projected impacts of climate-related legislation to predict future levels of GHG emissions.

Determining the annual level of GHG emissions for specific years on a recurring basis will aid the County in establishing an attainable goal for continually reducing emissions. Furthermore, knowing which activities release GHG emissions allows the County to develop policies and programs that facilitate a decrease in emissions for each activity.

GHG emissions are generated by various activities that are commonplace in daily life, such as driving, electricity use, and water use. Some daily activities release GHG emissions in the location of the activity, such as gases released any time an internal combustion engine is operated. Other activities cause GHG emissions to be released elsewhere, such as using nonrenewable or non-carbon-free electricity to power a home, which generates GHG emissions in the location of the power plant that supplies the power, not in the home itself. ~~Therefore,~~ Contra Costa County must consider ~~all~~ GHG emissions ~~caused by~~ resulting from activities attributed to residents, business, workers, and visitors of the unincorporated community, including GHG emissions generated both inside and outside the County's jurisdictional boundaries.

The County ~~has~~ develops two types of GHG inventories: (1) community-wide inventories and (2) County operations inventories.

- A community-wide GHG inventory identifies GHG emissions that result from activities of unincorporated Contra Costa County residents, employees, visitors, and other community members. Examples include GHG emissions from residents driving cars, homes using water, and businesses using electricity. The community-wide GHG inventory presented for the unincorporated county is a production-based inventory, which means that it assesses the GHG emissions produced by activities occurring in the community.
- A County operations GHG inventory summarizes emissions that are a direct result of Contra Costa County's government operations. Examples include GHG emissions from electricity and water used in County buildings or the fuel used for County vehicles.

The project team prepared the new GHG inventories and updates to past GHG inventories consistent with the guidance in widely adopted, standard protocol documents. These protocols provide guidance on what activities should be evaluated in the GHG inventories and how emissions from those activities should be assessed. Using standard methods also allows for an easy comparison of GHG emission levels across multiple years and communities. The methods used to create these inventories are described in **Appendix B**.

Determining the annual level of GHG emissions will aid the County in establishing an attainable goal for continually reducing emissions. Furthermore, knowing which activities release GHG emissions allows the County to develop policies and programs that facilitate a decrease in emissions for each activity. Details about implementing these GHG reduction activities are included in the Enacting the Climate Action and Adaptation Plan section in **Chapter 6**.

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GHG Inventory

The following sections present the results of the community-wide and County operations GHG inventories for the years 2005, 2013, 2017, and 2019.

Total community-wide emissions declined 24~~18~~ percent from 2005 to 2019.

COMMUNITY INVENTORY

The community-wide GHG inventory assessed GHG emissions from the following 11 categories of activities, known as sectors.



- **Transportation** is GHG emissions created by driving on-road vehicles in the unincorporated county, including passenger and freight vehicles.



- **Residential energy** is GHG emissions attributed to the use of electricity, natural gas, and other home heating fuels in residential buildings.



- **Nonresidential energy** is GHG emissions attributed to the use of electricity and natural gas in nonresidential buildings.



- **Solid waste** is the GHG emissions released from trash collected in the unincorporated areas of Contra Costa County, as well as collective annual emissions from waste already in place at the Acme, Keller Canyon, and West Contra Costa Landfills.



- **Agriculture** is GHG emissions from various agricultural activities in the unincorporated county, including agricultural equipment, crop cultivation and harvesting, fertilizer application, and livestock operations.



- **Off-road equipment** is GHG emissions from equipment that does not provide on-road transportation (excluding agricultural equipment), such as tractors for construction, ~~or~~ equipment used for landscape

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maintenance, commercial and industrial equipment, and outdoor recreational equipment.

- **Water and wastewater** accounts for the electricity used to transport and process water and wastewater used or generated by unincorporated county residents and businesses, as well as direct emissions resulting from wastewater treatment activities.



- **Bay Area Rapid Transit (BART)** is GHG emissions associated with the operation of BART for unincorporated county residents.



- **Land use and sequestration** is GHG emissions absorbed and stored in trees and soils on locally controlled lands as part of healthy ecosystems and released into the atmosphere from development of previously undeveloped land.



- **Stationary sources** are emissions from fuel use at major industrial facilities, permitted by State and regional air quality authorities. These emissions are informational and are not counted as part of the community total.



- **Wildfire** includes emissions released as a result of wildfires. These emissions are informational and are not counted as part of the community total.



- **Direct access electricity** is electricity purchased directly from an Electric Service Provider (ESP) rather than an investor-owned utility company or Community Choice Energy provider such as MCE, generally to power large industrial, commercial, and institutional facilities.



~~The community-wide emissions inventory also records emissions released via wildfire and stationary sources such as oil refineries.~~ Emissions from stationary sources, wildfire, and direct access electricity ~~These emissions~~ are reported for informational purposes but are not formally counted as part of the unincorporated county's GHG emissions.

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Contra Costa County is home to large industrial facilities whose operations have generated significant GHG emissions and/or products that create GHGs, such as gasoline for internal combustion engines. Most of those facilities were constructed before land use permits from the County were required. If these facilities apply for new land use permits, the County can impose new operational requirements in some circumstances. An example of this is applications the County received in 2020 from two refineries to process renewable fuels.

There are several factors outside of the County's control that influence the operations and related emissions and energy use at these facilities. The County has therefore elected to exclude the direct emissions and energy use at these facilities from consideration of the County's GHG reduction goals for the following reasons:

- These facilities are regulated primarily through the Federal Energy Regulatory Commission and the California Energy Commission (CEC) and are subject to air quality and emissions standards set forth by the USEPA, CARB, and BAAQMD.
- The energy used at some of these facilities fluctuates from year to year, depending on the demand for resources and the availability of other electricity-generating sources, such as hydropower or renewable resources. This makes it difficult to accurately forecast the energy use at these facilities.
- The County has limited jurisdictional authority to reduce GHG emissions from these sources because they are subject to cap-and-trade regulations set forth by CARB.
- The approach to excluding energy from sources that are outside of the County's jurisdictional control is consistent with the *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*.
- The resultant jurisdictional inventory more accurately reflects the energy use from nonresidential customers in unincorporated Contra Costa County and allows the County to focus on actions that are within its control.

Large industrial customers frequently purchase direct access electricity. Direct access customers can purchase electricity from any Electric Service Provider (ESP) operating in the state. Different EPSs will rely on different power sources with different proportions of fossil and renewable energy to produce electricity. The California Public Utilities Commission (CPUC) regulates the sale of direct access electricity in California, and the identities of direct access customers and the specific ESPs from which they purchase electricity are not made

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available to the public. Given the County's limited ability to monitor and regulate the sale and use of direct access electricity, as well as historical inconsistences in how direct access electricity use is reported, direct access emissions are reported for informational purposes only.

Table 3 and **Figure 7** show the community-wide GHG emissions for the unincorporated county during the four inventory years. Total community-wide emissions declined 18 percent from 2005 to 2019. **Table 4** shows the proportion of GHG emissions from each sector for the unincorporated county for the four inventory years.

TABLE 3. ABSOLUTE ANNUAL GHG EMISSIONS, 2005 TO 2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Transportation (excluding BART)	628,200	651,130	571,650	464,040	-26%
Energy - Residential	294,930	280,870	212,420	191,780	-35%
Energy - Nonresidential	118,740	125,350	98,850[1]	85,390	-28%
Solid waste	243,940	224,570	223,100	220,760	-10%
Agriculture	33,350	39,300	44,880	36,130	8%
Off-road equipment	34,160	36,290	42,840	54,010	58%
Water and wastewater	8,080	7,400	4,400	4,870	-40%
BART	1,040	1,320	1,440	190	-82%
Land use and sequestration	-70,860	-70,860	-70,860	-70,860	0%
Total Annual $MTCO_2e$	**1,291,580**	**1,295,370**	**1,128,720**	**986,310**	**-24%**
Informational Items					
Stationary sources	13,983,030	11,956,000	11,232,290	10,867,670	-22%
Wildfire	14,270	66,080	0[2]	10,100	N/A[3]
Direct access electricity	0[4]	0[4]	0[4]	74,130	N/A

Note: All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

[1] Estimates of nonresidential electricity use in 2013 are used in 2017 to account for a lack of available data in 2017.

[2] No wildfires were recorded in the unincorporated county in 2017.

[3] Overall change between 2005 and 2019 for wildfire is not calculated because of the high degree of year-to-year variability.

[4] PG&E did not provide direct access electricity use data in these years.

FIGURE 7. ABSOLUTE ANNUAL GHG EMISSIONS BY SECTOR, 2005 TO 2019

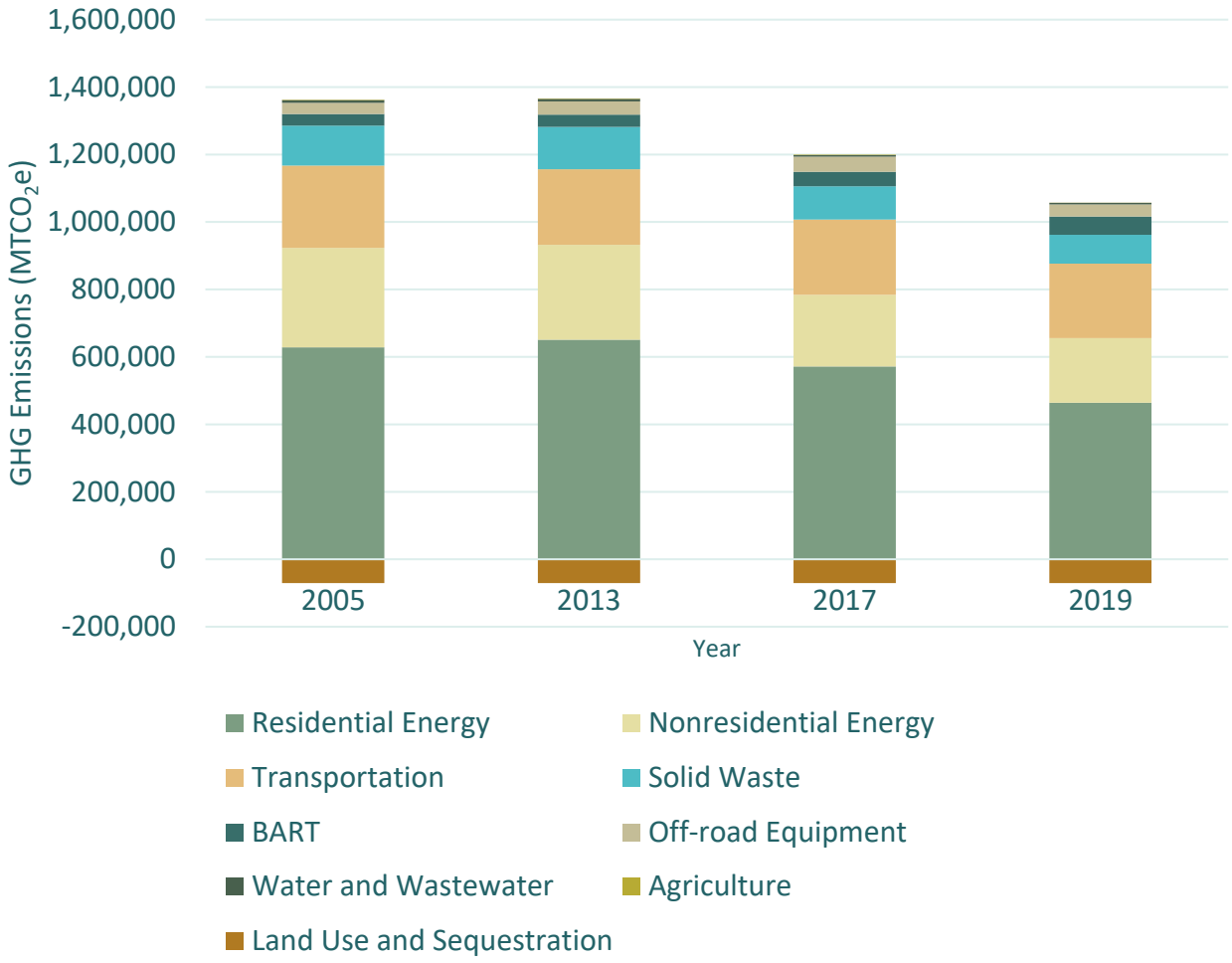

TABLE 4. PROPORTION OF GHG EMISSIONS, 2005 TO 2019

SECTOR	2005	2013	2017	2019
Transportation	49%	50%	51%	47%
Energy - Residential	23%	22%	19%	19%
Energy - Nonresidential	9%	10%	9%	9%
Solid waste	19%	17%	20%	22%
Agriculture	3%	3%	4%	4%
Off-road equipment	3%	3%	4%	5%
Water and wastewater	1%	1%	Less than 1%	Less than 1%
BART	Less than 1%	Less than 1%	Less than 1%	Less than 1%
Land use and sequestration	-5%	-5%	-6%	-7%
Total Annual $MTCO_2e$	**100%**	**100%**	**100%**	**100%**
Note: Totals may not equal the sum of individual rows due to rounding.				

The transportation sector has consistently been the largest source of GHG emissions in the unincorporated county, accounting for between 47~~6~~ and 51~~3~~ percent of total community-wide GHG emissions (excluding informational items). Residential and nonresidential energy combined are the second-largest source of emissions, comprising 28 to 32 percent of community-wide emissions. Of the energy-related emissions, approximately 70 percent come from residential buildings and 30 from nonresidential buildings. In both building types, most emissions are associated with natural gas use. Solid waste is the third-largest source of emissions, accounting for between 17 and 22 percent of the community-wide total. ~~Residential energy and solid waste are the second- and third-largest sources of GHG emissions, followed by nonresidential energy.~~ Agriculture GHG emissions account for between 3 and 4 percent, and off-road equipment accounts for between 3 and 5 percent. GHG emissions from the water and wastewater and BART sectors are each 1 percent or less.

The sectors that experienced the largest decrease in annual GHG emissions between 2005 and 2019 were BART (82 percent), water and wastewater (40 percent), residential energy (35 percent), nonresidential energy (28 percent), and transportation (26 percent). Collectively, emissions from energy use declined 33 percent over this time period. ~~Emissions reductions also occurred in the solid waste sector (10 percent), and the nonresidential energy sector (8 percent).~~ These changes are primarily due to an increase in renewable and carbon-free electricity, the County joining MCE in 2017 (which provides more electricity from renewable and carbon-free sources than PG&E), and better resource-efficiency practices by community members. Emissions reductions also occurred in the solid waste sector (10 percent). Three~~wo~~ sectors nonresidential energy, off-road equipment, and agriculture saw increases in their emissions from 2005 to 2019.

> The transportation sector has consistently been the largest source of GHG emissions in unincorporated Contra Costa County. The sectors that experienced the largest decrease in annual GHG emissions between 2005 and 2019 were BART, water and wastewater, residential energy, and transportation.

Between 2005 and 2019, offroad emissions increased by 58 percent. Increases in offroad emissions are due to increased emissions from agricultural and other types of commercial and industrial equipment. Agricultural emissions increased due to changes in crop activity and livestock population. Detailed summaries of changes in GHG emissions by sector appear in **Appendix B.**

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Per-person GHG emissions

Along with the "absolute" GHG emission levels discussed previously, the project team assessed the per-person GHG emissions from the unincorporated county. The team calculates per-person GHG emissions by taking the absolute GHG emissions in **Table 3** and dividing them by the number of residents in the unincorporated county for that inventory year. **Table 5** and **Figure 8** show the per-person emissions for the inventory years for the unincorporated county.

Overall, per-person emissions declined 32~~27~~ percent from 2005 to 2019. Because the population of the unincorporated county grew during this time, most sectors saw their per-person emissions decline. Even for sectors that had increases in their absolute emissions, such as Agriculture, population growth resulted in a decline in per-person emissions. Only per-capita off-road equipment emissions increased between 2005 and 2019. ~~The two sectors that saw an increase in per-person emissions were Off-road equipment, and Nonresidential energy, although the per-person emissions grew by 53 percent from 2005 to 2019 compared to a 73 percent increase in absolute emissions.~~

TABLE 5. PER-PERSON GHG EMISSIONS, 2005 TO 2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Population					
Residents	154,270	165,700	174,110	174,150	13%
Emissions ($MTCO_2e$ per-person)					
Transportation	4.07	3.93	3.28	2.66	-35%
Energy - Residential	1.91	1.70	1.22	1.10	-42%
Energy - Nonresidential	0.77	0.76	0.57	0.49	-36%
Solid waste	1.58	1.36	1.28	1.27	-20%
Agriculture	0.22	0.24	0.26	0.21	-4%
Off-road equipment	0.22	0.22	0.25	0.31	53%
Water and wastewater	0.05	0.04	0.03	0.03	-47%
BART	0.01	0.01	0.01	Less than 0.01	-84%
Land use and sequestration	-0.46	-0.43	-0.41	-0.41	-11%

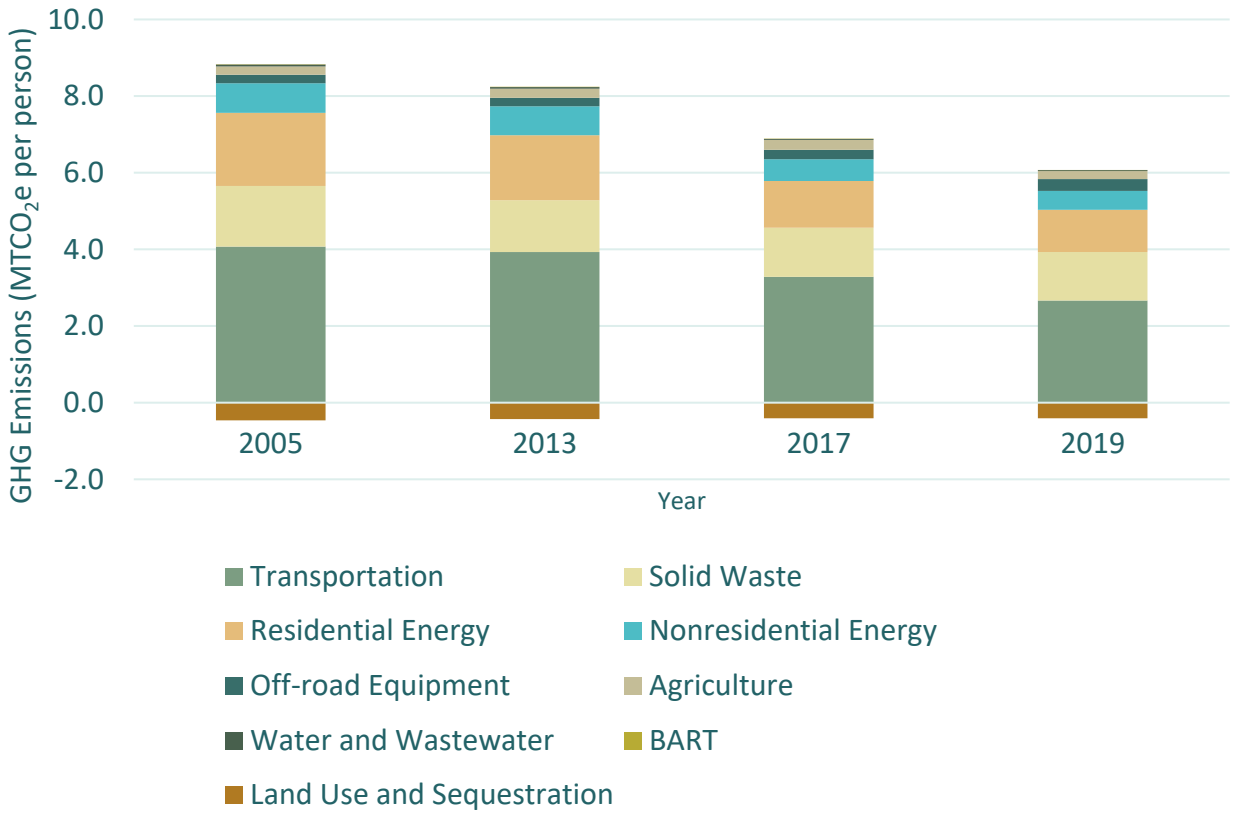
Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Total Annual ($MTCO_2e$ per-person)	8.37	7.82	6.48	5.66	-32%
Informational Items					
Stationary Sources	90.64	72.15	64.51	62.40	-31%
Wildfire	0.09	0.40	0.00	0.06	N/A[1]*
Direct access electricity	0.00	0.00	0.00	0.44	N/A[2]**

Note: All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

[1] Overall change between 2005 and 2019 is not calculated because of the high degree of year-to-year variability.

[2] Overall change between 2005 and 2019 is not calculated because of limited availability of direct access electricity use data between 2005 and 2017.

FIGURE 8. PER-PERSON ANNUAL GHG EMISSIONS BY SECTOR, 2005 TO 2019



The typical resident in Contra Costa County…



…uses about 4,610 kWh of electricity annually.



…uses about 200 therms of natural gas each year.



…drives about 6,530 miles annually.



…throws out about 910 pounds of trash each year.



…uses about 46,000 gallons of water annually.

COUNTY GOVERNMENT OPERATIONS EMISSIONS INVENTORY

Contra Costa County conducted government operations emissions inventories in 2006 and 2017.[8] In 2006, Contra Costa County government operations emissions totaled 54,130 $MTCO_2e$ for the sectors reported in this inventory (see **Table 6**). In 2017, County government operations GHG emissions were 43,380 $MTCO_2e$, a 20 percent decrease from 2006. This decrease is primarily the result of reductions in energy use, reductions in County Fleet emissions, and reductions in government-generated solid waste. The 2017 inventory also includes emissions from Wastewater Treatment and Refrigerants, which were not included in the 2006 inventory. In summary:

In 2017, GHG emissions from County government operations were 43,380 $MTCO_2e$, a 20 percent decrease from 2006. This decrease is primarily the result of reductions in energy use, reductions in County fleet emissions, and reductions in government-generated solid waste.

[8] The budget for the 2024 CAAP included one County operations inventory. The County operations inventory will be updated on a regular basis, along with the community-wide inventory.

- The largest source of emissions in 2017 is from the Employee Commute sector (25,800 $MTCO_2e$). In the 2006 inventory, Employee Commute is also the largest contributor of GHG emissions (23,530 $MTCO_2e$).
- Significant emissions also originate from the Buildings and Facilities sector (12,500 $MTCO_2e$ in 2017) and Government (County) Fleet (3,430 $MTCO_2e$ in 2017).
- Emissions from every sector except for Employee Commute decreased between 2006 and 2017. There was a 10 percent increase in GHG emissions related to Employee Commute over this time.
- The greatest reduction in the amount of emissions was in the Buildings and Facilities sector (–6,760 $MTCO_2e$), followed by Government (County) Fleet sector (–5,070 $MTCO_2e$), and Solid Waste (–1,070 $MTCO_2e$).
- The number of County employees increased by 19 percent from 2006, accounting for 1,335 new positions in 2017.
- County employee transportation VMT increased, although this increase was slightly offset by improvements in vehicle efficiency. As a result, overall employee commute emissions increased 10 percent from 2006 to 2017.
- Energy usage in Buildings and Facilities as well as the Public Lighting sector emissions decreased overall due in large part to lower utility electricity emissions factors and energy efficiency.
- Annual solid waste volumes decreased.

Figure 9 compares 2017 GHG emissions to the 2006 baseline GHG emissions for the County operations inventory.

Local Energy Providers

As of January 2024, approximately 88.7 percent of customers in unincorporated Contra Costa County are buying electricity from MCE, a not-for-profit clean energy provider. Approximately 7.1 percent of these accounts, equating to 4,422 accounts, are enrolled in MCE's Deep Green electricity service, which provides electricity from 100 percent renewable energy. As a result of MCE's generation services, an estimated 3,485.73 metric tons of carbon dioxide equivalent were reduced in the unincorporated areas of the county in 2023. PG&E provides electricity to most of the remaining customers, as well as providing natural gas to all customers. Some large industrial facilities receive electricity from third-party providers. Some residents heat their homes using propane, kerosene, or wood.

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FIGURE 9. 2006 BASELINE AND 2017 COUNTY OPERATIONS GHG EMISSIONS SUMMARY

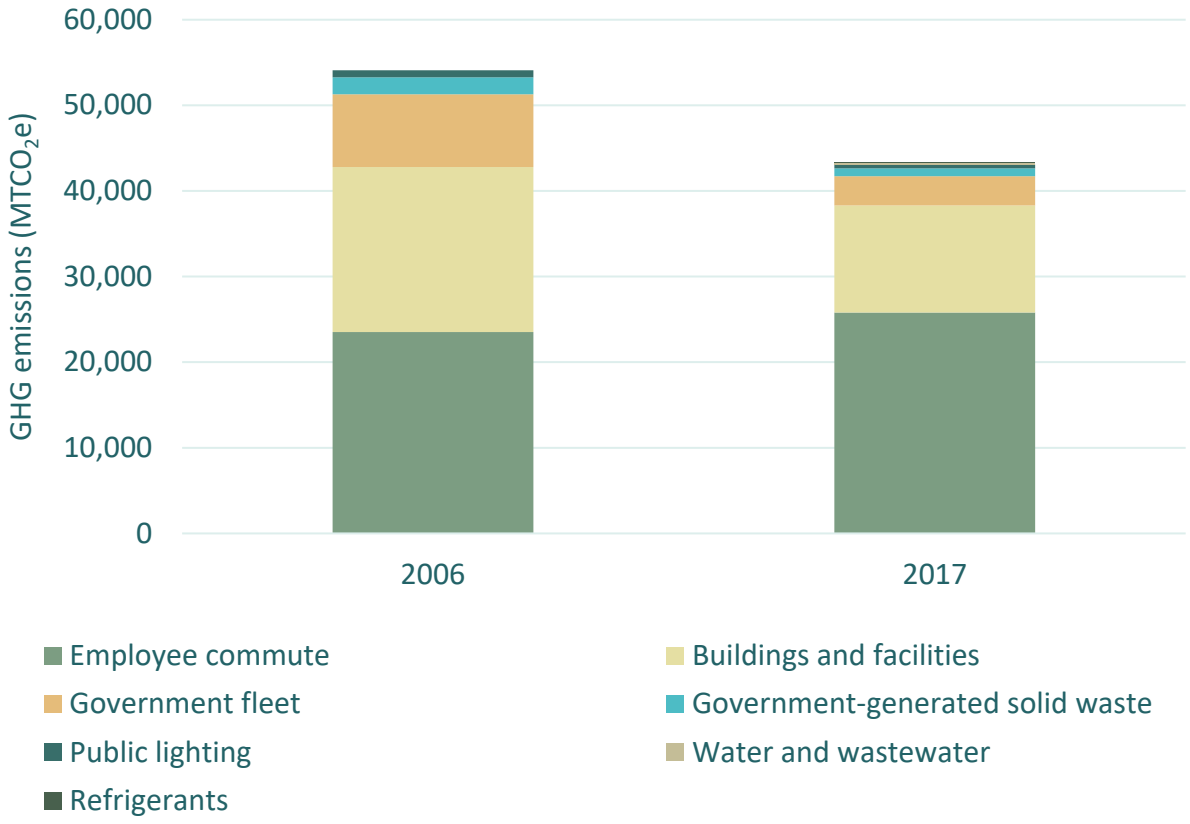

TABLE 6. 2006 BASELINE AND 2017 COUNTY OPERATIONS GHG EMISSIONS SUMMARY

SECTOR	2006 GHG EMISSIONS ($MTCO_2E$)	2017 GHG EMISSIONS ($MTCO_2E$)	PERCENTAGE CHANGE
Employee commute	23,530	25,800	10%
Buildings and facilities	19,260	12,500	-35%
Government fleet	8,500	3,430	-60%
Government-generated solid waste	1,980	900	-54%
Public lighting	830	440	-47%
Water and wastewater	Not included	220	—
Refrigerants	Not included	90	—
Total	54,090	43,380	-20%

Notes: These inventories assume 8,420 County employees in 2006 and 10,030 employees in 2017, a 19% increase.
All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

Many factors contribute to changes in GHG emissions. Key factors may include changes in electricity and natural gas use, the proportion of electricity obtained from carbon-free sources, VMT, vehicle fuel efficiency, landfilled waste tonnage, temperature (affecting heating and cooling demand), and demographic changes (e.g., changes in population, household, and job numbers). Sector-specific descriptions of sources of and changes in GHG emissions are provided in **Appendix B**.

CONSUMPTION-BASED INVENTORY EMISSIONS

The community-wide GHG inventory presented for the unincorporated county is a protocol-compliant, production-based inventory, which means that it assesses the GHG emissions produced by activities occurring in the community. However, the inventory does not account for most of the emissions created by the consumption of food or material goods or use of services in the unincorporated county, including emissions from the manufacture and transportation of goods purchased in the community, food grown and processed in other locations, air travel by unincorporated Contra Costa County community members, and the disposal or reprocessing of certain materials and products. For example, if someone who lives or works in an unincorporated county community purchases new clothes, the production-based inventory will include vehicle emissions for the trip to and from the store, energy use at the store and home, and any landfilled waste generated. It would not include emissions from the growing and processing of the raw materials in the clothes, the manufacturing of the clothes, transportation of the clothes to the store, or the reprocessing of any waste materials that do not end up in a landfill, unless these activities occur within the unincorporated county.

A consumption-based inventory assesses emissions associated with the manufacture, transportation, and disposal of these goods and services regardless of where they occur.

In contrast to a production-based inventory, a second type of GHG inventory, known as a consumption-based inventory, looks at a wider array of GHG emissions created by the goods and services used by unincorporated county community members, including residents, businesses, and employees. A consumption-based inventory assesses emissions associated with the manufacture, transportation, and disposal of these goods and services regardless of where they occur. Such inventories can provide a more complete picture of the GHG emissions associated with the lifestyle and consumer behavior of unincorporated county community members.

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A consumption-based inventory is more complex to prepare than a production-based inventory. There are not established protocols and methods for consumption-based inventories, and California does not yet have a statewide consumption-based inventory or any guidance for preparing one. Due to these limitations, the project team did not prepare one as part of this 2024 CAAP. In 2015, BAAQMD worked with the Cool Climate Network at the University of California, Berkeley, to prepare a consumption-based inventory for all Bay Area jurisdictions. This inventory includes GHG emissions from the following sources:

- **Travel:** GHG emissions from fuel use by on-road vehicles, vehicle manufacturing and repairs, public transportation, and air travel.
- **Housing**: GHG emissions from electricity and natural gas use in homes as well as other fuels associated with home heating (such as kerosene or fuel oil), electricity emissions from water and wastewater activities, and waste emissions. This category also includes emissions from the manufacture, transportation, and construction and demolition of materials used to construct houses.
- **Food**: GHG emissions from the growth, processing/manufacturing, and transportation of food products.
- **Goods**: GHG emissions from the manufacture, transportation, and disposal of consumer products, such as home furnishings, appliances and electronics, clothing, and healthcare and personal items.
- **Services**: GHG emissions from personal and business services, including entertainment and recreation, communication, education, healthcare, and maintenance and repair activities.

Some of these GHG emission sources are also included in the production-based inventory prepared as part of the 2024 CAAP, and others are covered by either the production-based or consumption-based inventory but not both. According to the consumption-based inventory, transportation is responsible for 15.5 $MTCO_2e$ per household, or 34 percent of emissions produced by activities conducted and goods consumed within ~~unincorporated~~ Contra Costa County. Food is responsible for 8.79 $MTCO_2e$ per household (19 percent), goods and services for 7.89 $MTCO_2e$ per household and 7.97 $MTCO_2e$ per household, respectively (17 percent each), and housing for 6.18 $MTCO_2e$ per household, or 13 percent (see **Figure 10**).

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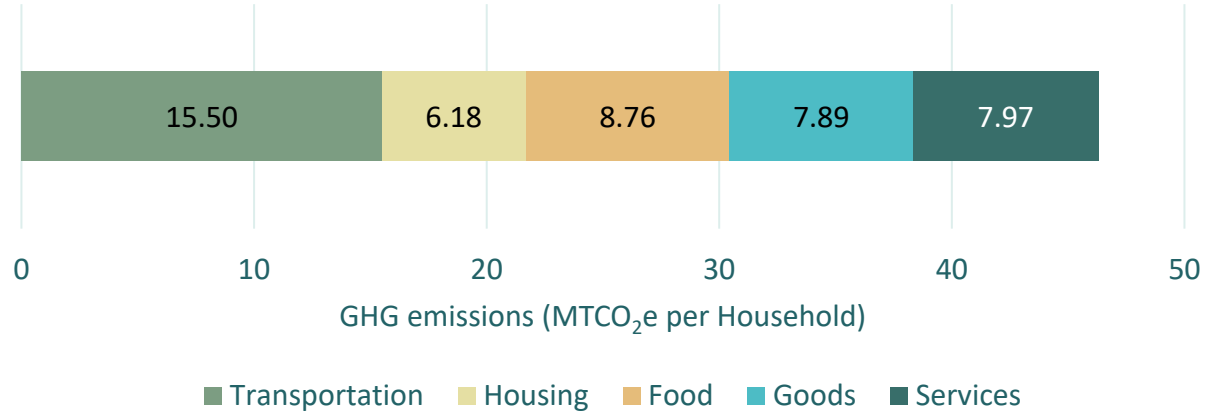
FIGURE 10. CONSUMPTION-BASED GHG EMISSIONS INVENTORY RESULTS



While the 2024 CAAP does not directly speak to the goods and services used and offered by residents, business, and industry, the Contra Costa County community should recognize the role that consumption patterns play in achieving the County's sustainability and climate goals.

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GHG Emissions and Food Consumption

Food production, transport, storage, cooking, and waste are substantial contributors to GHG emissions, accounting for approximately 30 percent of emissions globally. These emissions include carbon dioxide, from fossil fuels used to power farm machinery and to transport, store, and cook foods; methane, released by animals as part of their digestive process; and nitrous oxide, released from tilled and fertilized soils. The majority of the emissions associated with food consumption occur outside of Contra Costa County.

Different food groups are associated with different levels of GHG emissions. Animal-based products are generally responsible for significantly greater emissions than plant-based products per unit weight. Emissions are released during multiple stages of the meat-producing process, including the cultivation of cereal crops to use as animal feed, which may require the conversion of existing forestland; during the animal digestive process; and during the decomposition of animal wastes. Emissions are also generated during the meat storage, processing, and transportation process. Plant-based foods, such as fruits, vegetables, whole grains, beans, and lentils, typically require fewer resources to cultivate. According to the consumption-based inventory, meat is responsible for approximately 30 percent of diet-related GHG emissions within unincorporated Contra Costa County. Research has also found that healthier diets tend to be associated with lower GHG emissions. Fostering awareness of the connection between food choices and the environment can therefore be an effective way of lowering GHG emissions and promoting healthy lifestyles.

The 2024 CAAP and General Plan help reduce emissions associated with food consumption by including policies to support local food production and equitable access to healthy food.

Sources:

Clune S, Crossin E, Verghese K (2017). Systematic review of greenhouse gas emissions for different fresh food categories. *Journal of Cleaner Production* 140(2): https://www.sciencedirect.com/science/article/abs/pii/S0959652616303584.

Rippin HL, Cade JE, Berrang-Ford L, Benton TG, Hancock N, Greenwood DC (2021). *Variations in greenhouse gas emissions of individual diets: Associations between the greenhouse gas emissions and nutrient intake in the United Kingdom*. PLoS ONE 16(11): e0259418. https://doi.org/10.1371/journal.pone.0259418.

Scarborough P, Appleby PN, Mizdrak A, Briggs ADM, Travis RC, Bradbury KE, Key TJ (2014). Dietary greenhouse gas emissions of meat-eaters, fish-eaters, vegetarians, and vegans in the UK. Climate Change 125(2): 179-192. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4372775/

GHG Forecast

The following sections present the results of the community-wide and County operations GHG emissions forecasts for the years 2030 and 2045. For a detailed description of GHG forecast methods and assumptions, see **Appendix B**.

ABSOLUTE BUSINESS-AS-USUAL GHG EMISSIONS FORECAST

Table 7 and **Figure 11** show an estimate of unincorporated Contra Costa County's projected future GHG emissions if no further action is taken at the state, regional, or local level to reduce emissions, relative to the 2019 inventory. These projections are obtained by applying projected changes in community population to resource use and transportation behavior recorded in 2019. As such, these projections do not account for any potential changes in transportation or resource use directly resulting from the COVID-19 pandemic, the long-term effects of which are not currently known.

Most sectors show an increase in GHG emissions due to the growing population. Agricultural emissions decrease because the amount of land used for agricultural purposes is projected to decline. Although the land use and sequestration sector is expected to remain a net carbon sink (negative emissions), the amount of emissions sequestered (removed from the atmosphere) by the activities in this sector are projected to decline. This is due to anticipated development of currently undeveloped land, removing the potential for this land to sequester, or store, carbon. Sequestration in forested and urbanized areas is projected to increase slightly.

TABLE 7. ABSOLUTE BUSINESS-AS-USUAL GHG EMISSIONS FORECAST, 2019 TO 2045

Sector	2019	2030	2045	Percentage Change, 2019–2045
Transportation	464,040	542,020	605,080	30%
Energy - Residential	191,780	217,710	259,380	35%
Energy - Nonresidential	85,590	93,590	106,070	24%
Solid waste	220,760	229,450	260,490	18%
Agriculture	36,130	34,770	33,410	-8%
Off-road equipment	54,010	69,520	76,100	41%
Water and wastewater	4,870	5,530	6,590	35%
BART	190	220	260	37%
Land use and sequestration	-70,860	-67,580	-58,890	-17%
Total Annual $MTCO_2e$	986,310	1,125,230	1,288,490	31%

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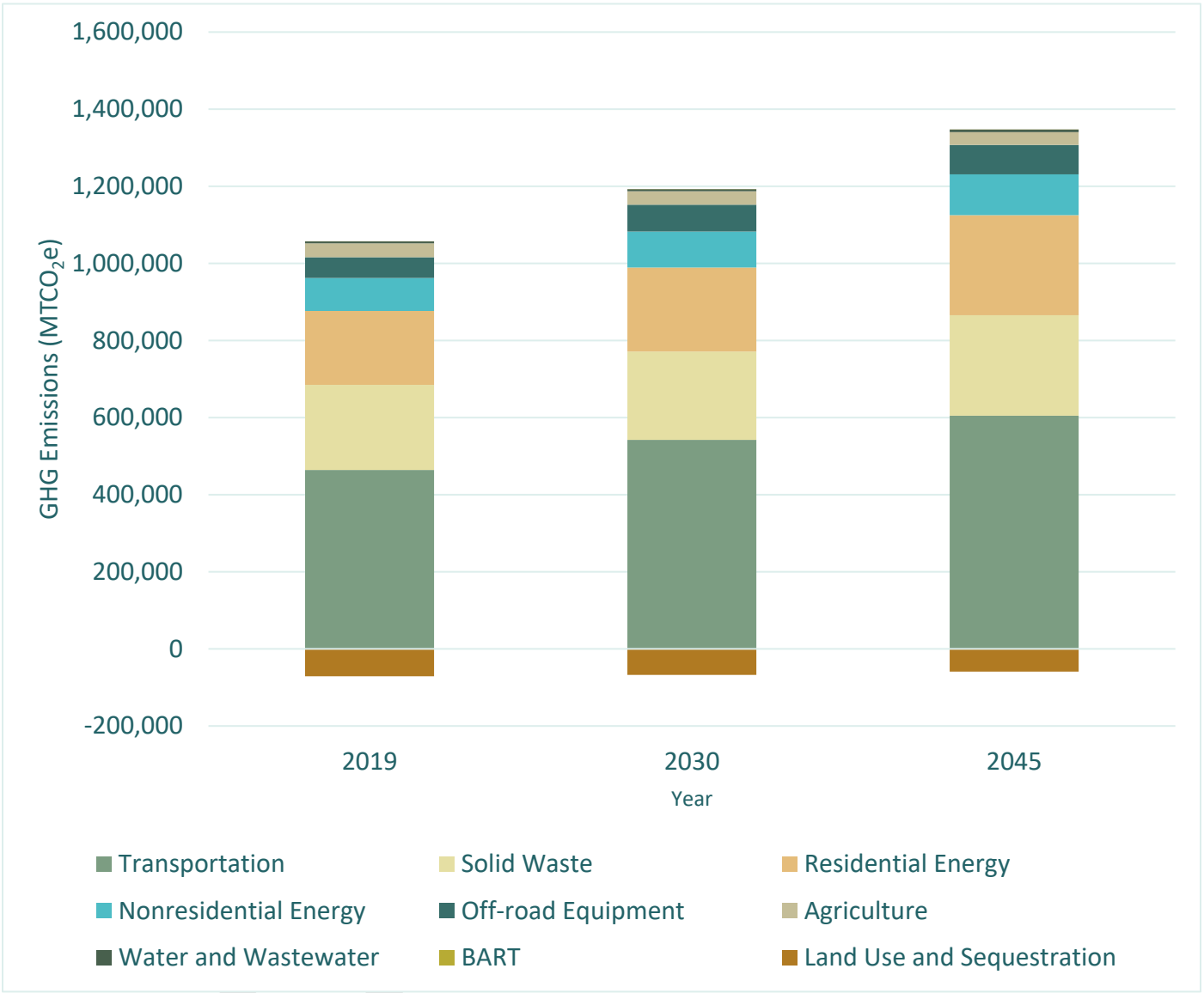
FIGURE 11. ABSOLUTE BUSINESS-AS-USUAL GHG EMISSIONS FORECAST, 2019 TO 2045



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4. GREENHOUSE GAS EMISSION REDUCTION STRATEGY



Briones Valley. Photo credit: Stephen Joseph.

GHG Emissions Reduction Goals

A key part of any CAAP is one or more goals for future GHG emissions levels. These goals may be "firm" levels of GHG emission reductions supported by State regulations and local commitments (also called regulatory goals) or aspirations that go beyond adopted minimums and represent a higher level of GHG emission reductions that communities can strive toward. The 2024 CAAP includes GHG emission reduction goals for 2030 and 2045.

As discussed in **Chapter 2**, California has two statewide regulatory goals for reduction of GHGs:

- Reduce GHG emissions to 40 percent below 1990 levels by 2030. This goal was codified into law by SB 32.
- Reduce emissions to 85 percent below 1990 levels and achieve net carbon neutrality by 2045. This is the goal codified by AB 1279.

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The 2022 Scoping Plan recommends that local governments support statewide efforts to achieve net carbon neutrality by achieving an 85 percent reduction in GHG emissions compared to 1990 by 2045. The 2022 Scoping Plan also removes specific goals for per-person emissions reductions that appeared in previous versions. The BAAQMD 2020 CEQA Guidelines,[13] *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans*, require that local climate action plans such as the 2024 CAAP be consistent with these State-level goals.

CONTRA COSTA COUNTY'S GHG EMISSION REDUCTION GOALS

Local GHG emissions reduction efforts, such as this 2024 CAAP, may select any GHG emissions reduction goals that are appropriate for unincorporated Contra Costa County. However, to comply with State and regional guidelines for CEQA, the GHG emission reduction goals in the 2024 CAAP should be broadly consistent with the State-level goals. Additionally, the 2045 General Plan informs the County's land use decisions and related policies out to 2045; therefore, consistency with the State's 2045 goal also aligns with the General Plan's horizon year. Given these considerations, the GHG emissions reduction goals for Contra Costa County are:

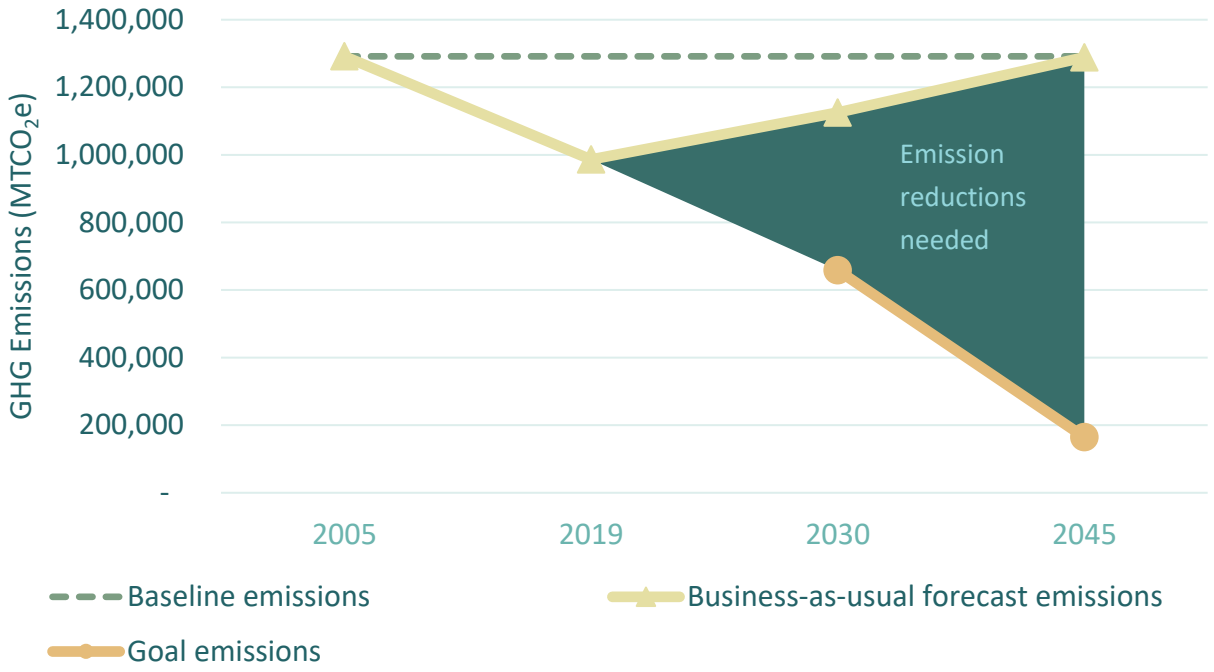
- Reduce GHG emissions to 658,700 $MTCO_2e$ by 2030.
- Reduce GHG emissions to 164,680 $MTCO_2e$ by 2045.

Table 8 and **Figure 12** show these emission goals and how they compare to the County's projected business-as-usual GHG emissions in **Chapter 3**.

TABLE 8. CONTRA COSTA COUNTY BUSINESS-AS-USUAL GHG EMISSIONS FORECAST AND EMISSION GOALS, 2019 TO 2045

	2019	2030	2045
Business-as-usual forecast GHG emissions	986,310 $MTCO_2e$	1,125,230 $MTCO_2e$	1,288,490 $MTCO_2e$
Goal	N/A	658,700 $MTCO_2e$	164,680 $MTCO_2e$
GHG emissions to be reduced	N/A	466,530 $MTCO_2e$	1,123,810 $MTCO_2e$

FIGURE 12. BUSINESS-AS-USUAL FORECAST GHG EMISSIONS AND REDUCTION GOALS



Existing and Planned GHG Emissions Reduction Efforts

The County must substantially reduce its GHG emissions to achieve its goals. Fortunately, the State of California and regional and local agencies ~~there are~~ already have several efforts in place or planned ~~at the State and regional level~~ that are expected to reduce GHG emissions in the unincorporated areas of Contra Costa County without the County taking additional action. The County can receive "credit" for the level of GHG emissions reduced locally by these existing and planned efforts.

STATE REDUCTION EFFORTS

California has adopted and committed to implementing policies to decrease GHG emission levels statewide, including from several of the major GHG emission sources in the unincorporated areas of Contra Costa County. Many of these policies are identified in the 2008 Scoping Plan and have been revised and expanded by successive updates.

The CARB Scoping Plan and related documents lay out several State-led policies to reduce GHG emissions, but six policies have a direct and apparent GHG emission reduction benefit to unincorporated Contra Costa County: tThe Renewables Portfolio Standard (RPS), Clean Car Standards, Title 24 building energy efficiency standards, the Low Carbon Fuel Standard (LCFS), the Short-Lived Climate Pollutant Reduction Strategy, and Renewable Natural Gas. An in-depth description of these initiatives and their projected GHG emission savings are provided in **Appendix B**. Because these are State-led programs, Contra Costa County will not be involved in their implementation or regulation.

1. **The Renewables Portfolio Standard** requires increases in renewable and carbon-free electricity supplies.
2. **The Clean Car Standards** require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels.
3. The updated **Title 24 building energy efficiency standards** require new buildings to achieve increased energy-efficiency goals, and in some cases to install rooftop solar panels. The latest version of these standards went into effect January 1, 2023.
4. **The Low Carbon Fuel Standard** mandates reduced carbon intensity of fuels used in off-road equipment.
5. **The Short-Lived Climate Pollutant Reduction Strategy**, also known as SB 1383, requires that jurisdictions provide organic waste collection services, recover edible food, and keep most organic waste out of landfills.
6. **Renewable Natural Gas** assumes that biomethane and renewable hydrogen fuels will be blended into the fossil gas pipeline and that, in the 2030s, dedicated hydrogen pipelines will be constructed to serve certain industrial clusters.

The project team estimated GHG savings from the Clean Car Standards using State modeling tools released in 2021. These models do not consider newer State regulations to accelerate the transition to zero-emission vehicles, and so they do not reflect all the expected GHG reductions from zero-emission vehicles in Contra Costa County. The remaining savings are covered in Strategy TR-2, which is discussed later in this chapter.

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REGIONAL AND LOCAL REDUCTION EFFORTS

In addition to State actions, the County's default electricity provider, MCE, has also taken action to reduce the GHG emissions from the electricity it supplies to unincorporated Contra Costa County community members, beyond the minimum required by the RPS. In 2019, MCE electricity was approximately 60 percent renewable and 90 percent carbon-free. In future years, MCE will work to source 95 percent of its electricity from carbon-free sources. When quantifying the emissions impacts from electricity procurement policies, GHG emissions reductions from RPS are considered first. The County also enacted an all-electric reach code (suspended in February 2024, as discussed in **Chapter 1**), which required many types of new buildings to not use natural gas. The reductions from MCE clean energy procurement and the all-electric reach code shown in **Table 9** represent savings obtained after the effects of the RPS have been considered. **Table 9** shows the GHG emissions reduction potential from the State-level efforts, ~~and~~ MCE's energy procurement plans and projected levels of adoption of MCE Deep Green, and the all-electric reach code. ~~as well as~~This table also shows how unincorporated Contra Costa County's GHG emission levels with these reductions compares to the goals discussed previously.

TABLE 9. GHG EMISSION REDUCTIONS FROM EXISTING AND PLANNED STATE, REGIONAL, AND LOCAL ACTIONS, 2019 TO 2045

	2019 $MTCO_2E$	2030 $MTCO_2E$	2045 $MTCO_2E$
Forecast emissions without existing and planned actions	986,310	1,125,230	1,288,490
Reductions from RPS	-	-3,640	-41,270
Reductions from Clean Car standards	-	-110,250	-214,120
Reductions from Title 24	-	-9,880	-31,600
Reductions from LCFS (off-road only) *	-	740	7,430
Reductions from SB 1383		-21,880	-53,870
Reductions from renewable natural gas	-	-18,460	-78,050
Reductions from MCE clean energy procurement	-	-1,240	-
Reductions from all-electric reach code (suspended February 2024)	-	-3,150	-2,590
Reductions from all existing and planned state, regional, and local actions		-188,740	-488,200
Remaining emissions with existing and planned state, regional, and local actions	986,310	957,470	874,420

*Due to how the off-road equipment emissions from LCFS are calculated, the results show a minor increase in emissions from this sector.

New Reduction Strategies To Achieve Our Goals

The 2024 CAAP uses a process called quantification to determine the amount of GHG emissions reduced by each strategy. The foundation for the quantification calculations is the baseline GHG inventory and forecast. Activity data from the inventory, such as VMT or kilowatt-hours, are combined with participation rates and data about the reduction in activity data from each action to calculate the GHG emissions reduction benefit of each strategy. This approach ensures that the GHG emissions reductions from the 2024 CAAP strategies are tied to current and future community activities. See **Appendix B** for additional quantification details for each strategy, including key assumptions and performance targets.

With the 2024 CAAP in place, the following are projected to occur before 2045:

- Average natural gas use per household will decline by 92 percent.
- The average resident will drive 15 percent fewer miles per year.
- The average resident will generate 18 percent less solid waste.

Calculations for reduction in activity data come from tools and reports provided by government agencies; these agencies include the ~~US Environmental Protection Agency (~~USEPA~~)~~, ~~California Energy Commission (~~CEC~~)~~, ~~California Air Resources Board (~~CARB~~)~~, California Air Pollution Control Officers Association, US Department of Energy, and local air districts. If accurate data are not available through these sources, quantification uses case studies from comparable communities and applicable scholarly research.

This 2024 CAAP identifies GHG emissions reductions for most of the strategies. However, there are a few that do not have a specific reduction level due to missing data or the lack of reliable methodology. These efforts are still expected to reduce GHG emissions, but by how much cannot be accurately determined. These strategies are labeled “supportive”.

Strategies that only reduce electricity use or increase renewable electricity supplies will show zero GHG emissions reductions in 2045. This is because the State’s RPS requires all electricity sold in California to be carbon-free by 2045. Because there will already be no emissions from electricity use in 2045, Contra Costa County cannot count additional reductions associated with electricity in this year. This 2024 CAAP already credits reductions from the RPS as an existing State program. Strategy BE-3 is not expected to result in any GHG savings in 2045 due to the State’s RPS requirements.

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Local renewable energy systems and energy efficiency strategies will continue to provide several co-benefits to communities, including lower electricity bills and increased resiliency against power disruptions, even if there are no measurable additional GHG emissions reductions. The County recognizes the opportunity for microgrids, if they are found to be technically and economically feasible, both by the private sector and for County facilities.

GHG EMISSIONS REDUCTION STRATEGIES

This section presents the ~~presents 28~~ 11 climate action strategies ~~, including 11~~ that make up the County's GHG emissions reduction approach. These strategies include a mix of education and outreach programs to encourage GHG emissions reduction activities, financial subsidies, and other enticements to incentivize GHG emissions reductions and mandates to require GHG emissions reductions. In addition to the 11 climate action strategies presented in this section, ~~The remaining~~an additional 17 strategies make up the 2024 CAAP's adaptation and resilience approach (discussed in **Chapter 5**) and the implementation approach (discussed in **Chapter 6**). More information on how these strategies were developed is provided in **Appendix B**.

The 11 GHG emissions reduction strategies are organized into five categories, each with a goal:



Clean and Efficient Built Environment (BE)



No Waste Contra Costa (NW)



Reduce Water Use and Increase Drought Resilience (DR)



Clean Transportation Network (CT)



Climate Equity (CE)

Each strategy presented in this 2024 CAAP includes a description of the strategy, an estimate of the absolute 2030 and 2045 GHG emissions reductions anticipated from the strategy at the projected performance level, the recommended actions necessary to implement it, and community co-benefits. For additional implementation details for each strategy, see **Table 12**.

Recommended actions represent the County's current understanding of best practices in achieving GHG emissions reductions and community equity, availability of technology, and local regulations as well as the current State and federal regulatory environment. County staff will revisit these recommended actions as conditions change and new opportunities become available. **Figure 13** provides definitions of goals, strategies, and actions, as used in this CAAP.

During the time the CAAP was under development, some of the actions were completed. These actions are included below, to facilitate tracking of the ongoing progress Contra Costa County is making in achieving its climate action goals.

FIGURE 13. DEFINING A CAAP GOAL, STRATEGY, AND ACTION

CAAP Goal: An end statement describing the general result sought by the community. Each goal has associated strategies and actions. Goals are given abbreviations based on their topic (for example, TR for Transportation).

CAAP Strategy: A specific statement to guide decision making as the County works to achieve the GHG reduction targets and climate action goals. Strategies are statements of policy and intent. Each strategy is supported by a series of actions. Strategies are numbered based on the goal they fall under (for example, BE-2 is the second strategy under the Built Environment goal).

CAAP Action: A recommended measure, program, procedure, or technique to implement the associated strategy. Actions are concrete steps for the County to take, in collaboration with community members and key partners. They are not a comprehensive list of everything the County can do to implement the strategy.

Community co-benefits are additional advantages of the strategy to communities beyond GHG emissions reduction. The 2024 CAAP highlights 12 co-benefits that a GHG emissions reduction strategy can provide, although strategies may provide additional benefits beyond those identified here:



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General Plan alignment

The goals, strategies, and recommended implementation actions in this CAAP are in sync with the approach to reduce GHG emissions and address climate adaptation contained in the County's 2045 General Plan, which is discussed in greater detail in **Chapter 1**. Where appropriate, the strategy language in the 2024 CAAP is identical to policy or action language in the General Plan. In other instances, the General Plan language provides a high-level framework for the more specific strategy wording in the 2024 CAAP. There are also cross-references in the 2024 CAAP at the end of relevant actions, indicating where the General Plan addresses the same topic.

Each cross-reference is made up of three parts: (1) a General Plan abbreviation, (2) a designation of a policy or action, and (3) the number of the referred policy or action. The cross-references use the following abbreviations for General Plan elements. Note that not all General Plan elements are cross-referenced in the 2024 CAAP, and so are not listed here:

- COS: Conservation, Open Space, and Working Lands
- HS: Health and Safety
- SC: Stronger Communities
- PFS: Public Facilities and Services
- GM: Growth Management

A cross-reference containing an element abbreviation followed by "P" refers to a policy, while a cross-reference containing an element abbreviation "A" refers to an action. This designation is then followed by two numbers. The first number is the goal under which the policy or action may be found. The second number is the number of the policy or action under that goal.

For example, a cross-reference to HS-P8.3 refers to the Health and Safety Element, Goal 8, and the third policy under that goal. Similarly, COS-A14.4 refers to the Conservation, Open Space, and Working Lands Element, Goal 14, and the fourth action under that goal.

This approach is intended to help ensure consistency between the General Plan and the 2024 CAAP, making it clear that both documents work together to address GHG reductions and improve resilience to climate change.

In addition to policies in the General Plan that provide direction on specific topics that are relevant to the 2024 CAAP, there are three policies that address overarching issues in the 2024 CAAP. These three policies are contained in the Health and Safety Element of the General Plan. All three fall under Goal HS-3.

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General Plan Goal HS-3

Communities that reduce existing and anticipated greenhouse gas (GHG) emissions in support of statewide carbon neutrality goals and other GHG reduction targets.

General Plan Policy HS-P3.1

Prioritize implementation of the Contra Costa County Climate Action and Adaptation Plan to reduce GHG emissions from community-wide sources and adapt to changing climate conditions.

General Plan Policy HS-P3.2

Facilitate carbon-neutral development projects and communities that support a circular economy, ~~net-~~zero-emission modes of transportation, reliable and renewable energy resources, energy-efficient buildings, zero waste, water efficiency and conservation, green infrastructure, soil conservation, and a system of natural and working lands that support natural carbon sequestration and climate resilience.

General Plan Policy HS-P3.3

Require new development projects using the Contra Costa County Climate Action and Adaptation Plan to streamline their environmental review of GHG emissions, as permitted by CEQA Guidelines Section 15183.5, to demonstrate consistency with the Climate Action and Adaptation Plan and incorporate applicable GHG reduction and climate change adaptation measures.

These three policies, along with the more specific General Plan policies cross-referenced in the following sections, support the development and implementation of the 2024 CAAP.

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CLEAN AND EFFICIENT BUILT ENVIRONMENT (BE)

HOMES, WORKPLACES, AND BUSINESSES IN UNINCORPORATED CONTRA COSTA COUNTY RUN EFFICIENTLY ON CLEAN ENERGY.

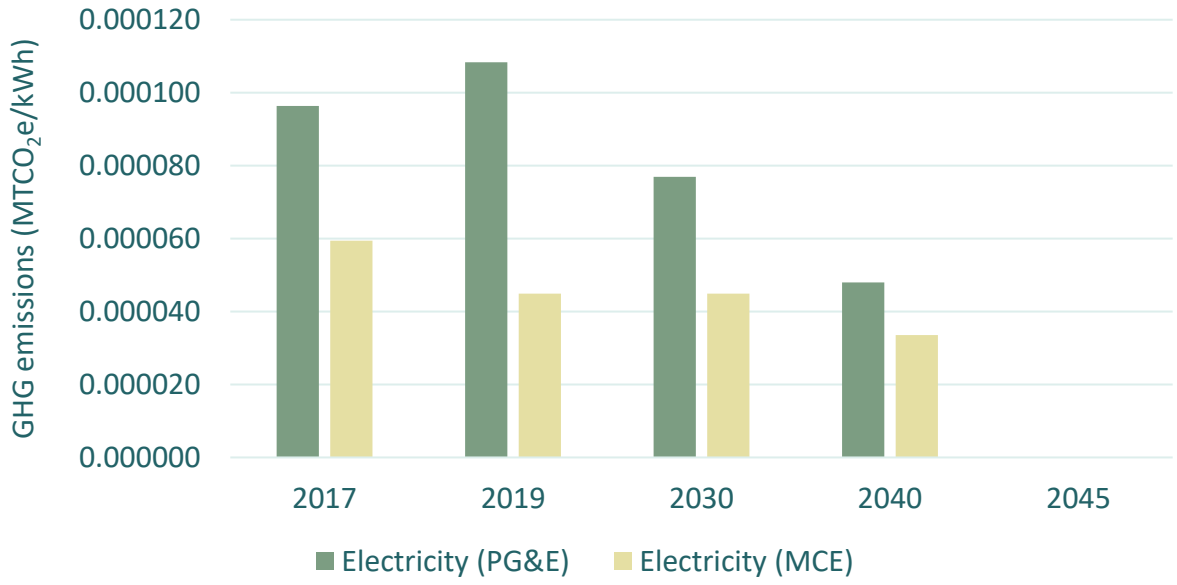


Homes and commercial buildings in Contra Costa County.

The structure of the built environment plays a significant role in how members of the Contra Costa County community work, play, live, and allocate personal resources. Community decisions about the structure, form, and function of homes, businesses, and other vital community structures represent a significant, long-term investment in a particular way of living life and conducting business.

The built environment uses a significant amount of energy and is responsible for a large share of Contra Costa County's GHG emissions. However, as shown in **Figure 14**, increasing the proportion of communities' energy mix that comes from carbon-free and renewable sources can dramatically reduce emissions resulting from electricity use within buildings. These strategies, combined with investing in energy-efficient buildings and retrofits, and reducing the resource intensity of building materials will reduce GHG emissions and energy use. These efforts can also reduce utility costs, improve local air quality, and make the neighborhoods of Contra Costa County more resilient, comfortable, and habitable in the face of the effects of climate change.

FIGURE 14. EMISSIONS PRODUCED PER KWH OF ELECTRICITY, MCE AND PG&E



BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

Under this strategy, there will be more new carbon-neutral and low-carbon buildings in unincorporated Contra Costa County through efforts to build all-electric new construction and use carbon-neutral/low-carbon building materials. This strategy builds on the County's ~~existing~~ previously adopted All-Electric Building Ordinance, which was suspended in February 2024 because of a federal court ruling in January 2024 that precludes cities and counties from adopting ordinances that prohibit the installation of gas plumbing in buildings. ~~This ordinance which requires required that all new residential (including single-family homes, multifamily buildings, and accessory dwelling units), hotels, office buildings, and retail buildings to be all-electric. These buildings may notwere not permitted to have natural gas plumbing, and they must had to use electricity as the sole source of energy for space heating (including indoor and outdoor spaces), water heating (including~~

Contra Costa County's Administration Building and Jail Demolition and Redevelopment Project is the County's first True Resource Use and Efficiency (TRUE) pre-certified project. The project incorporated used furniture and office supplies and other salvaged materials; over 90 percent of building materials were diverted materials. The project is the first government construction project in the world to achieve TRUE precertification.

~~heating of indoor or outdoor pools and spas), cooking appliances, and clothes drying appliances. Such buildings may were allowed to use emergency backup power sources that are fossil-fuel operated. This ordinance must needed be updated when the County adopts a new version of the California Energy Code every three years.~~ The County is preparing a new ordinance to replace its suspended all-electric ordinance ~~committed to renewing finding an alternative to this ordinance in future years~~that will support high levels of energy efficiency and low levels of GHG emissions for new construction. This ordinance is expected to take effect on January 1, 2025, and will be considered for updates during future revisions to the Building Standards Code.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	4,340~~13,620~~	10,970~~710~~

Strategy BE-1 Co-benefits:


Cost savings


Improved air quality


Improved community equity


Improved public health



Increased economic opportunities


Increased resilience to pests


Reduced resource use

Strategy BE-1 Actions:

- Continue ~~Consider a,A~~adopt~~ing~~ing new or modified reach codes~~-~~ and consider future updates that exceed the California Building Standards Code~~- as the State updates the Building Code every three years~~, to require the use of low~~er~~-carbon intensive energy sources, to achieve higher ~~feasible~~ levels of energy ~~conservation and efficiency~~performance, and to achieve lower ~~feasible~~ levels of GHG emissions. (COS-A14.4)
- ~~Maintain, update, and~~Publicize ~~and enforce the~~ County ~~O~~ordinances and programs ~~Code Title 7 – Building Regulations amendment~~ requiring new residential buildings, hotels, offices, and retail to be ~~all-electric~~more energy efficient, with low levels of GHG emissions. Evaluate the feasibility of including other building types as appropriate. (COS-A14.5)

- ~~Partner with community groups and MCE to establish an induction cooktop loaner program for county residents.~~
- ~~Require new water heaters and space heating and cooling systems to be electric or have no nitrogen oxide emissions in accordance with Bay Area Air Quality Management District Regulation 9, Rule 4, and Regulation 9, Rule 6. (COS-P14.10)~~
- Design and construct new County facilities to be zero-net energy to the extent feasible. (COS-P14.8)
- Study the feasibility of establishing a low-carbon concrete requirement for all new construction and retrofit activities and consider additional strategies to reduce embedded carbon in construction materials. The intent is to determine what the County can and should do to support or exceed State requirements for net-zero emissions for cement use by 2045. (HS-A3.2)
- Provide educational materials to encourage project applicants to incorporate passive solar design features into new developments and significant ~~reconstructions~~alterations and additions.
- Promote ~~additional~~ sustainable building strategies and designs, including small and "tiny" homes, to project applicants as site appropriate.
- Consider requiring ~~additional~~ sustainable features as a condition of approval, including reuse of materials to minimize embedded carbon.
- Provide educational and technical resources to advance the adoption of heat pump water heater and heat pump space heating in buildings in support of BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6, which will mandate that replacement and new water heaters (2027 and 2031) and space heaters (2029) are zero NOx. ~~-~~(COS-P14.10)



The new Contra Costa County Administration Building, part of the first government project in the world to receive TRUE pre-certification. Photo credit: Contra Costa County staff.

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BE-2: Retrofit existing buildings and facilities in the unincorporated county, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-~~neutral~~ free fuels.

With implementation of this strategy, the existing built environment in unincorporated Contra Costa County will include more carbon-neutral and low-carbon buildings through all-electric upgrades, energy efficiency, and weatherization retrofits, and upgrades to existing buildings, including County-owned and operated buildings and facilities.

Approximately 56 percent of the county's housing stock was constructed prior to 1980, around the time when modern building codes were first adopted (this includes the 19 cities). Within the unincorporated county, approximately 74 percent of housing stock was constructed prior to 1980.

In March 2023, BAAQMD adopted a regulation to require existing natural-gas-powered space heaters and water heaters be replaced with electrical models when the natural-gas-powered units reach the end of their operational life. This regulation will take effect in 2027 to 2031 for water heaters (depending on the capacity of the unit) and in 2029 for space heaters. This regulation accelerates the transition of natural gas appliances to electric appliances in existing homes and non-residential buildings, resulting in a higher adoption rate of these technologies. Depending on the specific type of equipment, 70 to 90 percent of space heaters and water heaters should be electric by 2045 due to the BAAQMD regulations and local efforts.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	55,990~~81,140~~	~~177,830~~156,150

Strategy BE-2 Co-benefits:


Cost savings


Improved air quality


Improved community equity


Improved public health



Increased economic opportunities


Reduced resource use

Strategy BE-2 Actions:

- Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy. (COS-A14.6)
- Create a detailed County roadmap to convert existing homes and businesses to use low-carbon or carbon-free appliances. The roadmap should include steps to support converting buildings to rely on low-carbon or carbon-free energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants. (COS-A14.7)
- ~~Require replacement and new water heaters and space heating and cooling systems to be electric or have no nitrogen oxide emissions electric if the building electric panel has sufficient capacity in accordance with BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6. (COS-P14.10)~~
- Provide educational and technical resources to advance the adoption of heat pump water heater and heat pump space heating in new buildings.
- Evaluate options for incentivizing and requiring additions and alterations to be energy efficient and to achieve the lowest feasible levels of GHG emissions, including upgrades to the building electric panel as needed. (COS-A14.8)
- Ensure County-led and supported retrofit programs incentivize and prioritize conversion of buildings built before 1980 and emphasize assistance to owners of properties that are home to very low-, low-, and moderate- income residents or located in Impacted Communities, as permitted by available funding. (COS-A14.9)
- Explore opportunities, in collaboration with partner agencies, to create new incentives or publicize existing ones to support updating existing buildings to achieve the lowest feasible levels of GHG emissions.
- Partner with community groups and MCE to establish an induction cooktop education ~~loaner~~ program for county residents. (Initiated in 2024.)

CookSmart

In 2024, the County implemented the BayREN CookSmart pilot program, in partnership with Sustainable Contra Costa. This program provides electric induction cooktops and up to three pieces of induction-compatible cookware to up to 100 County residents, with an emphasis on residents living in Impacted Communities.

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- Work to continue to obtain funding with partners such as BayREN and MCE to implement a program or programs to provide reduced-cost or free energy-efficiency and zero-carbon retrofits to local small businesses and households earning less than the area median income, in support of the Contra Costa County Asthma Initiative, Contra Costa County Weatherization Program, similar County programs, other nonprofit partners, and other health equity efforts for Impacted Communities. Support the use of low-emitting materials, including paints and carpeting, in retrofits to improve indoor air quality.
- In partnership with MCE and BayREN, continue to support voluntary home and business energy efficiency retrofits, including all-electric measures.
- Facilitate participation by homes and businesses in demand response programs.
- Continue to conduct energy and water tracking activities, audits, and upgrades of County facilities, including conversion of feasible County facilities to all-electric space and water heating.
- Advocate for modifications to the federal Weatherization Assistance Program that expand eligible measures to include whole building clean energy improvements, such as wall insulation, duct sealing, electric panel upgrades, electric heat pumps, and related measures. Advocate for an increase in the income eligibility limits for the Weatherization Assistance Program.

BayREN

The Bay Area Regional Energy Network (BayREN) is a partnership between communities in the nine-county Bay Area region, including Contra Costa County, which supports energy efficiency, water efficiency, and GHG emissions reduction. BayREN provides financial and technical assistance to property owners, businesses, and local governments to reduce their resource use and GHG emissions. This work includes providing rebates and other incentives for energy efficiency retrofits and the installation of energy-efficient appliances.

Cool roofs and pavement

Cool roofs and pavements help to reduce the amount of sunlight absorbed by these materials, helping to bring down the temperature in buildings and developed areas. Both cool roofs and pavements reflect most sunlight, rather than absorbing it, and efficiently emit the solar energy that they do absorb. In the California Building Standards Code, these materials are formally defined by their level of thermal emittance and solar reflectance.

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- Implement requirements for cool roofs and light-colored, non-reflective, permeable paving materials as part of retrofit, repair, and replacement activities, using recycled materials or other materials with low embedded carbon as feasible and as established by the Building Standards Code.

BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

This strategy seeks to accelerate the replacement of electricity from fossil fuels with electricity from renewable and other carbon-free sources. Actions include increased local renewable energy generation, support for MCE clean energy programs, including Deep Green and Local Sol tiers, and improved energy independence and resilience through battery storage systems[9] for renewable electricity. This builds on the 2018 *Renewable Resource Potential Study*, which describes the opportunities to generate renewable energy in Contra Costa County, on rooftops, parking lots, and other spaces within the urban limit line, and in certain areas outside the urban limit line.



Examples of ground-mounted and rooftop solar arrays. Multifamily buildings can be constructed with solar energy and battery storage systems. This reduces the amount of GHGs from the electricity needed to power the building and increases resilience to power outages. Photo credit: Contra Costa County staff

[9] The County recommends the installation of small battery energy storage systems because of their energy resilience benefits. Although these systems can help to increase use of carbon-free energy, reputable methods for quantifying energy use and GHG reduction benefits at the building level from use of battery storage are not available at this time.

As all electricity sources in California are expected to be carbon-free by 2045, reducing electricity use or increasing renewable energy supplies in 2045 do not result in GHG reductions beyond those quantified under the State's RPS program (discussed earlier in this chapter), although they continue to provide cost-saving and resilience benefits.

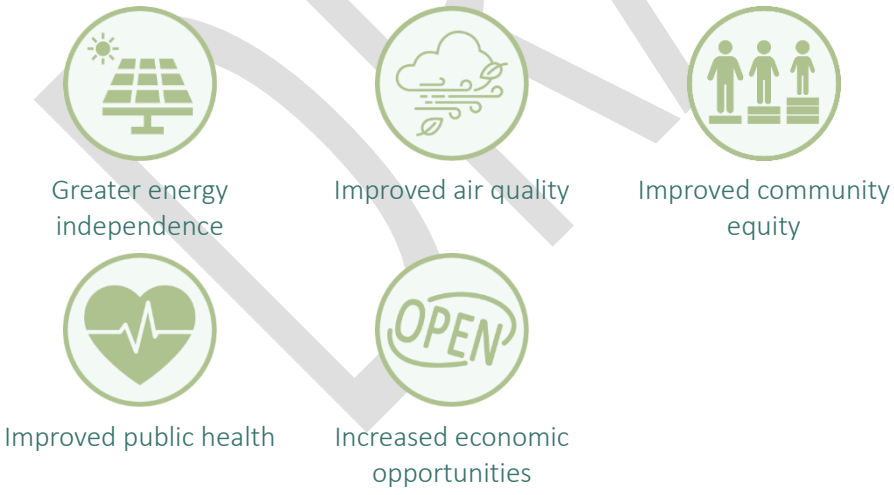
MCE Levels of Service

MCE provides three tiers of electricity service: Light Green 60% Renewable Energy, Deep Green 100% Renewable Energy, and 100% Locally Produced Solar Energy.

Approximately ~~98~~ 93 percent of MCE accounts participate in the Light Green tier, ~~2~~7 percent participate in Deep Green, and less than 1 percent participate in Local Solar. On March 24, 2020, the County Board of Supervisors voted to go Deep Green 100% renewable with MCE for most the County's accounts.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	10,83~~2~~0	0

Strategy BE-3 Co-benefits:



Strategy BE-3 Actions:

- Require new commercial parking lots with 50 or more spaces to mitigate heat gain through installation of shade trees, solar arrays, or other emerging cooling technologies. Prioritize the use of solar arrays where feasible and appropriate. (HS-P8.3)
- Encourage property owners to pursue financial incentives for solar energy installations and energy storage technologies, such as battery storage systems, on new and existing buildings.
- Work with MCE to increase enrollment, especially in the Deep Green tier.
- Continue to enroll all eligible, non-solar-equipped County facility electricity accounts in MCE territory in the Deep Green tier.
- Work with the Contra Costa County Fire Protection District and other organizations that provide fire protection services to provide education and promote incentives for battery storage systems that can increase the resilience of homes and businesses to power outages.

Renewable energy in Contra Costa County

In 2023, the County issued 1,700 permits for residential and commercial solar projects, totaling approximately 68,500 kilowatts (kW) of capacity, capable of generating enough electricity to meet the needs of over 23,000 houses. The County has installed 7,300 kW of rooftop and parking lot solar projects. The County also issued 110 permits for residential battery energy storage projects.

- Encourage installation of battery storage systems in new and existing buildings, especially buildings with solar energy systems and buildings that provide essential community services. (COS-P14.7)
- Provide information about battery storage systems with all applications for new home construction and solar panel installations.
- Pursue implementation of recommendations of the 2018 Renewable Resource Potential Study.
- Evaluate the least-conflict feasible locations for stand-alone battery storage systems and modify land use regulations to enable such use in these locations.
- Explore the technical and economic feasibility of developing and operating microgrids in Contra Costa County and for County facilities.
- Explore opportunities to install community solar projects with battery backup to provide clean energy to Impacted Communities.

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No Waste Contra Costa (NW)

Contra Costa County disposes of no more solid waste than 2.2 pounds per person per day (PPD).[10]



Waste reduction, reuse, recycling, and composting strategies reduce emissions by reducing the amount of material that decomposes in a landfill. These actions also encourage community-wide creativity, collaboration, and conservation as residents and business owners are inspired to share skills and develop innovative ways to reduce resource use.

Communities across California are already reducing their use of single-use plastics and expanding community compost efforts in accordance with AB 1276 and SB 1383. Contra Costa County is poised to make further strides in waste management by increasing composting of organic waste, expanding recycling efforts, encouraging the reuse of materials, and reducing the amount of waste arising through County operations.

Efforts to divert waste away from landfills and into composting and recycling programs reduce emissions and help make valuable recycled materials available to the broader community. Expansion of the County's recycling and composting programs helps ensure that residents not only know how to properly manage their waste, but also have a convenient and affordable way to do so. The ~~2024 CAP~~2024 CAAP also looks upstream, identifying strategies for reducing emissions from waste by reducing the amount of waste that results from the purchase of goods used in County operations.

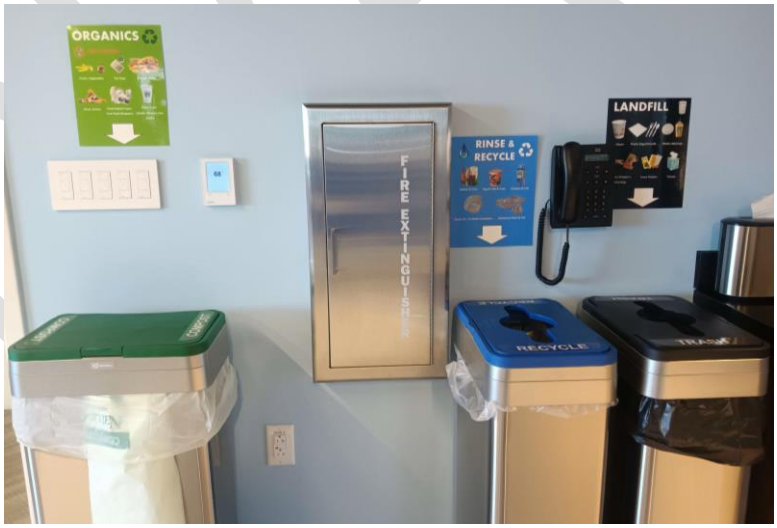
AB 1276

Assembly Bill (AB) 1276, signed into law by Governor Gavin Newsom, changes the Public Resource Code related to single-use food accessories and standard condiments. AB 1276 prohibits restaurants and other food providers from providing single-use utensils and standard condiments unless requested by the customer. Local jurisdictions are required to authorize an enforcement agency to enforce these requirements.

[10] The pounds per person per day (PPD) metric refers to the average amount of solid waste that each person that lives in the unincorporated county disposes in landfills each day. This does not include material that is recycled or composted.

Most of the emissions associated with the solid waste sector are not from waste that community members in the unincorporated county are throwing out annually. Instead, 80 to 90 percent of emissions from solid waste are coming from three landfills in the unincorporated county. These landfills accept waste from communities across Northern California. As the waste decomposes over decades, it releases GHG emissions. The County is responsible for permitting activities at these landfills and may affect operations at these activities through its agreements with landfill operators. These landfills are the Acme Landfill outside of Martinez, the Keller Canyon Landfill outside of Pittsburg, and the West Contra Costa Landfill outside of Richmond. Although the West Contra Costa Landfill closed in 2006, the waste that had already been deposited in the landfill continues to decompose and create GHG emissions.

The presence of three landfills within the unincorporated county means that, even if the volume of solid waste generated ~~with~~in the unincorporated county declines significantly, GHGs will be released for decades as waste that is already ~~with~~in landfills continues to decompose. The ~~2024 CAP~~2024 CAAP addresses this source of emissions by including strategies and actions to promote landfill gas capture, expanded use of landfill gases, and decreases in flaring activity.



Three-stream waste management systems with clear instructions about what materials go in each bin, like this, ensure that people are able to properly sort items into the correct bin and divert compostable and recyclable materials from the landfill. Photo credit: Contra Costa County staff.

NW-1: Increase composting of organic waste.

With this strategy in place, organic waste will be diverted from landfills to composting or other opportunities for reuse in accordance with SB 1383 and other applicable requirements. This includes establishing organic waste collection programs for all franchise waste customers in the unincorporated areas of the county, encouraging and supporting wastewater agencies to accept food waste or other acceptable organic materials for processing in on-site anaerobic digesters, and allowing for creative opportunities to reuse or reprocess organic waste material.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	2,240	4,000

Strategy NW-1 Co-benefits:



Increased economic opportunities



Increased resilience to pests



Reduced landfill waste



Reduced resource use

Strategy NW-1 Actions:

- Ensure, through franchise agreements and other relationships with waste haulers, a source-separated organics collection service for all residential and commercial customers in County-controlled collection franchise areas.
- Require that new and expanded landfill operations significantly reduce GHG emissions to meet or exceed State targets to the extent feasible, and work toward carbon-neutral landfills. (PFS-P7.12)
- Work with wastewater providers to explore the use of organic waste as feedstock for anaerobic digesters to produce biogas that can generate electricity or fuel.
- Require local restaurants, grocery stores, and other edible food generators that handle large quantities of food to partner with food rescue organizations to divert edible food that would be otherwise disposed in landfills for distribution to those in need, in accordance with SB 1383.
- Collaborate with edible food recovery programs and the Community Wellness & Prevention Program to decrease food waste and address hunger.

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- Procure compost or other products made from recovered organic waste in accordance with the County's Recovered Organic Waste Product and Recycled Paper Procurement Policy.

NW-2: Reduce waste from County operations.

This strategy reduces waste generated through County operations and the activities of outside organizations with which the County contracts for specific goods and services. Efforts to achieve waste reductions include updating and implementing the County's environmentally preferable purchasing policy, ensuring all County facilities have and use organic waste and recycling collection services, and requiring the use of low-carbon content building and paving materials for all County projects as feasible.

Environmentally Preferable Purchasing

The County's Environmentally Preferable Purchasing (EPP) Policy was updated and approved by the Board of Supervisors in September 2023. The new policy updates the County's 2008 EPP and includes purchasing requirements to minimize environmental impacts, reduce GHG emissions, and advance the goals of the CAAP.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	1,090	1,620

Strategy NW-2 Co-Benefits:



Increased economic opportunities



Increased resilience to pests



Reduced resource use

Strategy NW-2 Actions:

- ~~Establish~~ Continue~~a~~ source-separated organics collection service at all County-owned facilities that includes recovering food waste (scraps) and food-soiled paper.
- Implement three-stream recycling (trash, recycling, and organic waste) at all County-owned facilities.

- Establish requirements for source-separated organics collection and three-stream recycling as conditions in lease agreements for County offices.
- Conduct waste audits of County facilities, including assessing the volume and composition of all waste streams, to identify challenges with waste activities and develop educational or operational changes to address issues and reduce waste generation.
- Obtain material for capital projects from local and low-carbon sources to the greatest extent feasible, including allocating additional funds to allow for such materials, and integrate appropriate standards into the County's Environmentally Preferable Purchasing (EPP) policy.
- Continue to reduce paper use in County operations. Procure recycled paper and janitorial supplies in accordance with the Recovered Organic Waste Product and Recycled Paper Procurement Policy.
- Continue engagement with TRUE zero waste certification for County projects.
- Enact Bay-friendly landscaping practices at County facilities. Develop County policies and practices for Bay-friendly landscaping.
- Explore opportunities to reuse wood from County tree maintenance activities as an alternative to chipping.
- Encourage medical facilities and medical waste recycling companies to upgrade facilities to increase the amount of medical waste recycled or reprocessed.
- Explore the feasibility of transitioning to reusable products in the health sector, where appropriate, and procuring products certified as green or low carbon.

TRUE Certification

TRUE certification is a certification program for facilities and their operations that assesses how well the facility is reducing the amount of waste it produces. The certification requirements include at least a 90 percent diversion rate, compliance with applicable laws and permits, and regular reporting on waste statistics. The new County Administration Building B at 1026 Escobar Street, Martinez, was the first project in the world to receive TRUE certification.

Bay Friendly Landscaping

Bay Friendly Landscaping is a set of best practices for landscaping to minimize impacts to the San Francisco Bay and its watershed. These practices include reducing stormwater runoff, providing wildlife habitat, and reducing fertilizer use.

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NW-3: Increase community-wide recycling and waste minimization programs.

Under this strategy, the amount of waste sent to landfills from community members is reduced through extensive diversion and waste minimization programs. The County explores and implements all feasible opportunities to minimize landfill waste, including through recycling of additional materials, prohibitions or limitations on materials that cannot be recycled/composted, education around conscious consumption, and opportunities to divert waste materials for reuse.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	520	2,530

Strategy NW-3 Co-benefits:



Increased economic opportunities



Increased resilience to pests



Reduced resource use

Strategy NW-3 Actions:

- Create a source-reduction program in partnership with regional agencies to promote rethinking, refusing, reducing, reusing, and regenerating of materials.
- Improve educational efforts to promote better waste sorting among community members.
- Work with waste haulers to expand the types of materials accepted by recycling programs as economic conditions allow.

The Five Rs

Recycling and composting are critical steps to decreasing the amount of waste that the County sends to a landfill. However, recycling and composting still should be treated as a last resort. Prior to sending something to a recycling or composting center (or landfill if no alternative exists), community members should try to reduce the amount of waste produced in the first place, by following the five Rs:

Rethink whether it is necessary to buy something.
Refuse to buy something that produces excess waste.
Reduce the amount of waste generated.
Reuse items that would otherwise be treated as waste.
Regenerate waste products into something useful often through recycling.

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- Work with waste haulers to continue availability of curbside pickup recycling services.
- Evaluate the feasibility of banning single-use plastics or establishing additional restrictions beyond those created by SB 54.
- Encourage the use of reusable items over disposable materials.
- Promote the Contra Costa County Recycling Market Development Zone low-interest loan program to create incentiv~~iz~~es for the development of businesses that use recycled materials.

NW-4: Reduce emissions from landfill gas.

After it is deposited in landfills, waste gradually decomposes and releases landfill gas. Landfill gas contains both carbon dioxide and methane, making this gas a potent contributor to GHG emissions and regional air pollutants. Most, but not all, of this gas is captured and used to generate energy, produce fuels, or flared. The gas that is not captured escapes into the atmosphere, adding to the county's GHG emissions. Increasing the percentage of captured landfill gas both helps the County meet its GHG emissions reduction goals and improve local air quality. Strategy NW-4 improves the landfill gas capture rate, increases opportunities to use landfill gas as an alternative energy source, and reduces the rate of flaring of landfill gas.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	57,460	61,410

Strategy NW-4 Co-benefits:



Greater energy independence



Improved air quality

Strategy NW-4 Actions:

- Encourage efforts at Acme, Keller Canyon, and West Contra Costa landfills to install or enhance existing methane capture technology and associated monitoring systems with a goal of increasing the methane capture rate to the greatest extent feasible.
- Explore opportunities for partnering with agricultural and industrial operations to generate energy from methane gas generated by their ongoing activities.
- Support landfill operators in efforts to transition away from landfill gas flaring.

REDUCE WATER USE AND INCREASE DROUGHT RESILIENCE (DR)

CONTRA COSTA COUNTY USES LESS WATER AND COMMUNITIES ARE PREPARED FOR DROUGHT.



Communities can reduce water use and protect themselves from the effects of drought through implementation of strategies to increase indoor water use efficiency and reduce outdoor water use. Increasing water use efficiency and decreasing outdoor water use reduce GHGs by reducing the amount of energy needed to process, heat, and deliver water. In addition to saving energy, water conservation and efficiency helps protect one of California's most precious resources and helps the county become more resilient to drought and water shortage. In addition, reducing water use in individual homes and businesses can reduce utility costs.

Contra Costa County possesses both surface and groundwater resources. In California, groundwater quality and sustainability are ensured through the Sustainable Groundwater Management Act (SGMA). The SGMA establishes a local management structure for groundwater, led by Groundwater Sustainability Agencies (GSAs). GSAs are responsible for authoring and implementing the local Groundwater Sustainability Plan. GSAs active in Contra Costa County include the City of Antioch GSA, City of Brentwood GSA, Byron-Bethany Irrigation District GSA, Contra Costa County GSA, Diablo Water District GSA, Discovery Bay GSA, East Contra Costa Irrigation District GSA, East Bay Municipal Utilities District GSA, and Zone 7 GSA. The California Department of Water Resources approved the East Contra Costa Subbasin Groundwater Sustainability Plan in July 2023. The Groundwater Sustainability Plan goals are consistent and complementary with the County's CAAP and focus on groundwater management strategies that protect and maintain safe and reliable groundwater sources in the face of climate change.

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Drought-tolerant landscapes and native plants have lower water demands than other plant species. Photo credit: Envision Contra Costa picture gallery.

DR-1: Reduce indoor and outdoor water use.

This strategy reduces water use in communities and at County facilities. This includes efforts to promote water conservation; increase the acreage of native and drought-tolerant plants~~landscaping~~; encourage graywater/rainwater catchment systems and supportive infrastructure; and provide incentives to reduce water use as appropriate.

The average Contra Costa resident uses 126 gallons of water per day.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	970	1,440

Strategy DR-1 Co-benefits:

Cost savings

Increased resilience to pests

Reduced resource use

Strategy DR-1 Actions:

- Require new development to reduce ~~potable~~ water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water, where available. (COS-P7.~~1~~6)
- Require homes and businesses to install water-efficient fixtures at time of retrofit activities, in accordance with the California Building Standards Code.

- Continue to enforce the Model Water Efficient Landscaping Ordinance and encourage the use of native and drought-tolerant landscaping for exempt residential and commercial landscapes through partnership with local and regional water agencies and other organizations.
- Partner with water and wastewater service providers, Groundwater Sustainability Agencies, irrigation districts, and private well owners to increase participation in water conservation programs countywide. (COS-P7.~~2~~1)
- Facilitate offering of BayREN water bill savings programs through eligible community water providers.
- Encourage the installation of graywater and rainwater catchment systems, particularly for new construction, as feasible for wastewater infrastructure. Reduce regulatory barriers for these systems and explore creating incentives for installing these systems in new and existing buildings.
- ~~Identify~~ Evaluate opportunities for graywater use in public spaces and implement them as feasible.
- Promote the installation of composting toilets at appropriate County facilities in locations without wastewater service.

DR-2: Ensure sustainable and diverse water supplies.

This strategy supports efforts to diversify the sources of Contra Costa County's water supplies and ensure that water supplies are viable for the long-term.

This is a supportive policy that does not create its own GHG emission reductions.

Strategy DR-2 Co-benefits:



Greater community resilience



Reduced resource use

Strategy DR-2 Actions:

- Encourage Contra Costa Health to work with Groundwater Sustainability Agencies to ensure that new well permit applications are in accordance with County ordinances and State construction standards and require a hydrogeological evaluation in areas with known water shortages to ensure that the sustainable yield goals can be met.

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- Require new development to demonstrate the availability of a safe, sanitary, and environmentally sound water delivery and wastewater treatment systems with adequate capacity. (PFS-P4.5, PFS-P4.6)
- Discourage new development that may reasonably lead to groundwater overdraft, subsidence, or other negative impacts, or which may reasonably depend on the import of unsustainable quantities of water from outside the county.
- Require the use of permeable surfaces for new or reconstructed hardscaped areas where feasible.
- In coordination with Groundwater Sustainability Agencies, expand opportunities for groundwater recharge.
- Work with water suppliers to expand recycled water systems as feasible, including considering additional treatment to allow for additional recycled water uses.

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CLEAN TRANSPORTATION NETWORK (TR)

CONTRA COSTA COUNTY'S TRANSPORTATION NETWORK PROVIDES SAFE AND ACCESSIBLE OPTIONS FOR WALKING, BIKING, AND TRANSIT. IF RESIDENTS AND WORKERS ARE DRIVING, THEY ARE IN ZERO-EMISSION VEHICLES.



Transportation is an integral part of living life and conducting business for nearly all members of the Contra Costa County community. The range of transportation options that the County invests in and that are useful for the public has profound impacts on GHG emissions, local environmental quality, public safety, and overall quality of life.

Private vehicle travel is convenient, but releases significant volumes of GHGs, increases the maintenance demand on roads, creates toxic particulates through tire wear and brake dust, increases congestion, requires significant personal investment, hinders active modes of transportation, and is a significant source of death and injury. Increasing the safe, affordable, accessible, active, and reliable transportation options available to communities makes it easier for all residents to participate in public life and gives all community members the freedom to choose transportation modes that promote health, reduce fuel costs and time lost in traffic, and help the County meet its GHG emissions reduction goals. The ~~2024 CAP~~2024 CAAP diversifies the County's transportation landscape by recommending investments in active transportation, micromobility, public transit, complete streets, and roadway safety and ensuring that employers offer alternative commuting options for their employees.

> Micromobility is a category of affordable, lightweight transportation ideal for trips of five miles or less and designed for individual use. Micromobility devices can be personally owned bicycles, e-bikes, electric scooters and electric skateboards, or shared bikes, e-bikes, and e-scooters. - Contra Costa 511.org

The County is committed to enhancing active transportation by promoting access and connectivity for all modes of travel besides automobile travel. Active transportation encompasses any self-propelled, human-powered travel, such as walking and bicycling. The County's Active Transportation Plan[14] serves as a roadmap to enhance active transportation safety and mode share for unincorporated areas in Contra Costa County by providing a comprehensive look at the County's active transportation needs and

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opportunities. The plan outlines investments in new bicycle facilities, upgraded crossings, enhanced trail connections, and improved walkways.

While the County works to have a wide suite of transportation options available, passenger and commercial automobile use will continue to be a large part of Contra Costa County's transportation mix. However, different fuels have different levels of carbon intensity. Gasoline and diesel-fueled vehicles, in particular, release more carbon dioxide into the atmosphere than vehicles that use electricity or hydrogen fuels, even when accounting for how the electricity or hydrogen is generated. Increasing use of cleaner transportation fuels will be a key to help reduce the County's transportation emissions. Ensuring that cleaner fuels are affordable, accessible, and easy to use means helping communities address the up-front costs of acquiring an electric or other clean-fuel vehicle and ensuring that refueling infrastructure, such as EV charging stations, is equitably distributed throughout and across communities. Additionally, the County aims to increase the use of clean fuels in its own vehicle fleet and promote the use of clean fuels among transportation providers such as taxis and ridesharing programs.



County Employees on Bike to Work Day: Karin Deas (left), John Steere and Joe Lawlor (right).
Photo credit: Contra Costa County staff.

TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit for travel within, to, and from the county.

This strategy, in coordination with the General Plan's policies and actions, reduces vehicle miles traveled (VMT) in Contra Costa County by making it easier for people to bike, walk, roll, and take public transit. This strategy incorporates the County's commitments to implement the Contra Costa Active Transportation Plan, Complete Streets Policy, Vision Zero Action Plan, and other County policies to facilitate location of new development to minimize car dependency.

Contra Costa County's Complete Streets Policy was adopted in 2016. This policy promotes rethinking street design to ensure that streets adequately serve all users and are sensitive to local traffic conditions. All departments and agencies of Contra Costa County are required to work towards making Complete Streets practices a routine part of everyday operations and are considered for all development projects.

Adopted in March 2022, the County's Active Transportation Plan serves as a roadmap to enhance active transportation safety and mode share for unincorporated Contra Costa County by providing a comprehensive look at the county's active transportation needs and opportunities. The plan outlines investments in new bicycle facilities, upgraded crossings, enhanced trail connections, and improved walkways.

Active Transportation Plan

The Active Transportation Plan aims to:

- Prioritize active transportation investments based on factors such as collision history or systemic risk, location in an impacted community, location near key destinations, and funding opportunities.
- Shift trip modes by Contra Costa County residents and visitors from motor vehicles to active modes such as walking and biking.
- Provide a vision for arterials and collector streets within the unincorporated county roadway network to assist County departments in planning for private development, capital projects, and maintenance efforts.

In March 2022, the County also adopted the Action Plan from the Vision Zero Final Report.[15] Created by the Public Works Department, this plan commits the County to the Vision Zero goal of reducing vehicle collisions by promoting safe vehicles, safe speeds, safe roads, and post-crash care.

The County also supports legislation that enhances accessibility to quality transit, protects vulnerable road users, increases transit service, ensures transit is safe and affordable, and identifies strategies and funding to implement recommendations in the 2019 Employee Commute Survey for County employees.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	17,050	40,370

Strategy TR-1 Co-benefits:


Cost savings


Greater community resilience


Improved air quality


Improved community equity


Improved public health


Reduced resource use

Strategy TR-1 Actions:

- Prioritize expansion of bicycle, micromobility, and pedestrian infrastructure (e.g., Class IV separated bikeways) to address the significant latent demand for these active transportation modes. (TR-P1.2)
- Develop and promote mobility alternatives to single-occupancy vehicles, including but not limited to public transit, micromobility, carbon-free rideshare strategies, and nonmotorized modes. (TR-A1.1)
- Implement programs to encourage transit use, bicycling, walking, telecommuting, and use of alternative vehicle fuels by County employees. (TR-A1.4)
- Reduce single-occupant vehicle usage and VMT, by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, and other best practices), and support for public transit. (TR-P1.4)
- Plan, design, construct, and maintain facilities for walking, bicycling, and rolling to serve people of all ages, abilities, and income levels, including children, seniors, families, and people with limited mobility. (TR-P5.1)

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- Partner with CCTA and neighboring jurisdictions to build out the countywide bicycle and pedestrian network, prioritizing completion of the Low-Stress Countywide Bicycle Network and pedestrian safety improvement projects in the County's Pedestrian Priority Areas, as described in the Countywide Bicycle and Pedestrian Plan. (TR-A5.1)
- Construct innovative bicycle and pedestrian facilities, including Class IV separated and protected bikeways, bicycle superhighways, and other low-stress facility types, as described in the Countywide Bicycle and Pedestrian Plan and in contemporary, best-practice transportation planning and engineering guidance. Use contextually appropriate green infrastructure and landscaping to separate vehicular lanes from bicycle and pedestrian facilities whenever feasible. (TR-A5.2)
- Require transportation infrastructure serving new development to be designed using best practices, contemplating existing and planned land uses, roadways, bicycle and pedestrian facilities, transit facilities, and connections to adjoining areas. (TR-P4.2)
- Create connections between unincorporated communities and neighborhoods in unincorporated areas and adjacent jurisdictions to improve multimodal access to local destinations, such as schools, parks, shopping, health services, and workplaces. (TR-P4.3)
- Maintain in place and enforce a Transportation Demand Management (TDM) Ordinance that reflects best practices and, at a minimum, conforms to Contra Costa Transportation Authority's adopted model TDM ordinance or resolution. (GM-P3.5)
- Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report and Action Plan; Active Transportation Plan; and equity-focused plans, programs, and policies.
- Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities.

Healthy Building, Healthy Communities Program

In 2023, the Contra Costa Healthy Building Healthy Communities Program won two grants totaling over $1.7 million to promote active transportation and advance equity in bicycle and pedestrian roadway safety. These grants included a four-year $1.5 million grant to provide Safe Routes to School programming at up to 90 schools countywide; and a one-year $200,000 grant to advance Vision Zero, build community capacity to promote bicycle and pedestrian safety, and disseminate bicycle and pedestrian safety campaigns.

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- ~~Work with CCTA to fill gaps in the countywide Low-Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bicycle facilities~~ Coordinate with Caltrans, CCTA, the Regional Transportation Planning Committees, and neighboring jurisdictions to plan, design, and implement Complete Streets concepts on Routes of Regional Significance.
- In collaboration with key partners, support efforts to establish or join a shared mobility program that provides access to conventional bicycles, e-bikes, and other micromobility modes, prioritizing access for low-income residents who do not have bicycles. Support efforts to establish and/or maintain bike repair programs.
- Support efforts to expand the service area and frequency of regional transit agencies, and reduced fares for students, seniors, and low-income residents on systems, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT. Encourage programs that support "last mile" transportation connection and options.
- Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance.
- Market the county's Northern Waterfront to attract innovative companies with jobs for residents.
- Improve county-wide safety for cyclists by advocating for the passage of Vulnerable Road User Laws.
- Secure additional funding for the maintenance and expansion of bicycle and pedestrian infrastructure improvements. Support efforts to obtain additional funding to maintain and expand public transit operations and infrastructure improvements.
- Support CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions.
- Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.
- Encourage and support increased regional integration of transit systems to promote more equitable fare structures, fare integration, easier transfers, including



Contra Costa Centre Overcrossing.
Photo credit: Contra Costa County

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coordinated transfers between different transit systems and reduced wait times, improved information sharing, and generally a more seamless and modern system.

- Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility. (TR-P1.3)

TR-2: Increase the use of zero-emission vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

Implementation of this strategy will help increase the share of zero-emission vehicles on the road. The County will encourage all residents and businesses (including heavy-duty vehicle operators) to transition to zero-emission vehicles, enforce the County vehicle purchasing policy, promote electric vehicle sharing services, and ensure adequate electric vehicle charging and other zero-emission fueling infrastructure in new and existing development. The State projects that 86 percent of light-duty vehicles and over 70 percent of heavy-duty vehicles will be zero emission by 2045, based on modeling in the State's 2022 Scoping Plan.

There are approximately 33,850 zero-emission or plug-in hybrid vehicles registered in Contra Costa County, or about 3.9 percent of all light-duty vehicles, as of the end of 2021. Statewide, about 2.9 percent of light-duty vehicles are zero-emission or plug-in hybrid. However, this number is growing rapidly. In the first half of 2022, approximately 22.7 percent of light-duty vehicle sales in Contra Costa County were zero-emission or plug-in hybrid, higher than all but five counties in California. Approximately 84 percent of vehicles in Contra Costa County are projected to be electric by 2045.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	148,000	343,890~~32,850~~

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Strategy TR-2 Co-benefits:



Cost savings



Improved air quality



Improved community equity



Improved public health



Reduced resource use

Advanced Clean Car Standards

California has a set of regulations adopted in recent years to encourage the transition to zero-emission vehicles.

The Innovative Clean Transit regulation, first adopted in 2018, requires that all new buses purchased by transit agencies in California must be zero-emission by 2029. There are earlier milestones for zero-emission bus purchases depending on the size of the agency. The regulation also requires that transit agencies plan to fully transition to zero-emission buses by 2040.

The Advanced Clean Trucks regulation, adopted in 2020, requires an increase in the number of new zero-emission medium- and heavy-duty vehicles sold in California. This regulation covers freight trucks, delivery vans, large pickup trucks, and other large vehicles. The targets vary by vehicle type, but the State expects that 63 percent of new trucks will be zero-emission by 2035.

The Advanced Clean Car II standards, adopted in 2022, requires that all new passenger cars, trucks, and SUVs sold in California be zero-emission by 2035. Beginning in 2026, 35 percent of new passenger vehicles sold in the state must be zero-emission.

The Advanced Clean Fleets regulation, adopted in 2023, applies to government and large private vehicle fleets. It requires that most vehicle types sold to fleet operators be zero-emission. For local governments such as Contra Costa County, at least 50 percent of new vehicle purchases must be zero-emission starting in 2024, increasing to 100 percent in 2027. There are exemptions for some types of vehicles, including emergency vehicles.

Strategy TR-2 Actions:

- Require new County vehicles to be zero-emission to the extent a viable vehicle is available on the market, that charging or zero-emission fueling equipment is conveniently located where the vehicle will be stored, and as required by the Advanced Clean Fleet regulations, with the goal that all County vehicles will be zero-emission by 2035.
- Continue adopting new or modified reach codes and consider future updates that exceed the California Building Standards Code as the State updates the Building Code, including the Green Building Code, to require zero-emission charging infrastructure in new multifamily and nonresidential buildings. Explore expanding it to include new single-family homes. (Supported by TR-P1.12 and TR-A.12)
- Install electric vehicle charging equipment and other infrastructure needed to support the transition to a zero-emission County fleet at County facilities. Consider the appropriate locations, number, and capacity of infrastructure to facilitate the transition of the County fleet to zero-emission vehicles.
- Provide incentives for zero-emission vehicles in partnership with MCE, BAAQMD, and other agencies.
- Work with property owners and other potential partners to pursue installation of zero-emission vehicle charging stations in and near multifamily dwelling units.
- Update off-street parking ordinance to include a requirement for zero-emission vehicle charging infrastructure. Consider including incentives for developers to exceed minimum requirements (i.e., density bonus).
- Increase installation of electric vehicle charging stations for all vehicle types, including bicycles and scooters, at public facilities, emphasizing increased installation in Impacted Communities.
- In partnership with regional agencies, explore providing subsidies for households making less than the area median income to purchase or lease zero-emission vehicles and associated infrastructure.
- Pursue fees and regulatory efforts to convert transportation network company (TNC), taxi, and similar car-hire services to zero-emission vehicles.
- Explore opportunities for implementing electric vehicle sharing programs.

On June 1, 2023, the County hosted its first electric vehicle (EV) and E-bike show to educate and empower employees to use EV technology as the County fleet transitions to zero-emission vehicles. Approximately 200 staff from County departments and other public agencies attended to learn about EVs and E-bikes through a showcase that featured a wide range of EVs from public fleets and staff's personal vehicles.

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- Work with BAAQMD and other regional agencies to convert off-road equipment to zero-emission clean fuels.
- Work with contractors, fleet operations, logistics companies, and other operators of heavy-duty vehicles to accelerate the transition to zero-emission heavy-duty vehicles.
- In cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available, w~~W~~ork with Public Works to pursue the use of renewable natural gas (sourced from recovered organic waste) for transportation fuel, electricity, or heating applications. ~~in cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available.~~
- Encourage efforts to maximize EV charging during solar peak hours.
- Continue to host events such as the Electric Vehicle and E-Bike Show to educate and empower County staff and community members about zero-emission vehicles.
- Coordinate with CCTA and other local and regional agencies to ~~Support~~ implement~~ation of~~ the Contra Costa County Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements. (TR-A1.11)



Electric vehicles like this one in the County's fleet help to significantly reduce GHG emissions associated with transportation. Photo credit: Contra Costa County.

Resilient Communities and Natural Infrastructure (NI)

Contra Costa County will increase resilience to climate hazards and foster community health.



Most of the strategies for Resilient Communities and Natural Infrastructure are not associated with GHG emissions savings. NI-4 is included here because it both contributes significantly to the County's resilience efforts and results in measurable GHG emissions reductions. See Chapter 5 for a detailed description of other strategies that fall under this goal.

NI-4: Sequester carbon on natural and working lands in Contra Costa County.

This strategy increases opportunities to store carbon through natural carbon sequestration on public and private lands, increased tree planting by the County and public and private partners, and installation of green infrastructure. Additional actions pertaining to tree planting are in strategy NI-5 in **Chapter 5**.

	2030	2045
GHG emissions reduction (Absolute $MTCO_2e$)	22,630	88,910

Strategy NI-4 Co-benefits:



Enhanced recreation opportunities



Greater community resilience



Improved air quality



Improved public health



Increased economic opportunities



Increased resilience to pests

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Strategy NI-4 Actions:

- Pursue implementation of recommendations from the carbon sequestration feasibility study, *Healthy Lands, Healthy People*.
- Continue to support and work with key partners to maintain existing and establish new pilot programs for carbon sequestration on agricultural land.
- Promote ~~restorative~~ regenerative agricultural and landscaping techniques that incorporate cover crops, mulching, compost application, field borders, alley cropping, conservation crop rotation, prescribed grazing, and reduced tillage to promote healthy soil and soil conservation. (Supported by COS-P2.11)
- Support soil conservation and restoration programs. Encourage agricultural landowners to work with agencies such as the USDA's NRCS and Contra Costa RCD to reduce erosion and soil loss. (COS-P2.10)
- Coordinate with farming groups, ranchers, the Contra Costa Resource Conservation District, and the University of California Cooperative Extension to identify and promote varieties of feedstock, livestock, and crops that are resilient to rising temperatures and changing precipitation patterns and that increase carbon sequestration.
- Explore ways to increase carbon sequestration on County-owned ~~facilities~~properties.
- Partner with regional landowners and agencies to establish local carbon sequestration programs and incentives.
- Consider the development of carbon offset protocols and guidance ~~for future use by carbon sequestration program~~ to provide technical support to applicants and County permitting staff to promote appropriate natural sequestration on natural and developed lands.
- ~~-~~Ensure that any local or regional carbon sequestration program that the County establishes, promotes, supports, or joins demonstrates benefits to unincorporated communities that face environmental justice issues.
- Explore the potential for the public to support tree planting and maintenance of existing trees. (Supported by COS-P6.2)

Healthy Lands, Healthy People

Contra Costa County completed a feasibility study in 2023 to explore how agriculture, parks, gardens, and open space in the county could be used to sequester carbon and support carbon neutrality efforts. The study is funded by a grant from the California Department of Conservation. Its findings have informed quantification assumptions for Strategy NI-4. Implementation of the recommendations in this study will inform future updates of this 2024 CAAP.

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- Establish a mechanism to support expanded tree planting and maintenance activities, particularly in areas with few trees.
- Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat. (COS-P5.1)
- Inventory wetlands, floodplains, marshlands, natural watercourses, riparian corridors, and adjacent lands that could potentially support climate adaptation (e.g., through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration). (COS-A5.1)
- Encourage and support conservation of natural lands outside the urban limit line in the unincorporated county.
- Explore ~~the~~ new funding and financing opportunities for climate adaptation and resilience projects, including the creation of a Climate Resilience District, issuance of bonds—including bonds that can be marketed as "green bonds"-- as a potential financing mechanism, and similar opportunities.
- Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to ~~local~~ residents in unincorporated communities. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible or from sources that would improve air quality in an Impacted Community. If the project site is within or adjacent to an Impacted Community, require offsets or mitigation within that community unless determined infeasible by the County. (HS-P1.6)

Climate Resilience Districts

Climate resilience districts are special districts that can raise and allocate money to fund projects and operations that address climate change adaptation efforts, such as those to help protect against sea level rise, wildfire, and drought. They have the authority to establish special taxes, assessments, or other charges. Local governments may establish climate resilience districts under Assembly Bill 852, adopted in 2022.

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Achieving Our Goals

With the reductions currently projected from the 2024 CAAP strategies, GHG emissions for the unincorporated areas of Contra Costa County are expected to fall to 1.47 $MTCO_2e$ per person. This is 55 percent below GHG emissions without the 2024 CAP.

County staff developed a set of 11 GHG emission reduction strategies and assessed the GHG emission reduction potential of these strategies, given the project team's reasonable understanding of available resources and what seemed appropriate for the unincorporated area. **Appendix B** provides detailed information about the GHG emission reduction potential of these strategies.

These GHG emission reduction potentials are intended to be a starting point. They are based on the best available information, the experience and expertise of County staff, and known resources and capabilities. It is possible to achieve greater reductions if there is more confidence in higher levels of participation or development of additional programs. **Table 10** shows the expected GHG emission levels with these strategies enacted,

TABLE 10. GHG EMISSIONS WITH 2024 CAAP DRAFT REDUCTION STRATEGIES, 2019 TO 2045

SECTOR	2019	2030	2045	PERCENTAGE CHANGE, 2019–2045
Transportation	464,040	277,450	60,970	-87%
Energy - Residential	191,780	141,720	24,180	-87%
Energy - Nonresidential	85,390	71,500	24,540	-71%
Solid Waste	220,760	146,270	137,070	-38%
Agriculture	36,130	34,770	33,410	-8%
Off-road Equipment	54,010	54,150	29,270	-46%
Water and Wastewater	4,870	3,610	1,470	-70%
BART	190	150	50	-74%
Land Use and Sequestration	-70,860	-90,210	-147,800	-109%
Total Annual $MTCO_2e$	986,310	639,460	163,130	-83% *

Note: Due to rounding, totals may not equal the sum of the individual values

* Reductions of 83 percent below 2019 levels are comparable to reductions of 85 percent below 1990 levels.

All the strategies discussed in this chapter help Contra Costa County reduce its GHG emissions and allow the County to achieve its GHG reduction goals. Different strategies, along with existing and planned efforts, contribute to the GHG reductions in each of the different sectors as projected in 2045:

- Transportation: The largest share of GHG reductions from transportation-related emissions comes from a significant increase in adoption of electric vehicle and other zero-emission vehicle (ZEV) technologies, as discussed in Strategy TR-2. The State's Clean Car Standards, establishing stricter vehicle fuel efficiency standards and ZEV adoption requirements, accounts for approximately 39 percent of these reductions. Strategy TR-1, which reduces VMT through increases in transit use, active transportation, and micromobility, accounts for the remaining 7 percent of GHG reductions in transportation energy use.
- Residential energy: More than half of GHG reductions in residential energy use comes from energy efficiency and electrification of existing homes, as discussed in Strategy BE-2, and another 24 percent comes from the State's program to partially meet natural gas needs from renewable sources. The State's increase in the Title 24 energy efficiency standards for new buildings and RPS program to convert all electricity to renewable or carbon-free sources each contribute about 10 percent of the GHG reductions in this sector. Smaller but still significant GHG reductions to residential energy use come from the high energy performance standards discussed in Strategy BE-1 and the effects of the County's earlier all-electric reach code.
- Nonresidential energy: Similar to the residential energy sector, the largest share of GHG reductions in nonresidential energy use (44 percent) comes from energy efficiency and electrification of existing building in Strategy BE-2, followed by the State's plan for increased natural gas from renewable sources (28 percent). The State's RPS and Title 24 programs create the next-largest sources of reductions. The County's energy performance standards in BE-1 and the County's earlier all-electric reach code also play a role in reducing emissions from this sector.
- Solid waste: The largest contributor to solid waste GHG emission reductions in the CAAP is the increased capture rate of methane from landfills in Strategy NW-4, which is responsible for about 50 percent of these reductions. The State's organics recycling requirements, SB 1383, is responsible for another 44 percent of GHG emission reductions from solid waste. Local efforts to increase recycling and minimize waste generation, as discussed in Strategies NW-1, NW-2, and NW-3, collectively achieve the remaining GHG emission reductions.

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- Agriculture: The State and CAAP strategies do not directly reduce agricultural emissions in a measurable manner, although Strategy TR-2 reduces emissions from agricultural equipment (part of the off-road equipment sector) and Strategy NI-4 may affect agricultural emissions by supporting increased carbon farming and sequestration on the County's natural and working lands.
- Off-road equipment: The CAAP achieves reductions in off-road equipment GHG emissions by promoting replacing gasoline and diesel-fueled equipment with electric models, as discussed in Strategy TR-2.
- Water and wastewater: The primary contributor to GHG emission reductions from water and wastewater is the State's RPS program. Water-efficiency standards in Strategy DR-1 account for the remaining GHG emission reductions.
- BART: The State's RPS program reduces GHG emissions from BART operations.
- Land use and sequestration: Strategy NI-4 in the CAAP, which increases carbon farming and sequestration on the County's natural and working lands, drives the GHG reductions in the land use and sequestration sector.

With the reductions currently projected from the 2024 GHG emissions reduction strategies, GHG emissions for the unincorporated county are expected to be reduced to 856 percent below 1990 levels, equal to 878 percent below baseline 2005 levels and~~or 85~~ 83 percent below 2019 levels. These reductions are predicted to occur across most GHG emission sectors, though emissions within the Solid Waste sector will continue to be affected by previously deposited waste continuing to decompose in landfills. As noted previously, there is the potential for these strategies to yield additional GHG emission reductions as County staff and decision makers develop and institute implementation actions and monitor the results.

With these reductions as currently assessed, unincorporated Contra Costa County achieves the GHG emissions reduction goals for 2030 and 2045, as shown in **Table 11**. The County may reduce emissions faster than expected as it implements the CAAP, and it will report on this progress as part of the CAAP monitoring activities.

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TABLE 11. 2024 GHG EMISSION REDUCTIONS AND REGULATORY GOALS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG emissions goals	658,700	164,680
GHG emissions with CAAP strategies	639,460	163,130
Gap to GHG emission reduction goal*	-19,240	-1,550

Note: Due to rounding, totals may not equal the sum of the individual values.

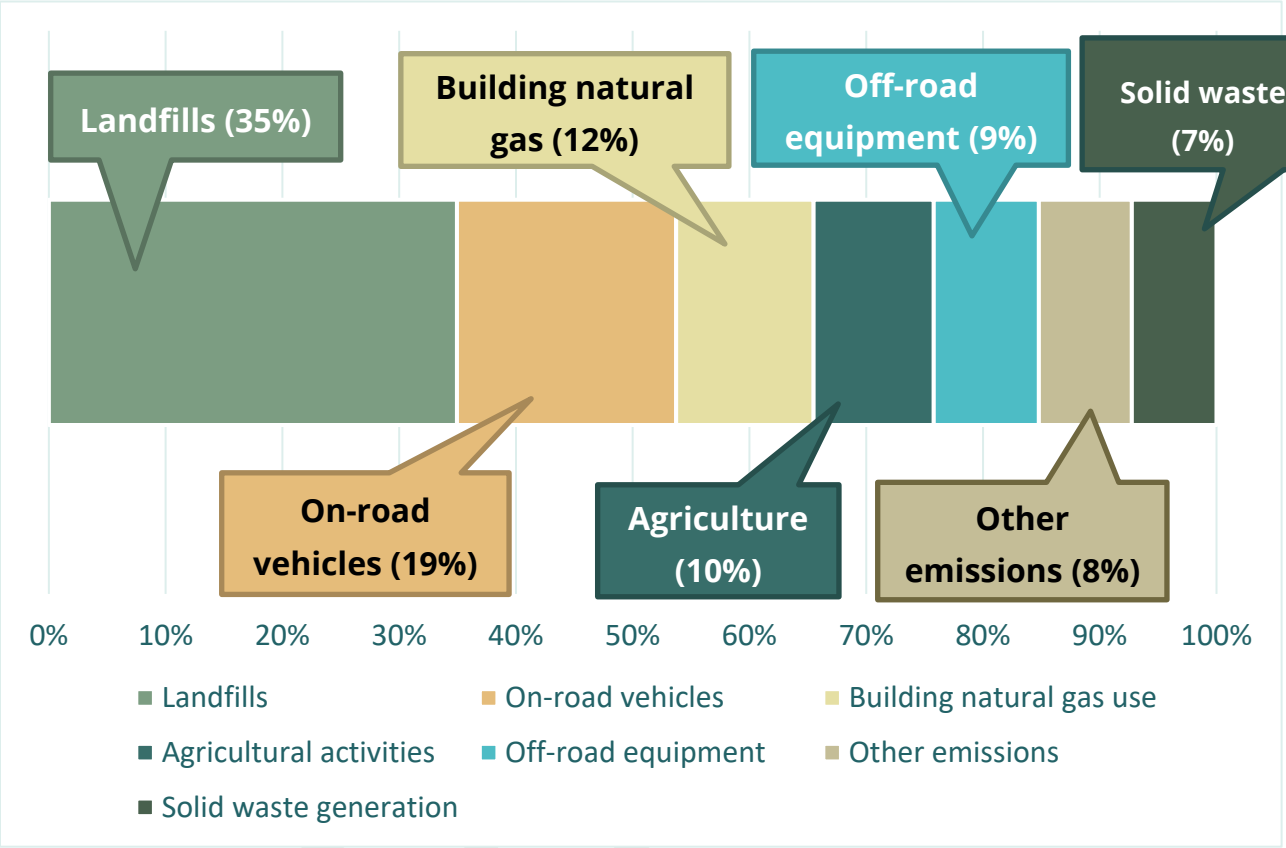
* Negative values mean that the strategies reduce GHG emissions to below the goal.

THE 2024 CAAP AND NET CARBON NEUTRALITY

Achieving net carbon neutrality in Contra Costa County will require implementation of GHG reduction efforts that meet the County's regulatory goals, in combination with carbon sequestration and potentially other methods to "zero out" the remaining emissions. The 2024 CAAP achieves significant reductions in GHG emissions, consistent with the County's emission reduction goals, and places Contra Costa County on a path to support statewide net carbon neutrality by 2045. Currently, there is insufficient guidance and certainty around local carbon sequestration, storage, and potential carbon offset strategies to mathematically demonstrate with certainty that the 2024 CAAP will achieve carbon neutrality by 2045. However, the County believes that such guidance and certainty will emerge in future years as the County, regional agencies, and the State further explore the opportunities, develop guidance and methods, and validate new technology. When available, guidance on quantifying how to achieve carbon neutrality will be integrated into future updates of this 2024 CAAP.

For the foreseeable future, achieving net ~~the County's GHG emissions reductions goals, including~~ carbon neutrality~~,~~ will likely not be feasible without the use of local carbon sequestration~~, notably~~ on natural and working lands. Although GHG emissions can be eliminated from many of the County's GHG emissions sources, this is not practical for every source given technical, economic, or political considerations. Assuming implementation of the strategies in this 2024 CAAP, **Figure 15** shows the major sources of Contra Costa County's remaining GHG emissions in 2045.

FIGURE 15. CONTRA COSTA COUNTY 2045 GHG EMISSIONS WITH IMPLEMENTATION OF 2024 CAAP



Note: Percentage totals in this chart do not account for emissions in the land use and sequestration sector (natural and working lands, urban trees, and developed land). With implementation of the 2024 CAAP, the land use and sequestration sector is projected to sequester 147,800 $MTCO_2e$ in 2045. ~~Not including emissions associated with land use and sequestration.~~ The "Other emissions" category is composed of emissions from BART; water and wastewater sectors; land development activities; and propane, kerosene, and wood used as heating fuels.

The County should take advantage of future opportunities to reduce the GHG emissions from these sources as much as possible, ideally to zero. However, for GHG emissions that cannot be feasibly reduced in the short and near term, carbon sequestration on natural and working lands is the preferred strategy to "cancel out" these emissions so that the County's net GHG emissions from remaining sources are zero. Should the County find that there continue to be GHG emissions, the County may want to consider ~~and~~ related strategies to remove carbon from the atmosphere ~~may be able to "cancel out" these emissions so that the County's net GHG emissions from remaining sources are zero.~~ if equity and GHG emissions and other potential pollution concerns can be addressed.

5. CLIMATE ADAPTATION STRATEGY



Photo credit: Envision Contra Costa picture gallery.

Vulnerability Assessment Summary

Contra Costa County prepared a vulnerability assessment that examines how people and assets in the county may be affected by the hazards related to climate change discussed in Chapter 3. This vulnerability assessment considers how severe the effects of these hazards are likely to be and identifies the groups of people and assets who face the greatest potential for harm. It considers both the current and future climate conditions in the unincorporated area of the county following the methods recommended by the *California Adaptation Planning Guide* prepared by the California Governor's Office of Emergency Services. An abridged version of the key vulnerability assessment results is presented here. **Appendix C** provides detailed information on the vulnerability assessment methods and results.

Some hazards can occur virtually anywhere in Contra Costa County or may affect the entire county. This includes drought, human health hazards, and air quality impacts. Other hazards are much more likely in specific locations, such as landslides and flooding. However, people and assets outside of affected areas may still be harmed if the hazard creates a series of cascading impacts that ripple beyond the immediate hazard zone. For example, a fire near Orinda may close Highway 24 and the BART tracks in that area, interrupting BART service in the central and east parts of Contra Costa County and causing traffic congestion on alternate routes. The vulnerability assessment considers these indirect impacts and reflects them in its scores.

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EFFECTS ON POPULATIONS

Although climate change will affect everyone, some populations in the unincorporated county are likely to be affected more than others. This can include the risk of injury, death, or property damage or destruction, and can also include economic impacts and loss of income, behavioral and mental health impacts, and an overall decrease in quality of life. Impacted Communities, who have been historically under-resourced and are already more likely to face constraints such as limited financial resources, reduced access to education and job opportunities, and increased exposure to environmental hazards, are likely to be further affected as climate change–related hazards increase in frequency and severity. Other groups of people are also likely to be disproportionately affected, including senior citizens, renters, and persons with chronic health conditions.

People with limited financial means, such as low-income persons and cost-burdened households (those who must spend more than 30 percent of their income on housing) are often vulnerable because they may lack the resources to retrofit their home against hazardous conditions or to move to an area with less risk. For example, low-income persons are less likely to live in homes that have reliable air conditioning and may not be able to afford to install these systems themselves, which puts them at greater risk of harm from extreme temperatures. They also face greater vulnerabilities because they may be less able to withstand a temporary loss of income if their work is affected by climate change–related hazards. People who work in outdoor activities, such as construction, agriculture, and recreation, are usually more susceptible.

> Due to the high cost of living in Contra Costa County, "low-income households" include some households who might be considered financially well off in other places. In 2022, a family of four in Contra Costa County is considered "low-income" if its annual income is lower than $109,600.

Lack of access to resources not only includes financial resources, but also communication, transportation, education, and other community services. Even people who are relatively well-off financially can be disproportionately affected by climate change–related hazards if they are physically or socially isolated. For example, persons with limited English proficiency may not be able to interact with officials, and persons without lifelines such as transportation, or broadband internet or other forms of reliable communication, may not be able to get accurate information about hazardous situations. This often makes it harder for them to get the resources needed to prepare for or respond to an emergency. Renters

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face similar threats because even if they have the financial resources to adapt to changing conditions, they have limited control over their home.

Physical constraints can also make people more susceptible to climate change. Persons with disabilities may find it harder to prepare for hazardous events, and some hazards can exacerbate chronic health conditions and create a greater threat for persons with these conditions. Young children and senior citizens are disproportionately affected by some hazards, such as extreme heat and air pollution, even if they are entirely healthy. Senior citizens living alone are often at greater risk since they are more likely to be socially isolated. Persons with physical constraints are also more likely to need assistance during evacuations.

The health equity of populations is also closely associated with racism, historic discrimination, and a wide range of socioeconomic conditions. The 2024 CAAP includes "place-based strategies", such as efforts to enhance availability and access to resources and physical infrastructure. These strategies advance the County's efforts to address GHG emissions as well as offer enhanced resilience in Impacted Communities.

EFFECTS ON BUILDINGS AND INFRASTRUCTURE

The vulnerability assessment considers the effects of climate change–related hazards on buildings and infrastructure, including private homes and businesses, public facilities such as government offices and libraries, and important institutions such as schools and hospitals. This category also includes infrastructure networks such as the electrical grid, roadways, rail lines, and water and wastewater systems. Buildings and infrastructure in hazard-prone areas are naturally vulnerable to damage or destruction from hazards that occur in those areas, such as floods, landslides, sea level rise, and wildfires. Designing new structures to be more resilient against these hazards or hardening existing ones to better resist them can help reduce the threat.

The loss of key buildings and infrastructure systems can create potentially severe effects throughout the county. The loss of homes in a natural disaster means that a potentially large group of people must be temporarily housed while their homes go through the lengthy reconstruction process. Some people may choose not to return to their former community. Damages to businesses can cause economic harm to business owners and employees as well as members of various communities. For example, sea level rise and coastal flooding can interrupt many of the industrial and manufacturing centers located along the Contra Costa County shoreline, creating temporary or permanent loss of income for their employees, with possible cascading impacts such as harming the tax base and well-being of various communities.

Infrastructure networks, despite their county-spanning size, are also vulnerable to disruption from hazards related to climate change. Damage to just one or a few key nodes or components of an infrastructure system can cause a chain reaction that restricts or shuts down the network across a much wider area. For example, 26 bridges in Contra Costa County are in areas at risk of a 100-year flood or dam inundation. Even though these bridges make up a very small portion of the overall roadway network in the county, damage to them can force travelers to take potentially long and congested detours or may render some areas completely inaccessible.

Loss of key buildings or parts of infrastructure networks can also harm important community services that rely on these networks. This is particularly true for transportation infrastructure, such as roads and railways. If these systems are damaged or blocked, this can also block access by emergency response and public transit services vehicles. Even if alternate buildings and infrastructure networks are available, the alternatives may not be able to accommodate the change in demand. For example, 10 schools in Contra Costa County are in high and very high fire hazard severity zones. Although this is a relatively small proportion of the overall number of schools in the county, if some of these schools are damaged by wildfires, there may not be capacity at other, unharmed schools to take in all the displaced students.

Contra Costa County's infrastructure networks are connected to much larger regional, State, and national systems. These systems are vulnerable to disruption from outside of Contra Costa County, resulting in a loss of service to community members. For example, most of the water used in the unincorporated areas of the county is imported from the Sierra Nevada through a complex system of pumps, aqueducts, and reservoirs. Damage at any point along this system can affect Contra Costa County's water supply, causing restricted water service. Many components of this system pass through eastern Contra Costa County and other low-lying areas of the Delta region, where they are particularly vulnerable to sea level rise.

Buildings and infrastructure do not need to be physically damaged to trigger a loss of service. For example, extreme heat makes the machinery of the power grid run less efficiently and simultaneously increases demand to meet greater cooling needs. This combination raises the risk of the grid overloading and causing brownouts or blackouts. Similarly, drought conditions harm water delivery services but do not cause physical damage to pipes or water treatment plants. Economic drivers can also be affected without experiencing physical damage, such as when businesses are forced to close because of a public health emergency.

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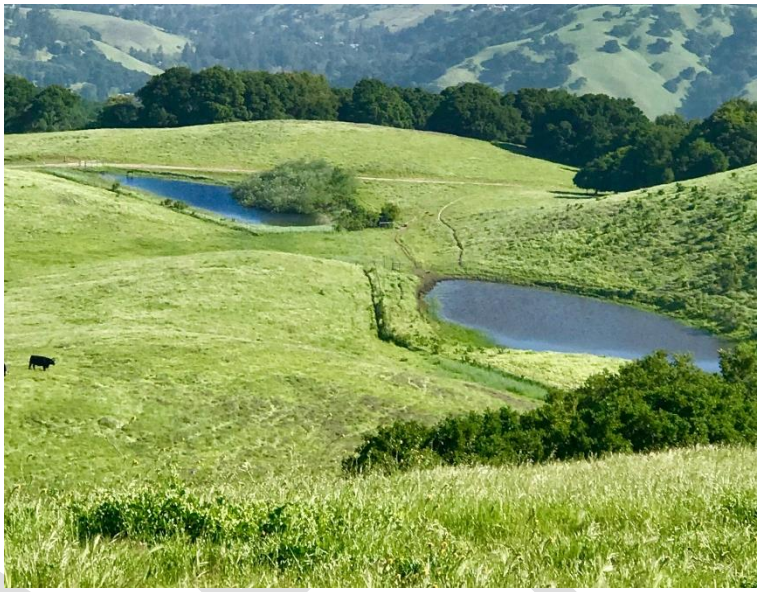
EFFECTS ON ECOSYSTEMS AND NATURAL RESOURCES



Meadow environments such as this are highly susceptible to several climate change-related hazards. Photo credit: Deidra Dingman.

Many of the ecosystems and other natural resources in California are unique to the state and have evolved under local conditions, including climate patterns. However, the unprecedented rate of change in the climate system can rapidly create local conditions unfavorable to ecosystems, killing them or forcing them out of the area before they have the chance to adapt. Damage or loss of local ecosystems and natural resources is harmful for its own sake, but it also affects the people and economy of Contra Costa County. Many ecosystems provide important services for communities, such as protection against floods and high winds, groundwater recharge and filtration, and home for pollinators and beneficial species. The natural environment provides recreational and tourism opportunities, contributes to the valued character of Contra Costa County, and helps maintain a high quality of life.

Climate change often results in species and even entire ecosystems being forced out of their historical range and moving to areas that provide their preferred living conditions. In some cases, there may no longer be places in Contra Costa County that can support these ecosystems, and they disappear from the area. For example, the conifer forests in the hills of west county depend on fog and its cooling benefit in summer temperatures. As temperatures increase and coastal fog is expected to decrease, these trees may not survive. Habitat loss can also exacerbate this problem. For example, in a natural system, wetlands will migrate inland as sea levels rise. However, if the inland areas are blocked by development or other barriers, the wetlands cannot migrate and could disappear.

Even if overall temperature and precipitation patterns remain favorable to key ecosystems and natural resources, the increased frequency and severity of some climate change–related hazards can harm these important community assets. Wildfires are a prime example of this. Many ecosystems in California, especially forests, rely on naturally

occurring wildfires to remove dead vegetation and return nutrients to the soil, and some species rely on fires for reproduction. However, increases in the intensity of wildfires mean that trees that could survive relatively low-level fires may not be able to survive much more severe blazes. Similarly, though occasional fires may be beneficial, too-frequent fires can kill young trees before they establish themselves, creating a risk that trees will be replaced by more rapidly growing grasses and brushlands.

In some cases, climate change leads to cumulative impacts that can weaken or kill ecosystems. Species that have adapted to be relatively resistant to one or a small number of hazards may still be vulnerable to multiple hazards that happen at the same time or one after another in close succession. For example, forestry pests have long been a presence in California, and though they may kill individual trees or stands of trees, forests and woodlands are generally not significantly affected. However, drought and extreme temperatures weaken trees, making them more vulnerable to pests that could not do serious damage under normal conditions. At the same time, warmer temperatures can increase pest numbers and keep them active for more of the year, so they can do more damage than they could previously. This and similar cumulative effects mean that species and ecosystems that could resist hazardous events under normal conditions may be much more susceptible to them because of climate change.

Adaptation Strategies

A key goal of the 2024 CAAP is to reduce Contra Costa County's GHG emissions. Combined with other global GHG emissions reduction efforts, the 2024 CAAP will help to prevent more severe effects of climate change. However, some degree of climate change is inevitable. Climate conditions in recent years in Contra Costa County are already different from historical conditions, and community members have already observed more frequent and intense climate change–related hazards. Contra Costa County will have to adapt to future climate conditions; acting now or in the short term will help communities be more resilient to climate change–related hazards expected decades in the future.

This 2024 CAAP includes a set of adaptation strategies. These strategies respond to the key vulnerabilities identified by the vulnerability assessment; concerns about current and future conditions raised by community members and County officials; and best practices in the region and across California to help promote a more unified climate adaptation response. While these climate adaptation strategies do not directly result in measurable GHG emissions reductions, they do support the GHG emissions reduction strategies and contribute to a comprehensive climate change response.

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The adaptation strategies are organized into two categories, each with its own goal:



Climate Equity (CE)



Resilient Communities and Natural Infrastructure (NI)

As with the GHG emissions reduction strategies, the adaptation strategies support co-benefits, that is, benefits that the strategy provides to communities beyond increased resilience.



Cost savings



Enhanced recreation opportunities



Greater community resilience



Greater energy independence



Improved air quality



Improved community equity



Improved public health



Increased economic opportunities



Increased resilience to pests



Reduced disaster effects



Reduced landfill waste



Reduced resource use

General Plan alignment

As with the GHG reduction efforts in **Chapter 4**, the adaptation goals, strategies, and recommended implementation actions discussed in this chapter align with climate adaptation goals, policies, and actions in the County's General Plan, as discussed in **Chapter 1**. When the 2024 CAAP and General Plan address similar topics, the language used in both documents is identical or at least consistent, ensuring that both are in sync and provide a unified approach to addressing climate adaptation.

Resilient Communities and Natural Infrastructure (NI)

Contra Costa County will increase resilience to climate hazards and foster community health.

The 2024 CAAP takes steps to improve the resilience of Contra Costa County's unincorporated communities by ensuring that structures and infrastructure are responsive to flooding, sea level rise, fire, heat, and other climate change hazards. Natural features such as trees, soils, and water can help make the county more resilient by absorbing carbon and modulating the effects of heat, sea level rise, and flooding. Community resilience hubs can serve as centralized locations for electricity access, cooling and clean air centers, and emergency preparedness and response resources.

In addition to the General Plan, the strategies and actions in this goal integrate with the Contra Costa County Local Hazard Mitigation Plan and the Community Wildfire Protection Plan. The Local Hazard Mitigation Plan assesses risk to people and facilities from hazardous conditions and includes mitigation actions to reduce or eliminate risks, particularly in the short term. The Community Wildfire Protection Plan provides a snapshot of current wildfire protection challenges and capabilities, identifies and prioritizes areas for hazardous fuel reduction, and recommends types and methods of vegetation management that may help protect the affiliated communities from wildfire losses.



Hercules waterfront. Photo credit: Emily Groth.

The Contra Costa County Emergency Operations Plan describes the structures and processes the County follows to respond to and recover from emergency events. The County's Extreme Weather Working Group collaborated in 2024 to create a series of hazard-specific plans or annexes that support the Emergency Operations Plan. These annexes identify County departments' roles and responsibilities and create a framework for cities to follow during extreme heat, extreme cold, or poor air quality events. These annexes guide emergency planning and response to these events and bolster the County's "whole community" approach to improve resilience today.

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NI-1: Protect against and adapt to changes in sea levels and other shoreline flooding conditions.

This strategy aims to protect communities against permanent and temporary inundation from rising sea levels and shoreline flooding through green infrastructure, effective building siting and retrofits, and informed land use decisions.



Sea level rise and other coastal flooding hazards threaten structures built near the shoreline.

Strategy NI-1 Co-benefits:

Enhanced recreation opportunities

Greater community resilience

Reduced disaster impacts

Strategy NI-1 Actions:

- Require new development to locate habitable areas of buildings above the highest water level expected, accounting for sea level rise and other changes in flood conditions, or construct natural and nature-based features, or a levee, if necessary, adequately designed to protect the project for its expected life. (HS-P6.1)
- Support the use of natural infrastructure, including ecosystem restoration and green infrastructure, to protect against sea level rise and associated shoreline flooding.
- Coordinate with State and regional agencies, neighboring jurisdictions, property owners, utilities, and others to prepare a sea level rise adaptation plan.
- Seek funding and pursue implementation of wetland restoration and other adaptation efforts for sea level rise.

As of December 2023, 28.3 acres of County right-of-way had been converted to green infrastructure, with another 11.1 acres planned. The County continues to incorporate pervious paving in some projects, including projects at the El Sobrante Library and Rio Vista Elementary School in Bay Point.

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- Convene a working group that includes local jurisdictions, local shoreline communities, community-based organizations, property owners, businesses, and other stakeholders to collaborate on shoreline flooding adaptation strategies.
- Identify opportunities for employing natural areas as buffers against rising sea levels.

Contra Costa Resilient Shoreline Ad Hoc Committee

The Board of Supervisors established the Contra Costa Resilient Shoreline Ad Hoc Committee at the May 16, 2023, Board of Supervisors meeting. The committee makes recommendations to the Board on work the County can do to plan for sea level rise and improve shoreline resiliency. The committee also provides a dedicated space for Contra Costa County to consider how local sea level rise resilience and adaptation efforts can complement regional efforts happening across the San Francisco Bay Area. The committee has been meeting regularly since October 12, 2023.

NI-2: Protect against and adapt to increases in the frequency and intensity of wildfire events.

This strategy aims to increase community resilience to the direct and indirect effects of wildfires, both locally and regionally. Public and private property shall be designed and maintained to minimize the risk of damage from wildfires; infrastructure systems will be hardened and designed to include redundancy; and emergency management plans and practices for wildfires will be responsive to the needs of Impacted Communities.

Strategy NI-2 Co-benefits:



Greater community resilience | Improved community equity | Improved public health | Reduced disaster impacts

DRAFT

Strategy NI-2 Actions:

- ~~Prohibit new residential subdivisions in Very High Fire Hazard Severity Zones and discourage residential subdivisions in High Fire Hazard Severity Zones~~Deny entitlements for projects creating additional residential units in Very High Fire Hazard Severity Zones in the LRA or SRA. Discourage such projects in High Fire Hazard Severity Zones in the SRA and discourage them in such zones in the LRA unless adequate fire protection services are provided.[11] (HS-P7.1)
- Require any construction of buildings or infrastructure within a High or Very High Fire Hazard Severity Zone in the Local or State Responsibility Areas, or in areas that may be designated as the Wildland-Urban Interface, to incorporate fire-safe design features that meet the applicable State Fire Safe Regulations and Hazard Reduction Around Buildings and Structures Regulation for road ingress and egress, fire equipment access, and adequate water supply. (HS-P7.2)
- Require subdivisions in the High Fire Hazard Severity Zone in the Local or State Responsibility Areas, or projects requiring a land use permit in the High or Very High Fire Hazard Severity Zone in the Local or State Responsibility Areas, to complete a site-specific fire protection plan. ~~Collaborate~~ Work with the appropriate fire protection district to review and revise the fire protection plans. (HS-P7.~~3~~4)
- Work with property owners in ~~mapped~~ High or Very High Fire Hazard Severity Zones or in areas that may be designated as the Wildland-Urban Interface, to establish and maintain fire breaks and defensible space, vegetation clearance, and

Fire Protection Plans

According to General Plan Policy HS-P7.3, a fire protection plan shall include measures for fire-resistant construction materials and modifying fuel loading, as well as a plan to maintain that protection over time. The fire protection plan shall include:

a) A risk analysis
b) Fire response capabilities
c) Defensible space requirements
d) Fire safety requirements for infrastructure
e) Building ignition resistance
f) Mitigation measures and design for non-conforming fuel modification
g) Wildfire education
h) Maintenance and limitations
i) A plan for emergency preparedness, response, and evacuation

[11] High and Very High Fire Hazard Severity Zones are mapped by CAL FIRE. Designations are based on factors that influence fire likelihood and fire behavior. Many factors are considered, such as fire history, existing and potential fuel (natural vegetation), predicted flame length, blowing embers, terrain, and typical fire weather for the area.

firefighting infrastructure that meets adopted State, County, or community fire safety standards. (HS-P7.45)

- ~~Support undergrounding of~~Coordinate with energy service providers to underground power ~~utility~~ lines, especially in the Wildland-Urban Interface and Fire Hazard Severity Zones. (HS-P7.~~8~~10)
- Review indoor air filtration standards and consider whether filtration requirements can and should be strengthened for projects permitted by the County.
- Work with community organizations to help Impacted Communities have access to financing and other resources to reduce the fire risk on their property, prepare for wildfire events, and allow for a safe and speedy recovery.

NI-3: Establish and maintain community resilience hubs.

The intent of this strategy is to establish and maintain community resilience hubs with microgrids, education, training opportunities, and other community-focused resources. Under this strategy, the County develops a feasibility analysis and implementation plan for siting community resilience hubs across the county, with attention to Impacted Communities, and identifies opportunities for battery storage projects at County facilities. County emergency planners help enact this strategy by ensuring emergency response plans include climate change disasters such as wildfires, sea level rise, flooding, extreme heat, and drought. These efforts emphasize equitable recovery for Impacted Communities and those affected by environmental justice issues.

Strategy NI-3 Co-benefits:



Greater community resilience

Improved community equity

Increased resilience to pests

Strategy NI-3 Actions:

- Pursue funding to develop a resilience hub master plan that identifies existing community facilities that can serve as resilience hubs and support affected populations during hazard events. This process should start with an assessment of community needs. Such facilities should be distributed equitably throughout the county, with an emphasis on easy access for Impacted Communities. Where appropriate facilities do not exist, develop plans to create new resilience hubs. (Supported by HS-P8.1)

- Pursue funding to implement the resilience hub master plan, including retrofitting selected facilities to function as resilience hubs. These retrofits should involve adding solar panels, battery backup systems, water resources, air filtration, supplies to meet basic community and emergency medical needs, and other needs as identified by the resilience hub master plan.
- Create a virtual resilience hub that connects County resources to communities through virtual community networks to provide detailed, up-to-date information about preparing for natural disasters, public safety notifications and alerts, space for virtual gathering and information-sharing, and other appropriate uses. Materials shall be accessible in multiple languages.
- Coordinate resilience hub activities with planning efforts around public safety power shutoffs and wildfire smoke resiliency.

NI-4: Sequester carbon on natural and working lands in Contra Costa County.

NI-4 contributes significantly to the County's resilience efforts, but because it results in measurable GHG emissions reductions, it is part of the County's GHG emissions reduction approach and is included in **Chapter 4**.

NI-5: Minimize heat island effects through the use of cool roofs, ~~and~~ green infrastructure, tree canopy, cool paint and pavement, and other emerging strategies.

With this strategy, impacts of heat islands are addressed and minimized through construction practices for buildings and structures, including through ample shading opportunity and other green infrastructure improvements, including green stormwater infrastructure.

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Strategy NI-5 Co-benefits:


Improved air quality


Improved community equity


Improved public health



Increased economic opportunities


Reduced disaster impacts


Reduced resource use

Strategy NI-5 Actions:

- Require landscaping for new development to ~~be drought-tolerant,~~ filter and retain runoff and support flood management and groundwater recharge. (COS-P-7.7)
- Promote installation of drought-tolerant green infrastructure, including street trees, in landscaped public areas. (COS-P7.8)
- Increase tree planting in urbanized areas and open spaces, where ecologically appropriate, emphasizing areas with limited existing tree cover, using low-maintenance native tree species that are low fire risk, and ensuring water supply resources are not compromised. (Supported by COS-P6.2)
- Consider preparing and implementing an Urban Forest Management Plan, or Tree ~~Master~~ Plan for the unincorporated county.
- Provide shade trees or shade structures at parks, plazas, and other outdoor spaces where feasible.
- ~~Update~~ When updating the County ~~tree~~ ordinances that relate to trees and green infrastructure, ~~to~~ consider whether ~~factors for approval of~~ tree removal and/or replanting requirements ~~are~~ adequately promote expansion of the tree canopy and green infrastructure in~~considering~~ Impacted Communities ~~(e.g., tree cover, replanting standard)~~. (Supported by TR-A2.2, HS-P2.2, and HS-A2.5)
- Support efforts to develop incentive programs for home and business owners, school districts, and other local and regional property owners to increase the adoption of cool roofs, ~~and~~ green infrastructure, and other cooling strategies on private property.

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Urban Heat Islands: Tree Cover and Impervious Surfaces

The urban heat island effect is one of the most important aspects of how neighborhood conditions can exacerbate extreme heat. Urban heat islands are areas with little tree cover and significant portions of land covered by impervious surfaces or artificial structures covered with impenetrable materials, such as pavement and rooftops. Temperatures in these areas may be significantly hotter than in surrounding areas, especially at night, because impervious surfaces retain heat absorbed throughout the day. Addressing heat islands may also be an important lever for health equity, as researchers have found that low-income people and people of color are more likely to live in areas with land cover characteristics conducive to urban heat islands. Additionally, research has identified a correlation between home values and tree cover, meaning that addressing urban heat islands carries implications for financial equity. Actions to reduce the heat island effect also offer mitigation co-benefits, as increased tree cover can store carbon dioxide, as well as provide shade that reduces energy consumption needed for cooling buildings.

Many cities in Contra Costa County contain areas with very little contiguous tree cover, including most of the cities in East and West County, along with significant parts of Martinez, Concord, Danville, and San Ramon. Areas with very high percentages of impervious surfaces exist in many of the same urban areas with little tree cover. Areas with a high percentage of impervious surfaces are concentrated in North Richmond, San Pablo, Richmond, and El Cerrito, and in some tracts in cities in Central and East County.

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NI-6: Protect communities against additional hazards created or exacerbated by climate change.

The goal of this strategy is to reduce impacts from other climate-related hazards, including drought, flooding, landslides, and severe weather. In accordance with this strategy, development projects are sited and designed to reduce exposure to hazardous conditions, and community members receive the support and assistance needed to prepare for and recover from natural disasters.

Strategy NI-6 Co-benefits:



Strategy NI-6 Actions:

- Discourage new below-market-rate housing in High and Very High Wildfire Hazard Severity Zones, the Wildland-Urban Interface, and Alquist-Priolo Fault Zones. If below-market-rate housing must be constructed within these zones, require it to be hardened or make use of nature-based solutions to remain habitable to the greatest extent possible. (HS-P4.~~3~~2)
- Treat susceptibility to hazards and threats to human health and life as primary considerations when reviewing all development proposals and changes to land uses.
- Partner with community-based organizations to provide information to community members about how to prepare for projected climate change hazards.
- Promote, and develop as necessary, available funding sources to create incentives for residents and businesses to prepare for natural disasters, particularly members of Impacted Communities.

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- Consider projected impacts of climate change when siting, designing, and identifying the construction and maintenance costs of capital projects.
- Actively promote and expand participation in local and regional community emergency preparedness and response programs.
- Support and fund efforts to enhance ongoing community and cross-sector engagement in community-level resilience and cohesion. Support non-governmental organizations to actively engage in developing a network of community-level actions that enhance resiliency.
- Work with energy service providers to promote programs encouraging reduced energy use during extreme heat events. (HS-P8.2)
- Support efforts by East Bay Regional Park District and other local recreation agencies to provide outdoor recreation facilities with adequate shading and refillable water stations where appropriate. (HS-P8.4)

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CLIMATE EQUITY (CE)

CONTRA COSTA COUNTY WILL ADDRESS ENVIRONMENTAL FACTORS LEADING TO HEALTH DISPARITIES, PROMOTE SAFE AND LIVABLE COMMUNITIES, AND PROMOTE INVESTMENTS THAT IMPROVE NEIGHBORHOOD ACCESSIBILITY.



Ensuring that Contra Costa County's unincorporated communities are a welcoming and resilient home to diverse families, individuals, and businesses as the effects of climate change intensify around the world means ensuring that the County's climate action strategies are built on a foundation of justice and equity. Equity, justice, and the climate resilience they engender can take many forms across different sectors and include such strategies as supporting family-sustaining jobs in sustainable industries, providing equitably distributed green space, facilitating access to fresh and healthy food, and ensuring that all Contra Costa County departments and citizens are actively engaged in climate action planning. An important aspect of Climate Equity will be using culturally and linguistically appropriate methods. Climate action planning entails mobilizing the entire community to adopt a way of life and way of doing business that will not only weather the disruptions caused by climate change but will continue to thrive far into the future.

CE-1: Provide access to affordable, clean, safe, and healthy housing and jobs.

Strategy CE-1 aims to ensure that all residents live in clean, healthy homes and neighborhoods; have access to parks, open space, and fresh food; have easy access to safe and affordable mobility options; and are trained for and have access to living wage jobs. The County commits to implementing the 2024 CAAP strategies for equitable benefits to Impacted Communities, ensures every County department integrates climate issues and climate-related effects in services to residents, and meaningfully and continuously engages the communities most affected by climate change with developing and implementing appropriate solutions.

Strategy CE-1 Co-benefits:



Enhanced recreation opportunities



Greater community resilience



Improved community equity



Increased economic opportunities



Increased resilience to pests

Strategy CE-1 Actions:

- In partnership with community-based organizations, reverse community deterioration and blight and improve personal and property safety in neighborhoods throughout Contra Costa County.
- Ensure that new housing for households making less than the area median income and housing for other Impacted Communities are outside of hazard-prone areas, including for wildfires, landslides, floods, and sea level rise, or that they are hardened or make use of nature-based solutions to remain habitable to the greatest extent possible. (Supported by HS-P4.~~3~~2)
- In partnership with community-based organizations, secure funding to create a program to provide low-cost or free air conditioning and filtration, improved insulation, low-emitting materials, energy solar and storage systems, energy efficiency, and indoor ventilation in homes, emphasizing buildings that are home to Impacted Community members. (SC-A6.2, SC-A6.3)
- Track development of local micro-grid battery storage policies and systems in other jurisdictions and identify potential opportunities for Contra Costa County.
- Encourage companies and entrepreneurs from local universities and national labs to create jobs in such industries as renewable energy, transportation technology, diverse forms of manufacturing, biotech/biomedical, and clean tech.
- Partner with local schools, the community college district, community-based organizations, labor unions, Workforce Development Boards, and other appropriate groups to provide training for residents for family-sustaining jobs in sustainable industries. Prioritize training for people currently or recently working in polluting or extractive activities. (SC-P1.1)

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- Provide support for State and federal programs that support family-sustaining jobs in sustainable industries, efforts to support organized labor, and living wage labor standards.
- Adopt an ordinance at least as stringent as the State's maximum idling law, and coordinate with CARB and law enforcement to achieve compliance. (HS-A1.5)

CE-2: Invest in solutions to support climate equity.

With this strategy in place, County investments support climate equity. The County implements best practices in environmental, social, and governance considerations as the 2024 CAAP is implemented.

Strategy CE-2 Co-benefits:



Improved community equity



Increased economic opportunities

Strategy CE-2 Actions:

- Evaluate and adjust County planning and expenditures for infrastructure and services as needed to ensure equitable investment in Impacted Communities, consistent with SB 1000.
- Work with County departments to incorporate addressing climate change, providing climate solutions, and enhancing community equity more fully into County operations and the broad range of services the County provides.
- As part of the ~~2024 CAP~~2024 CAAP and General Plan implementation, consider whether the strategy being implemented provides equitable benefits for Impacted Communities as a criterion for prioritization.
- Continually engage communities most affected by climate change in developing and implementing climate solutions and ensure that such solutions provide benefits to Impacted Communities.
- Advocate for the Contra Costa Employees Retirement Association to include use of Environmental, Social, and Governance criteria in its investment policies.
- Require that the County's Deferred Compensation Plan provider make available Environmental, Social, and Governance investment options for employees participating in the County's 457 deferred compensation program. (In Progress)

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- Amend the County investment policy to consider the use of Environmental, Social, and Governance criteria and to continue and improve efforts to divest from fossil fuels. (Completed)
- Work with schools, the Contra Costa County Library, business groups, and community-based organizations to educate and inform community members about climate change and related sustainability topics, and the County's climate goals and the actions the County is taking to achieve them.
- Evaluate the issuance of Labeled Bonds, such as "Green", "Sustainable", or "Social" bonds, during the planning stage of a bond issuance by the County. It is the County's preference to issue Labeled Bonds if the evaluation demonstrates a financial or policy benefit to the County. (Completed)

The County submitted a signed Agreement with the U.S. Department of Housing and Urban Development in July 2023 for a $750,000 Community Project Funding grant to fund the development of a Just Transition Economic Revitalization Plan (JTERP). The JTERP is a plan for transitioning away from an economy that is dependent on fossil fuels to a zero-emission and clean and green economy and for improving the health, safety, infrastructure, and job opportunities of residents in communities most impacted by the environmental burdens of the climate crisis.

On June 13, 2023, the Board of Supervisors approved the County's Investment Policy for Fiscal Year 2023-2024. The policy includes a new provision regarding the prohibition of investment in securities issued by fossil fuel companies and the consideration of Environmental, Social, and Governance (ESG) criteria.

CE-3: Increase access to parks and open space.

All County residents have easy access to parks and open space under this strategy. The County has an easily accessible and integrated system of high-quality, safe, and well-maintained parks and trails for all residents of the unincorporated county, including Impacted Communities.

Strategy CE-3 Co-benefits:

- Enhanced recreation opportunities
- Greater community resilience
- Improved air quality
- Improved community equity
- Improved public health
- Increased economic opportunities
- Reduced disaster effects

Strategy CE-3 Actions:

- Establish a goal for all residents to live within a half-mile of a park or other green space.
- Support land acquisition for new parks and open space areas and protect such lands through fee title acquisition or through deed restrictions like conservation easements.
- Continue to construct and develop opportunities for new trails.
- Support investment in existing park facilities, in partnership with regional agencies.
- Increase the tree canopy on public property, especially in Impacted Communities and areas with a high heat index, by prioritizing funding for new street tree planting and maintenance. (HS-P2.2)



El Cerrito playground.
Photo credit: Amalia Cunningham.

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CE-4: Ensure residents have equitable, year-round access to affordable, local fresh food.

With this strategy in place, county residents will have increased access to local fresh food. The County facilitates the creation of more Certified Farmers' Markets, supports urban gardens, and ensures that healthy food is affordable and accessible to Impacted Communities and those in food desert areas.

Strategy CE-4 Co-benefits:



Improved community equity



Improved public health



Increased economic opportunities

Strategy CE-4 Actions:

- Support establishment of year-round Certified Farmers' Markets in all communities, prioritizing Impacted Communities.
- Work with community groups to establish and maintain urban gardens, particularly on vacant lots and park land in Impacted Communities. (SC-P4.1)
- Encourage major supermarkets to locate in Impacted Communities.
- Support co-operative grocery markets in Impacted Communities.



Little Sprouts Farm in Bay Point.

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CE-5: Ensure that large industrial facilities act as good neighbors.

This strategy helps to make sure that large industrial facilities are good neighbors. The County makes recommendations to responsible permitting agencies regarding permits for fossil-fuel based industries and/or point sources, tracks data on fossil fuel products produced and/or transported in and through Contra Costa County and allows for a Just Transition away from polluting and extractive industries.

Strategy CE-5 Co-benefits:



Improved air quality



Improved community equity



Improved public health



Increased economic opportunities

Strategy CE-5 Actions:

- ~~Provide recommendations to responsible permit agencies regarding permits for fossil fuel-based industries and point sources~~ Provide comments to responsible permit agencies on permit applications for large industrial facilities with significant emissions on potential measures to reduce impacts on and provide benefits to neighboring unincorporated communities.
- Regularly track data on fossil fuel production and transportation in Contra Costa County.
- Encourage the economic development of industries and supply chains that emphasize a reduction in GHG emissions.
- Encourage economic development and job creation in industries that advance the County's sustainability goals, using the County's policy on enhanced infrastructure financing districts.
- As economic conditions change, support efforts to phase out heavily polluting and extractive industries and replace them with businesses that contribute to a regenerative and circular economy.
- Require new or expanded commercial and industrial projects ~~exceeding~~ resulting in 25,000 square feet or more of gross habitable floor area to be near zero-emission operations, including the facilities themselves and the associated fleets, except for uses with fewer than five vehicles domiciled on-site. Require all necessary measures to achieve near~~-~~ –zero-~~-~~emissions. (HS-P1.8)

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Near-Zero Operations for Large Commercial or Industrial Facilities

According to General Plan Policy HS-P1.8, measures to achieve near-zero emissions for large commercial or industrial projects may include:

a) Reduce on-site energy consumption and increase on-site energy generation and energy storage.
b) Provide adequate on-site zero-emission vehicle-capable parking for all anticipated truck traffic to prevent idling and off-site queuing.
c) Provide electrified loading docks with receptables allowing plug-in of refrigerated trailers.
d) Use heavy-duty trucks that are model year 2014 or later and expedite a transition to zero-emission trucks by establishing a clear timeline for electrification of trucks as they become commercially available. Ensure contracts with motor carriers include air quality incentives or requirements, such as providing incentives to fleets that meet United States Environmental Protection Agency SmartWay standards or requiring use of zero-emission or near zero-emission trucks.
e) Use a "clean fleet" of delivery vehicles as they become commercially available, but no later than 2025.
f) Use zero-emission yard equipment, such as forklifts, pallet trucks and jacks, and stackers.
g) Implement practices to control and remove fugitive dust and other contaminants from paved areas.

Collectively, the strategies in this section will help community members and assets adapt to changing climate conditions and improve resilience to climate change–related hazards as well as confer many relevant co-benefits. Unlike the GHG emissions reduction strategies in **Chapter 4**, adaptation strategies do not have quantitative goals. However, these strategies can contribute to quantified benefits, including reductions in property damage, decreases in the number or severity of hazard events, and preservation of key community standards. These quantified benefits also support performance standards discussed in the General Plan elements.

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6. REALIZING THE 2024 CAAP



Photo credit: Envision Contra Costa photo gallery

Enacting the Climate Action and Adaptation Plan

To ensure the success of the 2024 CAAP, Contra Costa County will integrate the goals and strategies of this plan into other local and regional plans and prioritize and implement the programs and activities identified herein. As the County updates other planning documents, such as the Municipal and Zoning Codes, or Specific Plans, staff will ensure that these documents support and are consistent with the 2024 CAAP.

Implementing the 2024 CAAP will require County staff and leadership to enact these strategies and report progress. This ~~plan~~ CAAP identifies a work plan that includes responsible departments/divisions, time frames, and relative costs associated with each strategy. Staff will monitor progress using an implementation and monitoring tool on an annual basis and will provide an annual update to County decision-makers. The Contra Costa County Sustainability Group, part of the County's Department of Conservation and Development, is responsible for leading overall implementation of the CAAP, and working with other County departments and community partners to implement specific CAAP strategies and actions.

The following strategies and associated actions are designed to guide Contra Costa County in successfully implementing the 2024 CAAP.

LEADERSHIP STRATEGIES (L)

CONTRA COSTA COUNTY IS A MODEL FOR HOW LOCAL GOVERNMENT CAN TAKE ACTION ON CLIMATE ISSUES.



Advancing meaningful action on climate change requires sustained commitment and active involvement from Contra Costa County government officials, community members, local organizations, regional agencies, and more. The 2024 CAAP's leadership strategies are designed to facilitate the long-range and creative planning that will ensure that Contra Costa County is on the forefront of climate change mitigation and adaptation. These efforts include ensuring that climate action is a priority across County departments and that County staff are equipped to address climate change as part of their work; supporting the development of climate action funding mechanisms; and incorporating analysis of climate change and equity in budgeting decisions. While GHG emissions from County operations are a very small percentage of emissions countywide, it is important for the County to demonstrate in its day-to-day business its commitment to climate action. New programs being introduced by BayREN should provide additional resources for County operations to reduce GHG emissions.

L-1: Establish Contra Costa County as a leader among local governments for addressing climate issues.

Strategy L-1 Actions:

- Continue to publicize and support the operations of the County's Interdepartmental Climate Action Task Force and Green Government Group (G3) Champions.
- Work with all County departments to encourage adoption of best practices from the County's Green Business Program and other practices that support the County's climate goals.
- Encourage development of new policies and initiatives that support the County's climate goals.
- Explore the creation of funding mechanisms, including a carbon impact fee, to support the County's Sustainability Fund for investments in County facilities if additional financial resources are needed.

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- Support legislative efforts to establish a green bank able to equitably finance sustainability projects, including renewable energy, energy efficiency, and green infrastructure, for residential and commercial customers. (COS-A14.9~~10~~)
- Ensure that funding mechanisms to address climate change minimize or avoid disproportionate financial impacts to Impacted Communities and do not exacerbate economic inequities, to the extent feasible.
- Facilitate trainings for County staff on climate change (including the results of the Vulnerability Assessment and ~~2024 CAP~~2024 CAAP technical work) and how they can support climate action through their work with the County and at home.
- Encourage County employees to explore innovative technologies and programs that address climate change.
- Incorporate integrated pest management into new construction and retrofit programs on County properties.
- Ensure County departments follow the County's Environmentally Preferable Purchasing Policy and policy requirements are included in the contracting process.
- Regularly review and revise the County's purchasing and contracting programs as necessary to ensure consistency with the County's sustainability and GHG reduction goals. (HS-A3.2~~3~~)



County Green Government Group Champions at a planting day with Friends of Alhambra Creek. Photo credit: Jody London.

L-2: Continue to recognize the climate crisis as an emergency for Contra Costa County and make addressing climate change a top County priority.

Strategy L-2 Actions:

- Continue to implement the 2020 Climate Emergency Resolution approved by the Board of Supervisors, including conducting periodic reviews and updates to the Resolution.
- Consider climate vulnerabilities and associated equity effects as factors in the County's planning and expenditures for infrastructure and services to increase resilience and reduce GHG emissions countywide.
- Consider developing standards for the disclosure of climate and equity effects and vulnerabilities in staff reports for all decisions by the Board of Supervisors when such disclosures are helpful and necessary. Explore modifying County processes and forms to include questions to ensure the proposed action is consistent with the ~~2024 CAP~~2024 CAAP and equity goals.
- Assess County programs, policies, operations, and projects (excluding stationary sources) for their contribution to achieving the County's GHG emissions reduction goals and consistency with the ~~2024 CAP~~2024 CAAP.
- Disclose GHG emissions to a registry such as the Carbon Disclosure Project (CDP).



Climate change is a priority for Contra Costa County residents, who support continued County leadership on this topic.

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IMPLEMENTATION STRATEGIES (IS)

CONTRA COSTA COUNTY WILL ENSURE IT FOLLOWS THROUGH TO ACHIEVE THE GOALS AND ACTIONS IN THIS CLIMATE ACTION AND ADAPTATION PLAN.



Successfully reducing GHG emissions, addressing climate change vulnerabilities, and building community resilience require active, organized, and ongoing collaboration between County government, local businesses and community-based organizations, regional governments, and the public. Implementation strategies in this 2024 CAAP are intended to ensure the continued provision of resources for the implementation, revision, and monitoring of the 2024 CAAP as well as the continued cultivation of government and community partnerships.

IS-1: Monitor and report progress toward achieving Climate Action and Adaptation Plan goals on an annual basis.

Strategy IS-1 Actions:

- Assign responsibility for facilitating and supporting 2024 CAAP implementation to the County's Department of Conservation and Development.
- Identify key staff from each department responsible for supporting 2024 CAAP implementation and updates for annual reporting and monitoring.
- Continue to involve community-based organizations and other key stakeholders in reviewing and recommending 2024 CAAP action items.
- Continue to prepare an annual progress report on implementation of the recommended GHG emissions reduction strategies and progress toward the 2024 CAAP goals. When information is available, provide updates on estimated GHG emissions reductions and current GHG emissions levels.
- Monitor implementation of the Sustainability Fund for projects in County facilities.
- Use the 2024 CAAP implementation and monitoring tool to track GHG benefits from 2024 CAAP implementation and identify progress toward the 2024 CAAP reduction goals.
- Pursue refinements to the County permitting system and other systems as needed to support collection of 2024 CAAP implementation data.

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- Work with Contra Costa Health on exploring and, if appropriate, developing health indicators related to climate change to help inform progress on current actions and effectiveness of adaptation strategies.

IS-2: Continue collaborative partnerships with agencies and community groups that support Climate Action and Adaptation Plan implementation, with an emphasis on residents and community-based organizations from Impacted Communities.

Strategy IS-2 Actions:

- Participate in local and regional organizations that provide tools and support for energy efficiency, energy conservation, GHG emissions reductions, sustainable infrastructure development, adaptation, public information, and implementation of this 2024 CAAP.
- Enable effective partnerships to implement high-priority strategies from the 2024 CAAP by working through established interagency collaborations and joint exercise of powers authorities and forming new arrangements of various types where necessary to be effective.
- Provide input to partner agencies on policy barriers that need to be addressed at the State level.
- Continue collaboration with other local governments in Contra Costa County on climate action and related subjects, including an annual Sustainability Exchange meeting of all local government staff in Contra Costa County that focus on climate action and adaptation planning and implementation.

The Sustainability Exchange is a regular gathering for local government staff in Contra Costa County who work on sustainability issues to network and learn from one another. The Sustainability Exchange launched in January 2017. Every meeting includes time for networking and learning about the work of others in Contra Costa County, as well as a topical presentation and opportunity to reflect in small groups.

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Members of the Sustainability Exchange tour the Antioch Dunes National Wildlife Refuge. Photo credit: Contra Costa County staff

IS-3: Secure necessary funding to implement the Climate Action and Adaptation Plan.

Strategy IS-3 Actions:

- Identify funding sources and levels for reduction strategies as part of annual reporting.
- Include GHG emissions reduction strategies in the capital improvement programs for County-owned and managed facilities and infrastructure, and other plans as appropriate.
- Pursue local, regional, state, and federal grants to support implementation.

  Explore dedicated funding sources for 2024 CAAP implementation, including from the Sustainability Fund or other revenue sources as needed.
- Explore opportunities to allocate a portion of revenues from revenue-generating strategies in the 2024 CAAP to its implementation.

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CAAP Updates

Per HS-A3.1 in the County's General Plan, future updates to the 2023 CAAP must include:

a) Inventories of GHG emissions in the unincorporated county.
b) GHG reduction goals for 2030 and 2045 at a minimum.
c) Forecasts of GHG emissions for the unincorporated county consistent with the growth assumptions of the General Plan.
d) GHG reduction measures and strategies with quantifiable outcomes.
e) Climate adaptation and resilience strategies to ensure the county's communities can respond to changing climate conditions.
f) An implementation and monitoring program to track the County's progress toward achievement of the GHG reduction targets.
g) A community and stakeholder engagement program for CAP preparation and implementation.

IS-4: Continue to update the baseline emissions inventory and Climate Action and Adaptation Plan every five years.

Strategy IS-4 Actions:

- ~~Prepare a GHG emissions inventory that shows GHG emissions after emergency conditions created by the COVID-19 pandemic are expected to have ended~~ Update the community-wide GHG emissions inventory every five~~5~~ years at a minimum and more frequently as resources are available. Prepare an inventory for the 2024 calendar year within a year of adoption of the 2024 CAAP.
- Update the 2024 CAAP to incorporate new technologies, practices, and other options to further reduce emissions. (HS-A3.1)

IS-5: Maintain and update the Climate Action and Adaptation Plan to allow for greater resilience.

Strategy IS-5 Actions:

- Coordinate, where possible, updates of the Climate Action and Adaptation Plan, General Plan Safety Element, and Local Hazard Mitigation Plan cycles to ensure plan alignment and coordination of climate mitigation and adaptation efforts.
- Assess the implementation status and effectiveness of adaptation strategies.

Work Plan

Table 12 contains information to support staff and community implementation of the strategies and to effectively integrate them into budgets, the capital improvement program, and other programs and projects. These implementation details are:

CAAP Strategy and Implementation Actions: The strategy language and the specific actions needed for reductions and increased resilience.

Potential Strategies of Effectiveness: Metrics that County staff and others could use to track the success of the strategy.

Lead Department(s): The lead County department(s) tasked with implementing the strategy.

Potential Partners: Example local organizations that the County will partner with to implement the given strategy. Additional community partners will be welcome.

Although significant GHG emissions reduction policies and initiatives are already in place, the actions proposed in this plan, by necessity, far surpass the scale of existing efforts. Implementing the plan and ensuring that it results in real, additional GHG emissions reductions will require increased coordination across sectors and institutionalized climate protection efforts across communities. The number of actions recommended in this plan will take many years to implement, given limitations in both staff time and funding.

Time Frame: The year by which a strategy should be effective by fiscal year's end. The exact status of a strategy will vary based on its actions, and many strategies will be ongoing through and beyond 2030. An effective strategy will be one that is actively on track to achieve its GHG emissions reductions, support adaptation to climate change effects, or achieve long-term resilience. For a strategy to be effective, the necessary programs and efforts should be active, and any infrastructure or other capital improvements should be in place. The effective year is not the end year—many of the strategies are intended to remain in effect for the foreseeable future, so they do not have end dates. Time frames for effectively setting up the strategies are:

- Near Term (by 2026)
- Mid-term (by 2028)
- Long Term (by 2030)

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Applicability: The people, development, land uses, activities, and other aspects of communities that the strategy applies to.

Though near term priorities are identified, please note that priorities can and do shift based on funding availability, advances in technology, new and better ideas, etc. The 2024 CAAP and this implementation section should be considered a living document.

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TABLE 12. 2024 CAAP IMPLEMENTATION MATRIX

CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
Clean and Efficient Built Environment: Homes, workplaces, and businesses in unincorporated Contra Costa County run efficiently on clean energy.		
BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral. – ~~Consider~~ Continue adopting new or modified reach codes and consider future updates that exceed the California Building Standards Code, as the State updates the Building Code every three years, to require the use of low~~er~~-carbon intensive energy sources, to achieve higher ~~feasible~~ levels of energy ~~conservation and efficiency~~performance, and to achieve lower ~~feasible~~ levels of GHG emissions. (COS-A14.4) – ~~Maintain, update, and p~~Publicize~~, and enforce the~~ County ~~O~~ordinances and programs ~~Code Title 7 – Building Regulations amendment~~ requiring new residential buildings, hotels, offices, and retail to be more energy efficient, with low levels of greenhouse gas emissions.~~all-electric~~. Evaluate the feasibility of including other building types as appropriate. (COS-A14.5) ~~– Partner with community groups and MCE to establish an induction cooktop loaner program for county residents.~~ – Design and construct new County facilities to be zero-net energy to the extent feasible. (COS-P14.8) – Study the feasibility of establishing a low-carbon concrete requirement for all new construction and retrofit activities and consider additional strategies to reduce embedded carbon in construction materials. The intent is to determine what the County can and should do to support or exceed State requirements for net-zero emissions for cement use by 2045. (HS-A3.2)	**Key Performance Metric(s):** – Implement the reach code. (Conservation and Development) **Supportive Performance Metric(s):** – Participation in energy efficiency and weatherization programs by new residential and commercial buildings (including County facilities), with attention to participation in Impacted Communities. (Conservation and Development – community; Public Works – County facilities) – Energy efficient lighting and other appliances and mechanical systems in new County buildings. (Public Works) – Completed report exploring requirements for low-carbon concrete in new construction. (Conservation and Development)	**Potential Partners** – BayREN – Local contractors, developers, architects, and Contra Costa County Building Trades Council – MCE – PG&E – Building Industry Association – BAAQMD **Applicability** – County operations – New development – Residents in unincorporated areas. **Time Frame** Near term (by 2026)

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
– Provide educational materials to encourage project applicants to incorporate passive solar design features into new developments and significant ~~reconstructions~~alterations and additions. – Promote ~~additional~~ sustainable building strategies and designs, including small and "tiny" homes, to project applicants as site appropriate. Consider requiring ~~additional~~ sustainable features as a condition of approval, including reuse of materials to minimize embedded carbon. – Provide educational and technical resources to advance the adoption of heat pump water heater and heat pump space heating in buildings in support of BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6, which will mandate that replacement and new water heaters (2027 and 2031) and space heaters (2029) are zero NOx. (COS-P14.10)		
BE-2: Retrofit existing buildings and facilities in the unincorporated county, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-~~neutral~~ free fuels. – Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy. (COS-A14.6) – Create a detailed County roadmap to convert existing homes and businesses to use low-carbon or ~~zero-~~carbon-free appliances. The roadmap should include steps to support converting buildings to rely on low-carbon or ~~zero-~~carbon-free energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants. (COS-A14.7) ~~– Require replacement and new water heaters and space heating and cooling systems to be electric or have no nitrogen oxide emissions if the building electric panel has sufficient capacity in~~	**Key Performance Metric(s):** – Participation in energy efficiency and weatherization programs, including retrofits and site rehabilitation, by existing residential and commercial buildings (including County facilities), with attention to participation in Impacted Communities. (Conservation and Development) – Roadmap to convert existing buildings to all-electric (Conservation and Development) **Supportive Performance Metric(s):** – Energy efficient lighting and other appliances and mechanical systems. (Conservation and Development) – Expanded or created retrofit programs to complement weatherization programs that serve low-income county residents. (Conservation and Development)	**Potential Partners** – BayREN – Local contractors, architects, and Contra Costa County Buildings Trades Council – MCE – Neighborhood Preservation Program – Contra Costa County Asthma Initiative **Applicability** – County operations – Existing development – Residents in unincorporated areas. – Businesses in unincorporated areas.

CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
~~accordance with BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6. (COS-P14.10)~~ – Provide educational and technical resources to advance the adoption of heat pump water heater and heat pump space heating in new buildings. – Evaluate options for incentivizing and requiring additions and alterations to be energy efficient and to achieve the lowest feasible levels of GHG emissions, including upgrades to the building electric panel, as needed. (COS-P14.8) – Ensure County-led and supported retrofit programs incentivize and prioritize conversion of buildings built before 1980 and emphasize assistance to owners of properties that are home to very low-, low-, and moderate- income residents and/or located in Impacted Communities, as permitted by available funding. (COS-A14.9) – Explore opportunities, in collaboration with partner agencies, to create new incentives or publicize existing ones to support updating existing buildings to achieve the lowest feasible levels of GHG emissions. – Work to continue to obtain funding with partners such as BayREN and MCE to implement a program or programs to provide reduced-cost or free energy-efficiency and zero-carbon retrofits to local small businesses and households earning less than the area median income, in support of the Contra Costa County Asthma Initiative, Contra Costa County Weatherization Program, similar County programs, other nonprofit partners, and other health equity efforts for Impacted Communities. Support the use of low-emitting materials, including paints and carpeting, in retrofits to improve indoor air quality. – In partnership with MCE and BayREN, continue to support voluntary home and business energy efficiency retrofits, including all-electric measures.		**Time Frame** Near term (by 2026)

CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
– Partner with community groups and MCE to establish an induction cooktop ~~loaner~~ education program for county residents. (Initiated in 2024.) – Facilitate participation by homes and businesses in demand response programs. – Continue to conduct energy and water tracking activities, audits, and upgrades of County facilities, including conversion of feasible County facilities to all-electric space and water heating. – Advocate for modifications to the federal Weatherization Assistance Program that expand eligible measures to include whole building clean energy improvements, such as wall insulation, duct sealing, electric panel upgrades, electric heat pumps, and related measures. Advocate for an increase in the income eligibility limits for the Weatherization Assistance Program. – Implement requirements for cool roofs and light-colored, nonreflective permeable paving materials as part of retrofit, repair, and replacement activities, using recycled materials or other materials with low embedded carbon as feasible and as established by the Building Standards Code.		
BE-3: Increase the amount of electricity used and generated from renewable sources in the county. – Require new commercial parking lots with 50 or more spaces to mitigate heat gain through installation of shade trees, solar arrays, or other emerging cooling technologies. Prioritize the use of solar arrays where feasible and appropriate. (HS-P8.3) – Encourage property owners to pursue financial incentives for solar installations and energy storage technologies, such as battery storage systems, on new and existing buildings.	**Key Performance Metric(s):** – Number and percent of County and community accounts enrolled in MCE Deep Green (Conservation and Development) – Total megawatts of installed renewable energy capacity, by type, in the unincorporated county. (Conservation and Development) **Supportive Performance Metric(s):**	**Potential Partners** – BayREN – Fire protection districts in Contra Costa County – Local contractors, architects, and Contra Costa County Building Trades Council – MCE – PG&E – BAAQMD

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CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
– Work with MCE to increase enrollment, especially in the Deep Green tier. – Continue to enroll all eligible, non-solar-equipped County facility electricity accounts in MCE territory in the Deep Green tier. – Work with the Contra Costa County Fire Protection District and other organizations that provide fire protection services to provide education and promote incentives for battery storage systems that can increase the resilience of homes and businesses to power outages. – Encourage installation of battery storage systems in new and existing buildings, especially buildings with solar energy systems and buildings that provide essential community services. (COS-P14.7) – Provide information about battery storage systems with all applications for new home construction and solar panel installations. – Pursue implementation of recommendations of the 2018 Renewable Resource Potential Study. – Evaluate the least-conflict feasible locations for stand-alone battery storage systems and modify land use regulations to enable such use in these locations. – Explore the technical and economic feasibility of developing and operating microgrids in Contra Costa County, and for County facilities. – Explore opportunities to install community solar projects with battery backup to provide clean energy to Impacted Communities.	– Megawatts of rooftop and parking lot solar installed in unincorporated county, including County facilities and Impacted Communities. (Conservation and Development – community; Public Works – County facilities) – Megawatt-hours of installed battery storage capacity at public and private buildings. (Conservation and Development – community; Public Works – County facilities) – Percent of electricity supplied by PG&E and MCE from renewable sources. (Conservation and Development) – Number of new and existing buildings with energy storage systems, including County facilities. (Conservation and Development – community; Public Works – County facilities) – Progress in meeting recommendations from the 2018 Renewable Resource Potential Study. (Conservation and Development)	**Applicability** – County operations – Existing development – New development – Residents in unincorporated areas. – Businesses in unincorporated areas. **Time Frame** Mid-term (by 2028)

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
No Waste Contra Costa: Contra Costa County disposes no more solid waste than 2.2 pounds per person per day.		
NW-1: Increase composting of organic waste. – Ensure, through franchise agreements and other relationships with waste haulers, a source-separated organics collection service for all residential and commercial customers in County-controlled collection franchise areas. – Require that new and expanded landfill operations significantly reduce GHG emissions to meet or exceed State targets to the extent feasible, and work toward carbon-neutral landfills. (PFS-7.12) – Work with wastewater providers to explore the use of organic waste as feedstock for anaerobic digesters to produce biogas that can generate electricity or fuel. – Require local restaurants, grocery stores, and other edible food generators that handle large quantities of food to partner with food rescue organizations to divert edible food that would be otherwise disposed in landfills for distribution to those in need, in accordance with SB 1383. – Collaborate with edible food recovery programs and the Community Wellness & Prevention Program to decrease food waste and address hunger. – Procure compost or other products made from recovered organic waste in accordance with the County's Recovered Organic Waste Product and Recycled Paper Procurement Policy.	**Key Performance Metric(s):** – Percentage of County-controlled franchise areas with source separated organics collection for residential customers. (Conservation and Development) **Supportive Performance Metric(s):** – Number of commercial edible food generators in County-controlled franchise areas participating in edible food recovery program. (Conservation and Development) – Number of projects complying with the Model Water Efficient Landscaping Ordinance (MWELO) required to use compost. (Conservation and Development)	**Potential Partners** – Residents in unincorporated areas. – Businesses in unincorporated areas. **Applicability** – Environmental justice organizations – Food rescue organizations – Major generators of organic waste (schools, restaurants, event spaces, grocery stores, etc.) – Waste haulers – Wastewater service providers – Contra Costa Health, CWPP – County Jail meal service – Schools – Hospitals **Time Frame** Mid-term (by 2028)
NW-2: Reduce waste from County operations. – ~~Establish a~~ Continue source-separated organics collection service at all County-owned facilities that includes recovering food waste (scraps) and food-soiled paper.	**Key Performance Metric(s):** – Recycling, composting at County facilities. (Public Works)	**Potential Partners** – County operations **Applicability** – Waste haulers

CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
– Implement three-stream recycling (trash, recycling, and organic waste) at all County-owned facilities. – Establish requirements for source-separated organics collection and three-stream recycling as conditions in lease agreements for County offices. – Conduct waste audits of County facilities, including assessing the volume and composition of all waste streams, to identify challenges with waste activities and develop educational or operational changes to address issues and reduce waste generation. – Obtain material for capital projects from local and low-carbon sources to the greatest extent feasible, including allocating additional funds to allow for such materials, and integrate appropriate standards into the County's Environmentally Preferable Purchasing (EPP) policy. – Continue to reduce paper use in County operations. Procure recycled paper and janitorial supplies in accordance with the Recovered Organic Waste Product and Recycled Paper Procurement Policy. – Continue engagement with TRUE zero-waste certification for County projects. – Enact Bay-friendly landscaping practices at County facilities. Develop County policies and practices for Bay-friendly landscaping. – Explore opportunities to reuse wood from County tree maintenance activities as an alternative to chipping. – Encourage medical facilities and medical waste recycling companies to upgrade facilities to increase the amount of medical waste recycled or reprocessed. – Explore the feasibility of transitioning to reusable products in the health sector, where appropriate, and procuring products certified as green or low carbon.	– Volume of waste disposed at County facilities. (Conservation and Development) **Supportive Performance Metric(s):** – Recycled content of County purchases consistent with applicable requirements of SB 1383. (Public Works) – Enforcement of requirements for County vendors and contractors to adopt and implement the Environmentally Preferable Purchasing Policy. (Public Works) – Number of County facilities with Bay-friendly landscaping practices. (Public Works) – Tonnage of recycled and composted materials, by type, collected at County facilities. (Public Works) – Number of County facilities with three-stream recycling. (Public Works)	**Time Frame** Mid-term (by 2028)

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
NW-3: Increase community-wide recycling and waste minimization programs. – Create a source-reduction program in partnership with regional agencies to promote rethinking, refusing, reducing, reusing, and regenerating of materials. – Improve educational efforts to promote better waste sorting among community members. – Work with waste haulers to expand the types of materials accepted by recycling programs as economic conditions allow. – Work with waste haulers to continue availability of curbside pickup recycling services. – Evaluate the feasibility of banning single-use plastics or establishing additional restrictions beyond those created by SB 54. – Encourage the use of reusable items over disposable materials. – Promote the Contra Costa County Recycling Market Development Zone low-interest loan program to create incentivesize for the development of businesses that use recycled materials.	**Key Performance Metric(s):** – Actual disposed pounds per person per day (PPD) numbers year over year. (Conservation and Development) – Number of households and businesses subscribing to recycling and organics service. (Conservation and Development) **Supportive Performance Metric(s):** – Number of businesses participating in Recycling Market Development Zone program (Conservation and Development)	**Potential Partners** – New development – Residents in unincorporated areas. – Businesses in unincorporated areas. **Applicability** – Major waste generators – Waste haulers – Recycling centers **Time Frame** Mid-term (by 2028)
NW-4: Reduce emissions from landfill gas. – Encourage efforts at Acme, Keller Canyon, and West Contra Costa landfills to install or enhance existing methane capture technology and associated monitoring systems with a goal of increasing the methane capture rate to the greatest extent feasible. – Explore opportunities for partnering with agricultural and industrial operations to generate energy from methane gas generated by their ongoing activities. – Support landfill operators in efforts to transition away from landfill gas flaring. (COS-P14.5)	**Key Performance Metric(s):** – Methane capture rate **Supportive Performance Metric(s):** – Tons of flared landfill gas	**Potential Partners** – Landfill operators **Applicability** – Landfill operators **Time Frame** Mid-term (by 2028)

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
Reduce Water Use and Increase Drought Resilience: Contra Costa County uses less water and communities are prepared for drought.		
DR-1: Reduce indoor and outdoor water use. – Require new development to reduce potable water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water, where available. (COS-P7.6~~1~~) – Require homes and businesses to install water-efficient fixtures at time of retrofit activities, in accordance with the California Building Standards Code. – Continue to enforce the Model Water Efficient Landscaping Ordinance and encourage the use of native and drought-tolerant landscaping for exempt residential and commercial landscapes through partnership with local and regional water agencies and other organizations. – Partner with water and wastewater service providers, Groundwater Sustainability Agencies, irrigation districts, and private well owners to increase participation in water conservation programs countywide. (COS-P7.1~~2~~) – Facilitate offering of BayREN water bill savings programs through eligible community water providers. – Encourage the installation of graywater and rainwater catchment systems, particularly for new construction, as feasible for wastewater infrastructure. Reduce regulatory barriers for these systems and explore creating incentives for installing these systems in new and existing buildings. – ~~Identify~~ Evaluate opportunities for graywater use in public spaces and implement them as feasible. – Promote the installation of composting toilets at appropriate County facilities in locations without wastewater service.	**Key Performance Metric(s):** – Water use, specifically reduction in overall water use in the unincorporated county as reported by water companies. (Conservation and Development) – Water use, specifically reduction in water use at County facilities. (Public Works) **Supportive Performance Metric(s):** – Square footage of native and drought-tolerant landscaping projects at County facilities. (Public Works) – Number of participants in Contra Costa Water District Lawn to Garden program. (Conservation and Development) – Number of participants in East Bay Municipal Utility District Lawn Conversion program. (Conservation and Development) – Number of water districts participating in BayREN water savings program. (Conservation and Development) – Number of customers participating in water conservation programs sponsored by water companies. (Conservation and Development)	**Potential Partners** – Water providers – Green Business Program **Applicability** – Central Contra Costa Sanitary District – Contra Costa Water District – East Bay Municipal Utility District – West County Wastewater District – Other water and wastewater service providers – Contra Costa Health – UC Master Gardeners – Nurseries – Property managers **Time Frame** Near term (by 2026)

CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
DR-2: Ensure sustainable and diverse water supplies. – Encourage Contra Costa Health to work with Groundwater Sustainability Agencies to ensure that new well permit applications are in accordance with County ordinances and State construction standards and require a hydrogeological evaluation in areas with known water shortages to ensure that the sustainable yield goals can be met. – Require new development to demonstrate the availability of a safe, sanitary, and environmentally sound water delivery and wastewater treatment systems with adequate capacity. (PFS-P4.5, PFS-P4.6) – Discourage new development that may reasonably lead to groundwater overdraft, subsidence, or other negative impacts, or which may reasonably depend on the import of unsustainable quantities of water from outside the county. – Require the use of permeable surfaces for new or reconstructed hardscaped areas where feasible. – In coordination with Groundwater Sustainability Agencies, expand opportunities for groundwater recharge. – Work with water suppliers to expand recycled water systems as feasible, including considering additional treatment to allow for additional recycled water uses.	**Key Performance Metric(s):** – Amount of recycled water used. (Conservation and Development) **Supportive Performance Metric(s):** – Groundwater sustainability indicators: chronic lowering of groundwater levels; reduction in storage; seawater intrusion; degraded quality; land subsidence; surface water depletion. (Conservation and Development)	**Potential Partners** – Existing development – New development – Residents in unincorporated areas. – Businesses in unincorporated areas. **Applicability** – Contra Costa Health – Central Contra Costa Sanitary District – Contra Costa Water District – East Bay Municipal Utility District – Groundwater Sustainability Agencies (GSAs): – City of Antioch GSA – City of Brentwood GSA – Byron-Bethany Irrigation District GSA – Contra Costa County GSA – Diablo Water District GSA – Discovery Bay GSA – East Contra Costa Irrigation District GSA – EBMUD GSA – Zone 7 GSA – West County Wastewater District – Other water and wastewater service providers

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
		Time Frame Mid-term (by 2028)
Clean Transportation Network: Contra Costa County's transportation network provides safe and accessible options for walking, biking, and transit. If residents and workers are driving, they are in zero-emission vehicles.		
TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit for travel within, to, and from the county. – Prioritize expansion of bicycle, micromobility, and pedestrian infrastructure (e.g., Class IV separated bikeways) to address the significant latent demand for these active transportation modes. (TR-P1.2) – Develop and promote mobility alternatives to single-occupancy vehicles, including but not limited to public transit, micromobility, carbon-free rideshare strategies, and nonmotorized modes. (TR-A1.1) – Implement programs to encourage transit use, bicycling, walking, telecommuting, and use of alternative vehicle fuels by County employees. (TR-A1.4) – Reduce single-occupant vehicle usage and VMT, by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, and other best practices), and support for public transit. (TR-P1.4) – Plan, design, construct, and maintain facilities for walking, bicycling, and rolling to serve people of all ages, abilities, and income levels, including children, seniors, families, and people with limited mobility. (TR-P5.1) – Partner with CCTA and neighboring jurisdictions to build out the countywide bicycle and pedestrian network, prioritizing completion of the Low-Stress Countywide Bicycle Network and pedestrian safety improvement projects in the County's Pedestrian Priority	**Key Performance Metric(s):** – Percentage complete and under construction of unincorporated bicycle network. (Public Works) – Linear feet of pedestrian facilities constructed. (Public Works) – Number of bicycle and pedestrian network gaps closed. (Public Works) – Measure progress on the County Road Improvement and Preservation Program (CRIPP); Complete Streets; Vision Zero; Active Transportation; and equity-focused plans, programs, and policies. (Public Works) – Number of new units (residential and commercial) located in transit priority areas. (Conservation and Development) – Number of new units of affordable housing, particularly in areas with high-quality transit. (Conservation and Development) – Transit ridership in County service areas. (Conservation and Development) – Number of employers operating transportation demand programs. (Conservation and Development) **Supportive Performance Metric(s):** For County Operations: – Number of employees participating in the County remote work policy. (Human Resources) – Number and percentage of County employees using the pre-tax commute benefit. (Human Resources)	**Potential Partners** – 511 Contra Costa – BAAQMD – CCTA – Environmental justice groups – MTC/ABAG – Transit providers – Local communities – California State Association of Counties – Advocacy organizations – East Bay Leadership Council – Safe Routes to School programs **Applicability** – County operations – Existing development – New development – Residents in unincorporated areas. – Businesses in unincorporated areas. **Time Frame** Long term (by 2030)

CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
Areas, as described in the Countywide Bicycle and Pedestrian Plan. (TR-A5.1) – Construct innovative bicycle and pedestrian facilities, including Class IV separated and protected bikeways, bicycle superhighways, and other low-stress facility types, as described in the Countywide Bicycle and Pedestrian Plan and in contemporary, best-practice transportation planning and engineering guidance. Use contextually appropriate green infrastructure and landscaping to separate vehicular lanes from bicycle and pedestrian facilities whenever feasible. (TR-A5.2) – Require transportation infrastructure serving new development to be designed using best practices, contemplating existing and planned land uses, roadways, bicycle and pedestrian facilities, transit facilities, and connections to adjoining areas. (TR-P4.2) – Create connections between unincorporated communities and neighborhoods in unincorporated areas and adjacent jurisdictions to improve multimodal access to local destinations, such as schools, parks, shopping, health services, and workplaces. (TR-P4.3) – Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report and Action Plan; Active Transportation Plan; and equity-focused plans, programs, and policies. – Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities. – ~~Work with CCTA to fill gaps in the countywide Low-Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bicycle facilities.~~ Coordinate with Caltrans, CCTA, the Regional Transportation Planning Committees, and neighboring jurisdictions to plan, design,	– Administrative Bulletin supporting videoconference and conference calls, where appropriate. (County Administrator) – Updated CRIPP Project list. (Public Works) – Grant awards for transportation projects that support ~~2024 CAP~~2024 CAAP goals (number and amount). (Public Works, Conservation and Development)	

CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
and implement Complete Street concepts on Routes of Regional Significance. – In collaboration with key partners, support efforts to establish or join a shared mobility program that provides access to conventional bicycle, e-bikes, and other micromobility modes, prioritizing access for low-income residents who do not have bicycles. Support efforts to establish and/or maintain bike repair programs. – Support efforts to expand the service area and frequency of regional transit agencies, and reduced fares for students, seniors, and low-income residents on systems, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT. Encourage programs that support "last mile" transportation connection and options. – Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance. – Market the county's Northern Waterfront to attract innovative companies with jobs for residents. – Maintain in place and enforce a Transportation Demand Management (TDM) Ordinance that reflects best practices, and, at a minimum, conforms to Contra Costa Transportation Authority's adopted model TDM ordinance or resolution. (GM-P3.5) – Improve county-wide safety for bicyclists by advocating for the passage of Vulnerable Road User Laws. – Secure additional funding for the maintenance and expansion of bicycle and pedestrian infrastructure improvements. Support efforts to obtain additional funding to maintain and expand public transit operations and infrastructure improvements. – Support CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions. – Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.		

CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
– Encourage and support increased regional integration of transit systems to promote more equitable fare structures, fare integration, easier transfers, including coordinated transfers between different transit systems and reduced wait times, improved information sharing, and generally a more seamless and modern system. – Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility. (TR-P1.3)		
TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030. – Require new County vehicles to be zero emission to the extent a viable vehicle is available on the market, that charging or zero-emission fueling equipment is conveniently located where the vehicle will be stored, and as required by the Advanced Clean Fleet regulations, with the goal that all County vehicles will be zero-emission by 2035. – Continue adopting new or modified reach codes and consider future updates that exceed the California Building Code as the State updates the Building Code, including the Green Building Code, to require zero-emission charging infrastructure in new multifamily and nonresidential buildings. Explore expanding it to include new single-family homes (Supported by TR-P1.12 and TR-A1.12). – Install electric vehicle charging equipment and other infrastructure needed to support the transition to a zero-emission County fleet at		**Potential Partners** – BAAQMD – Contra Costa Transportation Authority – Environmental justice groups – MCE – Multifamily and rental property owners – TNC and taxi providers – BART – Caltrans – East Bay Leadership Council **Applicability** – County operations – Existing development – New development – Residents in unincorporated areas. – Businesses in unincorporated areas.

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CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
County facilities. Consider the appropriate locations, number, and capacity of infrastructure to facilitate the transition of the County fleet to zero-emission vehicles. – Provide incentives for zero-emission vehicles in partnership with MCE, BAAQMD, and other agencies. – Work with property owners and other potential partners to pursue installation of zero-emission vehicle charging stations in and near multifamily dwelling units. – Update off-street parking ordinance to include a requirement for zero-emission vehicle charging infrastructure. Consider including incentives for developers to exceed minimum requirements (i.e., density bonus). – Increase installation of electric vehicle charging stations for all vehicle types, including bicycles and scooters, at public facilities, emphasizing increased installation in Impacted Communities. – In partnership with regional agencies, explore providing subsidies for households making less than the area median income to purchase or lease zero-emission vehicles and associated infrastructure. – Pursue fees and regulatory efforts to convert transportation network company (TNC), taxi, and similar car-hire services to zero-emission vehicles. – Explore opportunities for implementing electric vehicle sharing programs. – Work with BAAQMD and other regional agencies to convert off-road equipment to zero-emission clean fuels. – Work with contractors, fleet operations, logistics companies, and other operators of heavy-duty vehicles to accelerate the transition to zero-emission heavy-duty vehicles. – In cases where battery electric, hybrid, electric, and sustainable sourced hydrogen fuel cells are not available, ~~W~~work with Public Works to pursue the use of renewable natural gas (sourced from recovered organic waste) for transportation fuel, electricity, or	**Key Performance Metric(s):** – Number of zero-emission vehicles registered in unincorporated county. (Conservation and Development) – Percentage of County fleet that is zero-emission. (Public Works) – Implementation of an EV sharing program (Conservation and Development) – Number of electric vehicle charging ports installed at County facilities for County fleet and public use. (Public Works) – Number of EV ready parking spaces and EV charging stations installed with new development. (Conservation and Development) **Supportive Performance Metric(s):** – Number of zero-emission vehicles purchased annually for County fleet. (Public Works) – ~~Number of EV chargers installed at County facilities, both for County fleet and public use. (Public Works)~~ – Number of publicly accessible EV chargers installed throughout the unincorporated county. (Conservation and Development)	**Time Frame** Ongoing

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
heating applications i~~n cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available~~. – Encourage efforts to maximize EV charging during solar peak hours. – Continue to host events such as the Electric Vehicle and E-Bike Show to educate and empower County staff and community members about zero-emission vehicles. – Coordinate with CCTA and other local and regional agencies to ~~S~~support implementation of the Contra Costa County Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements. (TR-A1.11).		
Resilient Communities and Natural Infrastructure: Contra Costa County will increase resilience to climate hazards and foster community health.		
NI-1: Protect against and adapt to changes in sea levels and other shoreline flooding conditions. – Require new development to locate habitable areas of buildings above the highest water level expected accounting for sea level rise and other changes in flood conditions, or construct natural and nature-based features, or a levee, if necessary, adequately designed to protect the project for its expected life. (HS-P6.1) – Support the use of natural infrastructure, including ecosystem restoration and green infrastructure, to protect against sea level rise and associated shoreline flooding. – Coordinate with State and regional agencies, neighboring jurisdictions, property owners, utilities, and others to prepare a sea level rise adaptation plan. – Seek funding and pursue implementation of wetland restoration and other adaptation efforts for sea level rise.	**Key Performance Metric(s):** – Establish a shoreline flooding working group. (Conservation and Development) **Supportive Performance Metric(s):** – Develop effective tracking metrics. (Conservation and Development)	**Potential Partners** – Existing development – New development **Applicability** – San Francisco Bay Conservation and Development Commission – Delta Stewardship Council – Shoreline communities – Irrigation districts – Community-based organizations – Land Trusts **Time Frame** Long term (by 2030)

CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
– Convene a working group that includes local jurisdictions, local shoreline communities, community-based organizations, property owners, businesses, and other stakeholders to collaborate on shoreline flooding adaptation strategies. – Identify opportunities for employing natural areas as buffers against rising sea levels.		
NI-2: Protect against and adapt to increases in the frequency and intensity of wildfire events. – Deny applications for subdivisions creating additional residential lots in Very High Fire Hazard Severity Zones. Discourage such subdivisions in High Fire Hazard Severity Zones unless adequate fire protection services are provided~~Prohibit new residential subdivisions in Very High Fire Hazard Severity Zones and discourage residential subdivisions in High Fire Hazard Severity Zones~~. (HS-P7.1) – Require any construction of buildings or infrastructure within a High or Very High Fire Hazard Severity Zone in the Local or State Responsibility Areas, or in areas that may be designated as the Wildland-Urban Interface, to incorporate fire-safe design features that meet the applicable State Fire Safe Regulations and Hazard Reduction Around Buildings and Structures Regulations for road ingress and egress, fire equipment access, and adequate water supply. (HS-P7.2) – Require subdivisions in the High Fire Hazard Severity Zones in the Local or State Responsibility Areas, or projects requiring a land use permit in the High or Very High Fire Hazard Severity Zones in the Local or State Responsibility Areas, to complete a site-specific fire protection plan. ~~Collaborate~~ Work with the appropriate fire protection district to review and revise the fire protection plans. (HS-P7.~~3~~4)	**Key Performance Measure(s):** – Amount of funds distributed for wildfire mitigation efforts. (Contra Costa Fire Protection District and other fire protection entities) – Miles of power lines undergrounded. (Conservation and Development)	**Potential Partners** – Residents in unincorporated areas. – Businesses in unincorporated areas. – County operations – Existing development – New development – Sheriff's Office of Emergency Services **Applicability** – Community-based organizations – Contra Costa County Fire Protection District – Facility operators (school districts, libraries, community centers, etc.) – Kensington Fire Protection District – Rodeo-Hercules Fire Protection District – Moraga-Orinda Fire District – San Ramon Valley Fire Protection District – Medical service providers

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
– Work with property owners in ~~mapped~~ High or Very High Fire Hazard Severity Zones or in areas that may be designated as the Wildland-Urban Interface, to establish and maintain fire breaks and defensible space, vegetation clearance, and firefighting infrastructure that meets adopted State, County, or community fire safety standards. (HS-P7.~~4~~5) – ~~Support undergrounding of utility lines,~~ Coordinate with energy service providers to underground power lines, especially in the WUI and High and Very High Fire Hazard Severity Zones. (HS-P7.10~~8~~) – Review indoor air filtration standards and consider whether filtration requirements can and should be strengthened for projects permitted by the County. – Work with community organizations to help Impacted Communities have access to financing and other resources to reduce the fire risk on their property, prepare for wildfire events, and allow for a safe and speedy recovery.		– 211 – Red Cross **Time Frame** Long term (by 2030)
NI-3: Establish and maintain community resilience hubs. – Pursue funding to develop a resilience hub master plan that identifies existing community facilities that can serve as resilience hubs and support affected populations during hazard events. This process should start with an assessment of community needs. Such facilities should be distributed equitably throughout the county, with an emphasis on easy access for Impacted Communities. Where appropriate facilities do not exist, develop plans to create new resilience hubs. (Supported by HS-P8.1) – Pursue funding to implement the resilience hub master plan, including retrofitting selected facilities to function as resilience hubs. These retrofits should involve adding solar panels, battery backup systems, water resources, air filtration, supplies to meet	**Key Performance Measure(s):** – Adopted plan for community resilience hubs. (Conservation and Development) – Number of community resilience hubs. (Conservation and Development) – Number of permits issued for battery storage projects. (Conservation and Development)	**Potential Partners** – Community-based organizations – Contra Costa County Fire Protection District – Contra Costa County Sheriff's Office of Emergency Services – Employment and Human Services – Environmental justice organizations – Facility operators (school districts, libraries, community centers, childcare facilities, etc.)

CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
basic community and emergency medical needs, and other needs as identified by the resilience hub master plan. – Create a virtual resilience hub that connects County resources to communities through virtual community networks to provide detailed, up-to-date information about preparing for natural disasters, public safety notifications and alerts, space for virtual gathering and information-sharing, and other appropriate uses. Materials shall be accessible in multiple languages. – Coordinate resilience hub activities with planning efforts around public safety power shutoffs and wildfire smoke resiliency.		– Jurisdictional fire departments – Homeless service providers – Medical service providers – 211 – Contra Costa County Office of Education – Local school districts – Red Cross **Applicability** – County operations – Residents in unincorporated areas. **Time Frame** Mid-term (by 2028)
NI-4: Sequester carbon on natural and working lands in Contra Costa County. – Pursue implementation of recommendations from carbon sequestration feasibility study, *Healthy Lands, Healthy People.* – Continue to support and work with key partners to maintain existing and establish new pilot programs for carbon sequestration on agricultural land. – Promote ~~restorative~~regenerative agricultural and landscaping techniques that incorporate cover crops, mulching, compost application, field borders, alley cropping, conservation crop rotation, prescribed grazing, and reduced tillage to promote healthy soil and soil conservation. (Supported by COS-P2.11) – Support soil conservation and restoration programs. Encourage agricultural landowners to work with agencies such as the USDA's	**Key Performance Metric(s):** – Completed feasibility study for carbon sequestration in Contra Costa County. (Conservation and Development) Completed 2023 **Supportive Performance Metric(s):** – Number of completed pilot carbon farming project(s). – Progress report on implementation of County's Green Infrastructure Plan for County facilities. (Public Works) – Quantity of SB 1383-compliant compost procured and utilized by the County directly or on the County's behalf. (Public Works, Conservation and Development)	**Potential Partners** – Contra Costa County Integrated Pest Management Advisory Committee – Agricultural groups – Community gardening groups – Community-based organizations – Contra Costa Resource Conservation District – East Bay Regional Park District – Save Mount Diablo, John Muir Land Trust, and other

CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
NRCS and Contra Costa RCD to reduce erosion and soil loss. (COS-P2.10) – Coordinate with farming groups, ranchers, the Contra Costa Resource Conservation District, and the University of California Cooperative Extension to identify and promote varieties of feedstock, livestock, and crops that are resilient to rising temperatures and changing precipitation patterns and that increase carbon sequestration. – Explore ways to increase carbon sequestration on County-owned ~~facilities~~properties. – Partner with regional landowners and agencies to establish carbon sequestration programs and incentives. – Consider the development of carbon offset protocols and guidance ~~for future use by~~to provide technical support to ~~carbon sequestration program~~ applicants and County permitting staff to promote appropriate natural sequestration on natural and developed lands. – Ensure that any local or regional carbon sequestration program that the County establishes, promotes, supports, or joins must provide benefits to unincorporated communities that face environmental justice issues. – Explore the potential for the public to support tree planting and maintenance of existing trees. (Supported by COS-P6.2) – Establish a mechanism to support expanded tree planting and maintenance activities, particularly in areas with few trees. – Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat. (COS-P5.1) – Inventory wetlands, floodplains, marshlands, natural watercourses, riparian corridors, and adjacent lands that could potentially support climate adaptation (e.g., through flood management,	– Progress in meeting recommendations from the 2023 Healthy Lands, Healthy People carbon sequestration feasibility study. (Conservation and Development)	land conservation organizations. – Environmental justice organizations – Organizations that support regenerative landscaping and agriculture. – Regional landowners – UC Cooperative Extension – Contra Costa Health **Applicability** – County operations – East Contra Costa County Habitat Conservancy – Natural and working lands – Residents in unincorporated areas. – Businesses in unincorporated areas. **Time Frame** Long term (by 2030)

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CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration). (COS-A5.1) – Encourage and support conservation of natural lands outside the urban limit line in the unincorporated county. – Explore the new funding and financing opportunities for climate adaptation and resilience projects, including the creation of a Climate Resilience District, issuance of green bonds as a potential financing mechanism, and similar opportunities. – Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to ~~local~~ residents in unincorporated communities. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible or from sources that would improve air quality in an Impacted Community. If the project site is within or adjacent to an Impacted Community, require offsets or mitigation within that community unless determined infeasible by the County (HS-P1.6).		
NI-5: Minimize heat island effects through the use of cool roofs, ~~and~~ green infrastructure, tree canopy, cool paint and pavement, and other emerging strategies. – Require landscaping for new development to ~~be drought-tolerant,~~ filter and retain runoff and support flood management and groundwater recharge. (COS-P7.7) – Promote installation of drought-tolerant green infrastructure, including street trees, in landscaped public areas. (COS-P7.8) – Increase tree planting in urbanized areas, and open spaces where ecologically appropriate, emphasizing areas with limited existing tree cover, using low-maintenance native tree species that are low	**Key Performance Metric(s):** – Number of permits for cool roofs, both private and County facilities. (Conservation and Development) – Adoption of ~~a~~an Urban Forest Management Plan, or Tree ~~Master~~ Plan. (Conservation ahd Development, Public Works) – Percent of heat-vulnerable communities with tree cover / number of new tree plantings. (Public Works) – Square feet of pervious pavers installed. (Public Works) **Supportive Performance Metric(s):** – Number of ER visits, deaths, and associated clinical care related to extreme heat events. (Health)	**Potential Partners** – Community-based organizations – Community gardening groups – Environmental justice organizations – Organizations that support regenerative landscaping and agriculture. – Water and wastewater service providers – Contra Costa Health and related partners

CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
fire risk and ensuring water supply resources are not compromised. (Supported by COS-P6.2) – Consider preparing and implementing an Urban Forest Management Plan, or Tree ~~Master~~ Plan for the unincorporated county. – Provide shade trees or shade structures at parks, plazas, and other outdoor spaces. – ~~Update~~ When updating the County ~~tree~~ ordinances that relate to trees and green infrastructure, ~~to~~ consider whether ~~factors for approval of~~ tree removal, planting, and/or replanting requirements ~~are~~ adequately ~~considering~~promote expansion of the tree canopy and green infrastructure in Impacted Communities ~~(e.g., tree cover, replanting standard)~~. (Supported by TR-A2.2, HS-P2.2, and HS-A2.5) – Support efforts to develop incentive programs for home and business owners, school districts, and other local and regional property owners to increase the adoption of cool roofs, ~~and~~ green infrastructure, and other cooling strategies on private property.	– Equity measure rankings on the Healthy Places Index. (Health) – Acres treated by green stormwater infrastructure. (Public Works)	– East Bay Regional Park District **Applicability** – County operations – Existing development – New development – Residents in unincorporated areas. – Businesses in unincorporated areas. **Time Frame** Midterm (by 2028)

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
NI-6: Protect communities against additional hazards created or exacerbated by climate change. – Discourage new below-market-rate housing in High and Very High Wildfire Hazard Severity zones, the Wildland-Urban Interface, and Alquist-Priolo Fault Zones. If below-market-rate housing must be constructed within these zones, require it to be hardened or make use of nature-based solutions to remain habitable to the greatest extent possible. (HS-P3.42) – Treat susceptibility to hazards and threats to human health and life as primary considerations when reviewing all development proposals and changes to land uses. – Partner with community-based organizations to provide information to community members about how to prepare for projected climate change hazards. – Promote, and develop as necessary, available funding sources to create incentives for residents and businesses to prepare for natural disasters, particularly members of Impacted Communities. – Consider projected impacts of climate change when siting, designing, and identifying the construction and maintenance costs of capital projects. – Actively promote and expand participation in local and regional community emergency preparedness and response programs. – Support and fund efforts to enhance ongoing community and cross-sector engagement in community-level resilience and cohesion. Support non-government organizations to actively engage in developing a network of community-level actions that enhance resiliency. – Work with energy service providers to promote programs encouraging reduced energy use during extreme heat events. (HS-P8.2)	**Key Performance Metric(s):** – Health outcomes of residents in Impacted Communities relative to the prior performance review. (Health) – Number of substandard homes that pose a health risk to residents in Impacted Communities relative to the prior performance review. (Conservation and Development) – Amount of support provided to businesses in Impacted Communities through the County's small business assistance programs relative to the prior performance review. (Conservation and Development) – The rate of poverty in Impacted Communities relative to the prior performance review. (Conservation and Development) – Development and use of climate change vulnerability and resilience screening criteria for County capital investment projects. (Conservation and Development) **Supportive Performance Metric(s):** – Number of County-led or -supported outreach and engagement activities in support of emergency preparedness and hazard mitigation.	**Potential Partners** – Community-based organizations – Contra Costa County Fire Protection District – Facility operators (school districts, libraries, community centers, etc.) – Kensington Fire Protection District – Rodeo-Hercules Fire Protection District – Moraga-Orinda Fire District – San Ramon Valley Fire Protection District – Medical service providers – Contra Costa Health and related partners – 211 – Red Cross – Sheriff's Office of Emergency Services **Applicability** – County operations – Existing development – New development – Residents in unincorporated areas. – Businesses in unincorporated areas.

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
– Support efforts by East Bay Regional Park District and other local recreation agencies to provide outdoor recreation facilities with adequate shading and refillable water stations where appropriate. (HS-P8.4)		**Time Frame** Near term (by 2026)
Climate Equity: Contra Costa County will address environmental factors leading to health disparities, promote safe and livable communities, and promote investments that improve neighborhood accessibility.		
CE-1: Provide access to affordable, clean, safe, and healthy housing and jobs. – In partnership with community-based organizations, reverse community deterioration and blight and improve personal and property safety in neighborhoods throughout Contra Costa County. – Ensure that new housing for households making less than the area median income and housing for other Impacted Communities are outside of hazard-prone areas, including for wildfires, landslides, floods, and sea level rise, or that they are hardened or make use of nature-based solutions to remain habitable to the greatest extent possible. (HS-P4.3) – In partnership with community-based organizations, secure funding to establish a program to provide low-cost or free air conditioning and filtration, improved insulation, low-emitting materials, energy solar and storage systems, energy efficiency, and indoor ventilation in homes, emphasizing buildings that are home to Impacted Community members. (SC-A6.2, SC-A6.3) – Track development of local micro-grid battery storage policies and systems in other jurisdictions and identify potential opportunities for Contra Costa County. – Encourage companies and entrepreneurs from local universities and national labs to create jobs in such industries as renewable	**Key Performance Metric(s):** – Funds spent by County departments on energy efficiency and other services that support the Climate Action and Adaptation Plan goals in Impacted Communities compared to non-Impacted Communities. (Conservation and Development, Public Works) **Supportive Performance Metric(s):** – Measures of health and social impacts of climate change that can reveal significant disparities and inequities across groups. (Health)	**Potential Partners** – Community-based organizations – Environmental justice groups – Local grocery stores and food banks – Housing developers and contractors – Community colleges, schools, labor unions, and local career skills training programs – Workforce development programs – Workforce Development Boards **Applicability** – County operations – Existing development – New development – Residents in unincorporated areas. – Businesses in unincorporated areas.

CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
energy, transportation technology, diverse forms of manufacturing, biotech/biomedical, and clean tech. – Partner with local schools, the community college district, community-based organizations, labor unions, Workforce Development Boards, and other appropriate groups to provide training for residents for family-sustaining jobs in sustainable industries. Prioritize training for people currently or recently working in polluting or extractive activities. (SC-P1.1) – Provide support for State and federal programs that support family-sustaining jobs in sustainable industries, efforts to support organized labor, and living wage labor standards. – Adopt an ordinance at least as stringent as the State's maximum idling laws, and coordinate with CARB and law enforcement to achieve compliance. (HS-A1.5)		**Time Frame** Mid-term (by 2028)
CE-2: Invest in solutions to support climate equity. – Evaluate and adjust County planning and expenditures for infrastructure and services as needed to ensure equitable investment in Impacted Communities, consistent with SB 1000. – Work with County departments to incorporate addressing climate change, providing climate solutions, and enhancing community equity more fully into County operations and the broad range of services the County provides. – As part of the ~~2024 CAP~~2024 CAAP and General Plan implementation, consider whether the strategy being implemented provides equitable benefits for Impacted Communities as a criterion for prioritization. – Continually engage communities most affected by climate change in developing and implementing climate solutions and ensure that such solutions provide benefits to Impacted Communities. – Advocate for the Contra Costa Employees Retirement Association to include use of Environmental, Social, and Governance criteria in its investment policies.	**Key Performance Metric(s):** – Modified County investment policy to use ESG and to continue to prohibit investment in all securities issued by fossil fuel companies. (County Administrator, Treasurer/Tax Collector) **Supportive Performance Metric(s):** – Number of community engagement opportunities in which County staff participate, including presentations to community groups. – Advocacy for Contra Costa Employees Retirement Association to use ESG in its investment priorities and to offer environmentally and socially responsible investment choices for members. (Board of Supervisors)	**Potential Partners** – Community-based organizations – Contra Costa Employees Retirement Association – Environmental justice groups – School and community college districts – Contra Costa County Library – Business groups – Youth groups **Applicability** – Impacted Communities – Residents in unincorporated areas. **Time Frame** Mid-term (by 2028)

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CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
– Require that the County's Deferred Compensation Plan provider make available Environmental, Social, and Governance investment options for employees participating in the County's 457 deferred compensation plan. – Amend the County investment policy to consider the use of Environmental, Social, and Governance criteria and to continue and improve efforts to divest from fossil fuels. – Work with schools, Contra Costa County Library, business groups, and community-based organizations to educate and inform community members about climate change and related sustainability topics~~.~~, and the County's climate goals and the actions the County is taking to achieve them. – Evaluate the issuance of Labeled Bonds, such as "Green", "Sustainable", or "Social" bonds, during the planning stage of a bond issuance by the County. It is the County's preference to issue Labeled Bonds if the evaluation demonstrates a financial or policy benefit to the County.		

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CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
CE-3: Increase access to parks and open space. – Establish a goal for all residents to live within a half-mile of a park or other green space. – Support land acquisition for new parks and open space areas and protect such lands through fee title acquisition or through deed restrictions like conservation easements. – Continue to construct and develop opportunities for new trails. – Support investment in existing park facilities, in partnership with regional agencies. – Increase the tree canopy on public property, especially in Impacted Communities and areas with a high heat index, by prioritizing funding for new street tree planting and maintenance. (HS-P2.2)	**Key Performance Metric(s):** – Number of residents in unincorporated county, including those in Impacted Communities, within a half-mile of a park or other green space. (Conservation and Development) – Total acres of parks and green space by type. (Conservation and Development)	**Potential Partners** – Agricultural groups – Contra Costa Resource Conservation District – East Bay Regional Park District – Environmental justice groups – Local land trusts and land conservation groups – Housing developers **Applicability** – New development – Residents in unincorporated areas. **Time Frame** Near term (by 2026)
CE-4: Ensure residents have equitable, year-round access to affordable, local fresh food. – Support establishment of year-round Certified Farmers' Markets in all communities, prioritizing Impacted Communities. – Work with community groups to establish and maintain urban gardens, particularly on vacant lots and park land in Impacted Communities. (SC-P4.1) – Encourage major supermarkets to locate in Impacted Communities. – Support co-operative grocery markets in Impacted Communities.	**Key Performance Metric(s):** – Number of regular Certified Farmers' Markets in all communities and in Impacted Communities. (Agriculture) – Number of permits issued for urban gardens in all communities (if permits are required by policy). (Agriculture) **Supportive Performance Metric(s):** – Number of residents participating in In Lieu of Services (ILOS) food benefits. (Health)	**Potential Partners** – Agricultural groups – Community gardening groups – Environmental justice groups – Farmers markets – Local grocery stores and food banks **Applicability** – Residents in unincorporated areas. – Businesses in unincorporated areas.

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
		Time Frame Long term (by 2030)
CE-5: Ensure that large industrial facilities act as good neighbors. – ~~Provide recommendations to responsible permit agencies regarding permits for fossil fuel-based industries and point sources~~ Provide comments to responsible permit agencies on permit applications for large industrial facilities with significant emissions on potential measures to reduce impacts on and provide benefits to neighboring unincorporated communities.~~.~~ – Regularly track data on fossil fuel production and transportation in Contra Costa County. – Encourage the economic development of industries and supply chains that emphasize a reduction in GHG emissions. – Encourage economic development and job creation in industries that advance the County's sustainability goals, using the County's policy on enhanced infrastructure financing districts. – As economic conditions change, support efforts to phase out heavily polluting and extractive industries and replace them with businesses that contribute to a regenerative and circular economy. – Require new or expanded commercial and industrial projects ~~exceeding~~ resulting in 25,000 square feet or more of gross habitable floor area to be near zero-emission operations, including the facilities themselves and the associated fleets, except for uses with fewer than five vehicles domiciled on-site. Require all necessary measures to achieve near-zero emissions. (HS-P1.8)	**Key Performance Metric(s):** – Quantity and type of fossil fuels produced, refined, stored in, and distributed in the unincorporated county, to the extent data are available. (Conservation and Development) **Supportive Performance Metric(s):** – Information on specific fossil fuel facilities in Contra Costa County, including changes of ownership, mergers and acquisitions, investor presentations and reports, or any other public information that may indicate a facility's interest or intent to expand in the future, considering broader market trends in oil and gas refining and export in the Bay Area. (Conservation and Development) – Local air quality metrics. (Conservation and Development)	**Potential Partners** – BAAQMD – CARB – Chambers of Commerce – East Bay Leadership Council – Community-based organizations – Environmental justice groups – Industry groups – Labor unions **Applicability** – Industrial operations – Residents in unincorporated areas. – Businesses in unincorporated areas. **Time Frame** Ongoing and near term (by 2026)

CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
Leadership Strategies: Contra Costa County is a model for how local government can take action on climate issues.		
L-1: Establish Contra Costa County as a leader among local governments for addressing climate issues. – Continue to publicize and support the operations of the County's Interdepartmental Climate Action Task Force and Green Government Group (G3) Champions. – Work with all County departments to encourage adoption of best practices from the County's Green Business Program and other practices that support the County's climate goals. – Encourage development of new policies and initiatives that support the County's climate goals. – Explore the creation of funding mechanisms, including a carbon impact fee, to support the County's Sustainability Fund for investments in County facilities if additional financial resources are needed. – Support legislative efforts to establish a green bank able to equitably finance sustainability projects, including renewable energy, energy efficiency, and green infrastructure, for residential and commercial customers. (COS-A14.9~~10~~) – Ensure that funding mechanisms to address climate change minimize or avoid disproportionate financial impacts to Impacted Communities and do not exacerbate economic inequities to the extent feasible. – Facilitate trainings for County staff on climate change (including the results of the Vulnerability Assessment and the ~~2024 CAP~~2024	**Key Performance Metric(s):** – Ongoing work products and semi-annual reports from Interdepartmental Climate Action Task Force. (Conservation and Development) – Annual report on conditions placed on discretionary projects to ensure support of Climate Action and Adaptation Plan goals. (Conservation and Development) – Number of County departments that have adopted their own Climate Action Plan, or adopted practices that support the CAAP. (Conservation and Development) **Supportive Performance Metric(s):** – Number of County departments adopting best practices of the Green Business Program. (Conservation and Development) – Trainings and other information for County staff on climate change. (Conservation and Development) – Amount of pesticides applied to County properties. (Public Works, Health (IPM)) – Number of County facilities with an active integrated pest management plan. (Public Works, Health (IPM))	**Potential Partners** – All County departments – Interdepartmental Climate Action Task Force – Community-based organizations – Green Business Program – Contra Costa County Library **Applicability** – County operations – Businesses in unincorporated areas. **Time Frame** Ongoing and midterm (by 2028)

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CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
CAAP technical work) and how they can support climate action through their work with the County and at home. – Encourage County employees to explore innovative technologies and programs that address climate change. – Incorporate integrated pest management into new construction and retrofit programs on County properties. – Ensure County departments follow the County's Environmentally Preferable Purchasing Policy and policy requirements are included in the contracting process. – Regularly review and revise the County's purchasing and contracting programs as necessary to ensure consistency with the County's sustainability and GHG reduction goals. (HS-A3.~~2~~3)		
L-2: Continue to recognize the climate crisis as an emergency for Contra Costa County and make addressing climate change a top County priority. – Continue to implement the 2020 Climate Emergency Resolution approved by the Board of Supervisors, including conducting periodic reviews and updates to the Resolution. – Consider climate vulnerabilities and associated equity effects as factors in the County's planning and expenditures for infrastructure and services to increase resilience and reduce GHG emissions countywide. – Consider development standards for the disclosure of climate and equity effects and vulnerabilities in staff reports for all decisions by the Board of Supervisors when such disclosures are helpful and necessary. Explore modifying County processes and forms to include questions to ensure the proposed action is consistent with the ~~2024 CAP~~2024 CAAP and equity goals. – Assess County programs, policies, operations, and projects (excluding stationary sources) for their contribution to achieving the County's GHG emissions reduction goals and consistency with the ~~2024 CAP~~2024 CAAP.	**Key Performance Metric(s):** – Actions taken to implement Climate Emergency Resolution. (Conservation and Development)	**Potential Partners** – All County departments – Interdepartmental Climate Action Task Force – Community-based organizations – Local environmental groups **Applicability** – County operations **Time Frame** Mid-term (by 2028)

CAP Strategy and Implementation Actions	Potential Implementation Performance Metrics and Lead Departments	Potential Partners, Applicability, and Time Frame
– Disclose GHG emissions to a registry such as the Carbon Disclosure Project (CDP).		
Implementation Strategies: Contra Costa County will ensure it follows through to achieve the goals and actions in this Climate Action and Adaptation Plan.		
IS-1: Monitor and report progress toward achieving Climate Action and Adaptation Plan goals on an annual basis. – Assign responsibility for facilitating and supporting 2024 CAAP implementation to the County's Department of Conservation and Development. – Identify key staff from each department responsible for supporting 2024 CAAP implementation and updates for annual reporting and monitoring. – Continue to involve community-based organizations and other key stakeholders in reviewing and recommending 2024 CAAP action items. – Continue to prepare an annual progress report on implementation of the recommended GHG emissions reduction strategies and progress toward the 2024 CAAP goals. When information is available, provide updates on estimated GHG emissions reductions and current GHG emissions levels. – Monitor implementation of the Sustainability Fund for projects in County facilities – Use the 2024 CAAP implementation and monitoring tool to track GHG benefits from 2024 CAAP implementation and identify progress toward the 2024 CAAP reduction goals. – Pursue refinements to improve the County permitting system and other systems as needed to support collection of 2024 CAAP implementation data. – Work with Contra Costa Health on exploring, and if appropriate, developing health indicators related to climate change to help	**Key Performance Metric(s):** – Preparation of Annual Report and presentation to Sustainability Commission and Board of Supervisors. (Conservation and Development) – Dedicated funding in annual budget for implementation of the 2024 CAAP. (County Administrator) – Regularly maintained 2024 CAAP tracking tool. (Conservation and Development) – Updates to County permitting system to support tracking of 2024 CAAP implementation. (Conservation and Development) – Sustainability Fund progress report. (Public Works)	**Potential Partners** – All County departments – Interdepartmental Climate Action Task Force – Sustainability Commission **Applicability** – County operations – Residents in unincorporated areas. – Businesses in unincorporated areas. **Time Frame** Ongoing and near term (by 2026)

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CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
inform progress on current actions and effectiveness of adaptation strategies.		
IS-2: Continue collaborative partnerships with agencies and community groups that support Climate Action and Adaptation Plan implementation, with an emphasis on residents and community-based organizations from Impacted Communities. – Participate in local and regional organizations that provide tools and support for energy efficiency, energy conservation, GHG emissions reductions, sustainable infrastructure development, adaptation, public information, and implementation of this 2024 CAAP. – Enable effective partnerships to implement high-priority strategies from the 2024 CAAP by working through established interagency collaborations and joint exercise of powers authorities and forming new arrangements of various types where necessary to be effective. – Provide input to partner agencies on policy barriers that need to be addressed at the State level. – Continue collaboration with other local governments in Contra Costa County on climate action and related subjects, including an annual Sustainability Exchange meeting of all local government staff in Contra Costa County that focus on climate action and adaptation planning and implementation.	**Key Performance Metric(s):** – Partnerships maintained. (Conservation and Development)	**Potential Partners** – All County departments – Interdepartmental Climate Action Task Force – Sustainability Commission – Agency partners – Community-based organizations **Applicability** – County operations – Residents in unincorporated areas. – Businesses in unincorporated areas. **Time Frame** Near term (by 2026)

CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
IS-3: Secure necessary funding to implement the Climate Action and Adaptation Plan. – Identify funding sources and levels for reduction strategies as part of annual reporting. – Include GHG emissions reduction strategies in the capital improvement programs for County-owned and managed facilities and infrastructure, and other plans as appropriate. – Pursue local, regional, state, and federal grants to support implementation. – Explore dedicated funding sources for 2024 CAAP implementation, including from the Sustainability Fund or other revenue sources as needed. – Explore opportunities to allocate a portion of revenues from revenue-generating strategies in the 2024 CAAP to its implementation.	**Key Performance Metric(s):** – Climate action integration into all department work plans and capital improvement program. (County Administrator, Public Works) – Number of grants and amount of funding being pursued, awarded, and managed. (Conservation and Development) – Funding provided for the Sustainability Fund. (County Administrator)	**Potential Partners** – All County departments – Interdepartmental Climate Action Task Force – Agency partners **Applicability** – County operations – Residents in unincorporated areas. – Businesses in unincorporated areas. **Time Frame** Ongoing and near term (by 2026)
IS-4: Continue to update the baseline emissions inventory and Climate Action and Adaptation Plan every five years. – ~~Prepare a GHG emissions inventory that shows GHG emissions after emergency conditions created by the COVID-19 pandemic are expected to have ended.~~ Update the community-wide GHG emissions inventory every five years at a minimum and more frequently as resources are available. Prepare an inventory for the 2024 calendar year within a year of adoption of the 2024 CAAP. – Update the 2024 CAAP to incorporate new technologies, practices, and other options to further reduce emissions. (HS-A3.1)	**Key Performance Metric(s):** – Updated GHG inventories every five years. (Conservation and Development)	**Potential Partners** – All County departments – Interdepartmental Climate Action Task Force **Applicability** – County operations – Residents in unincorporated areas. – Businesses in unincorporated areas. **Timeframe** Mid-term (by 2028)

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CAP Strategy and Implementation Actions	Potential implementation performance metrics and Lead departments	Potential Partners, Applicability, and Time Frame
IS-5: Maintain and update the Climate Action and Adaptation Plan to allow for greater resilience. – Coordinate, where possible, updates of the Climate Action and Adaptation Plan, General Plan Safety Element, and Local Hazard Mitigation Plan cycles to ensure plan alignment and coordination of climate mitigation and adaptation efforts. – Assess the implementation status and effectiveness of adaptation strategies.	**Key Performance Metric(s):** – Progress on implementing GHG emissions reduction strategies, climate adaptation strategies, and general sustainability strategies. (Conservation and Development)	**Potential Partners** – All County departments – Interdepartmental Climate Action Task Force **Applicability** – County operations – Residents in unincorporated areas. – Businesses in unincorporated areas. **Time Frame** Near term (by 2026)

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7. GLOSSARY

Adaptation. Making changes in response to current or future conditions (such as the increased frequency and intensity of climate-related hazards), usually to reduce harm and to take advantage of new opportunities.[16,17]

Adaptive capacity. The "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities".[18]

Assets. A valued feature of a community that may be harmed by climate change. Assets may include buildings, infrastructure, community services, ecosystems, and economic drivers.[19]

Bay-friendly landscaping. A holistic approach to landscaping that works with the natural conditions of the San Francisco Bay Watershed. Bay-friendly practices foster soil health and conserve water and other valuable resources while reducing waste and preventing pollution.

Carbon-free energy. Means that the energy supplied by a resource generates no carbon emissions.

Carbon neutral. Reducing GHG emissions released to the atmosphere to zero over a period of time, either by entirely eliminating all GHG emissions or by balancing out all remaining GHG emissions through carbon removal practices so that the "net" emissions are zero.

Carbon offsets. A reduction or removal of emissions of carbon dioxide or other GHGs made to compensate for emissions made elsewhere.

Carbon sequestration. The process of storing carbon dioxide in locations other than the atmosphere, where it cannot contribute to climate change or ocean acidification. For the purposes of this plan, carbon sequestration refers to nature-based carbon removal through the storage of atmospheric carbon in vegetation, soils, woody products, and aquatic environments.[20]

Climate change. A change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. In the context of this plan, refers to changes brought on by human activities.[21,22]

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Climate justice. The concept that no group of people should disproportionately bear the burden of climate change impacts or the costs of mitigation and adaptation.[23]

Climate Resilience Districts. Special districts that can raise and allocate money to fund projects and operations that address climate change adaptation efforts, such as those to help protect against sea level rise, wildfire, and drought. They have the authority to establish special taxes, assessments, or other charges. Local governments may establish climate resilience districts under Assembly Bill 852, adopted in 2022.

Community-wide. Operative throughout the whole community.

Complete streets. A transportation facility that is planned, designed, constructed, operated, and maintained to provide comfortable and convenient mobility, and improve accessibility and connectivity to essential community destinations for all users, regardless of whether they are travelling as pedestrians, bicyclists, public transportation riders, or drivers. Complete streets are especially attuned to the needs of people walking, using assistive mobility devices, rolling, biking, and riding transit.[24]

Direct access: Electricity purchased directly from an Electric Service Provider (ESP) rather than an investor-owned utility company or Community Choice Energy provider, generally to power large industrial, commercial, and institutional facilities.

Electric Service Provider (ESP): An entity that is not a utility company~~,~~ but provides electricity service to specific customers (usually large industrial, commercial, or institutional sites) within a utility's service area. This service is often known as direct access electricity. ESPs are overseen by S~~s~~tate regulators.

Electric vehicle. A zero-emission vehicle that uses electricity stored in a battery to power one or more electric motors and can be plugged in at home, work, fleet, or public charging stations.[25]

Embeddodied carbon (also known as emboedided carbon). The total GHGs emitted in the production and use of a good or service. For example, the lifecycle GHG emissions of building materials would include emissions resulting from the extraction, manufacturing, transportation, installation, maintenance, and disposal of the materials.

Environmental, Social, and Governance (ESG). The implementation of a governance structure and reporting system that evaluates a company's performance related to environmental and social factors that go beyond the company's duty to maximize profits. *Environmental metrics* may include how well a company performs related to conserving energy, water, and other natural resources, protecting ecosystems and biodiversity,

reducing carbon emissions, mitigating climate change, and promoting resilience. *Social metrics* include factors such as whether a company is union friendly, provides fair pay and leave, prioritizes worker health and safety, and proactively seeks a diverse workforce. *Governance* refers to how the company manages both the environmental and social aspects of its policies, programs, and reporting.[26]

Equity. The state in which each individual or group is allocated the resources needed to reach an equal outcome.[27,28]

Exposure. The presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.[29]

Extreme event. When a weather or climate variable exceeds the upper or lower thresholds of its observed range.[30,31]

Extreme heat. Temperatures that are hotter than 98 percent of the historical high temperatures for the area, as measured between April and October of 1961 to 1990. Across Contra Costa County, the extreme heat threshold is 96.6°F, although it varies from 87.1°F in Kensington to 102.4°F in Byron.

Fire hazard severity zone. An area of significant fire hazard based on fuels, terrain, weather, and other relevant hazards.[32]

First mile, last mile. Refers to the first or final mile of a trip, typically between the origin/final destination of the trip and the nearest public transit access point.

Graywater. Untreated wastewater that has not been contaminated by toilet discharge; affected by infectious, contaminated, or unhealthy bodily wastes; and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes.[33]

Green bond. A green bond is a bond intended to finance projects with environmental benefits, such as renewable energy, public transportation, and pollution prevention and remediation.

Green infrastructure. Infrastructure that filters and absorbs stormwater where it falls. The federal Water Infrastructure Improvement Act (2019) defines green infrastructure as "the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters".[34]

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Greenhouse gas(es). Greenhouse gases (GHGs) are gases that allow sunlight to pass through but reflect heat radiated from the Earth's surface, trapping heat in the lower atmosphere. Common GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). They may be emitted by natural or human processes.

Greenhouse gas (GHG) emissions inventory. A quantified list of a community's GHG emissions and sources.[35]

Hazard. An event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural losses, damage to the environment, interruption of business, or other types of harm or loss.[36]

Hazard mitigation. Sustained action taken to reduce or eliminate the long-term risk to human life and property ~~through action~~by means of efforts that reduce hazard, exposure, and vulnerability.[37]

Impact (Climate impact). The effects (especially the negative effects) of a hazard or other conditions associated with climate change.[38]

Impacted Communities. Low-income areas that are disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation. Senate Bill (SB) 1000 labels such communities "disadvantaged communities", but county residents found that this term was neither supportive nor reflective of their community and opted for the term Impacted Communities instead. SB 1000 defines Impacted Communities per Health and Safety Code Section 39711, specifying CalEnviroScreen as the primary screening method for identifying Impacted Communities. In general, census tracts in the highest quartile of scores (75 to 100) are considered Impacted Communities under SB 1000.

Just Transition. Refers to the transition away from the extractive, profit-driven economy and culture to one that is ecologically sustainable, just, and equitable for all members of society. A central theme of the Just Transition is moving away from fossil fuels to renewable energy and the need to create sustainable green jobs for workers, particularly those in the fossil fuel industry.

Low-carbon building. Buildings designed and constructed to release little to no carbon over their lifetimes.

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Low-carbon construction materials. Low-carbon construction materials may refer to building materials that meet the State's requirements under AB 2446, which requires the State to develop a strategy for the building sector to achieve a 40 percent net reduction in GHG emissions of building materials by 2035.

Low-carbon energy. Energy sources that release less carbon than fossil fuels. Examples of low-carbon energy sources are solar, biomethane, and low- to zero-carbon hydrogen.[39]

Low-Stress Bike Network. Low-stress cycling refers to the idea that a network may be established to ensure that there are ways in which cyclists can easily access areas throughout a community without being an extremely confident rider.[40]

MCE. Community Choice Energy provider for unincorporated county and most of the cities in Contra Costa County.

Microgrid. According to the U.S. Department of Energy, a microgrid is a group of interconnected loads and distributed energy resources in clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can operate in either grid-connected or in island mode, including entirely off-grid applications.

Natural carbon sequestration. Assembly Bill 1757 (2022) defines natural carbon sequestration as "actions that are undertaken on natural and working lands to remove and provide storage of atmospheric greenhouse gases in vegetation and soils. This shall include preservation, conservation, restoration, and sustainable management of these lands, which may include compost application, cover crops, hedgerows, planned grazing, urban forestry, riparian restoration, restoration of tidal flows to wetlands, and other forms of wetland restoration, among other relevant actions".[41]

Natural infrastructure. An area or system that is either naturally occurring or naturalized and then intentionally managed to provide multiple benefits for the environment and human well-being.

Natural and working lands. Lands not covered by buildings or structures, including forests, grasslands, shrublands, woodlands, rangelands, farmland, wetlands, coastal areas, and the green spaces in urban and built environments. These lands serve important ecological purposes, including providing food and fiber, clean air, water, flood protection, species habitats, and other resources and benefits.[42]

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Near zero-emission. A building, vehicle, technology, or other type of operation that uses zero-emission technologies, enables technologies that provide a pathway to zero-emissions operations, or incorporates other technologies that significantly reduce criteria pollutants, toxic air contaminants, and GHG emissions.[43]

Net-zero. Means that emissions of GHGs to the atmosphere are balanced by removals of GHG emissions over a period of time.[44]

Open space. Land that is not intensively developed for residential, commercial, industrial, or institutional use.

Qualified climate action plan. A climate action plan that meets State requirements such that future development projects requiring environmental review under State law can streamline greenhouse gas impact analyses by demonstrating consistency with the plan.

Reach code. A local municipal code that exceeds the State building code. An energy reach code must be at least as stringent as the statewide code, cost-effective, approved by the California Energy Commission, and updated and re-approved with each State Energy Code update.

Resilience. The capacity of any entity—an individual, a community, an organization, or a natural system—to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience. Community resilience is the ability of communities to withstand, recover, and learn from past disasters to strengthen future response and recovery efforts.[45,46,47]

Resilience Hubs. Community-serving facilities augmented to support residents and coordinate resource distribution and services before, during, and after a natural hazard event.

Risk. The potential for damage or loss created by the interaction of hazards with assets such as buildings, infrastructure, or natural and cultural resources.[48]

Sea level rise. The worldwide average rise in mean sea level, which may be due to a number of different causes, such as the thermal expansion of sea water and the addition of water to the oceans from the melting of glaciers, ice caps, and ice sheets.[49]

Sensitivity. The level to which a species, natural system, or community, government, etc. would be affected by changing climate conditions.[50]

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Social vulnerability. The susceptibility of a given population to harm from exposure to a hazard, directly affecting its ability to prepare for, respond to, and recover from the hazard.[51,52]

Solid waste. The federal Resource Conservation and Recovery Act defines solid waste as "any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities. Nearly everything we do leaves behind some kind of waste. It is important to note that the definition of solid waste is not limited to wastes that are physically solid. Many solid wastes are liquid, semi-solid, or contained gaseous material".

State Responsibility Area. The area in the state where the State of California has primary financial responsibility for the prevention and suppression of wildland fires.

Susceptibility. A person or population's potential for vulnerability due to demographic, socioeconomic, and geolocation characteristics.[53]

Sustainability. Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Transportation network company (TNC). Companies that provide prearranged transportation services for compensation using an online-enabled application or platform to connect drivers using their personal vehicles with passengers.

Unincorporated Area. All land and water within a county that is outside the boundaries of incorporated cities and towns. Development in the unincorporated area is subject to County land use regulations.

Unincorporated communities: Communities in the unincorporated areas of Contra Costa County subject to County land use regulations.

Urban heat island. The phenomenon in which large urban areas experience higher temperatures, greater pollution, and more negative health impacts during hot months due to a combination of heat-absorptive surfaces, heat-generating activities, and the absence of vegetation.[54]

Vulnerable road user law. Laws that prioritize the safety of road users who are not motor vehicle drivers. Provisions may include instituting strong penalties for motor vehicle drivers who seriously injure people using roadways who are not protected within a motor vehicle.

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Vulnerability. Climate vulnerability describes the degree to which natural, built, and human systems are susceptible "to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt".[55]

Vulnerability assessment. An analysis of how a changing climate may harm a community and which elements—people, buildings and structures, resources, and other assets—are most vulnerable to its effects based on an assessment of exposure, sensitivity, the potential impact(s), and the community's adaptive capacity.[56]

Wildland-urban interface. An area where houses and wildland vegetation directly intermingle, creating a significant threat to human life or property from wildfires.

Zero-emission vehicle. A vehicle that does not produce emissions when in operation, including battery-electric vehicles and hydrogen fuel cell electric vehicles.[57]

Zero-net-energy building. A building where the value of the energy produced on-site by renewable energy resources is equal to the value of the grid energy consumed annually, as measured using the California Energy Commission's Time Dependent Valuation Metric.[58]

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APPENDIX A: KEY STATE AND REGIONAL CLIMATE CHANGE POLICY AND LEGISLATION

Since 2005, the State of California and regional agencies haves responded to growing concerns over the effects of climate change by adopting a comprehensive approach to addressing emissions in the public and private sectors through legislation starting with the first Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) and more recently with aggressive statewide targets on greenhouse gas (GHG) reduction (Senate Bill [SB] 32 and AB 1279), renewable energy portfolio standard (SB 100), and zero-emissions vehicles (SB 1275). The following table provides a summary of key State and regional climate change policy and legislation through mid-2023, beginning with the most recent actions.

POLICY OR LEGISLATION	DATE	DESCRIPTION
Bay Area Air Quality Management District (BAAQMD) Rules 9-4 and 9-6	2023	**Nitrogen Oxides from Natural Gas-Fired Furnaces, Boilers, and Water Heaters** BAAQMD adopted amendments to Regulation 9, Inorganic Gaseous Pollutants, Rule 4, Nitrogen Oxides from Natural Gas-Fired Furnaces (Rule 9-4), and Rule 6, Nitrogen Oxides Emissions from Natural Gas-Fired Boilers and Water Heaters (Rule 9-6). Space- and water-heating appliances generate a large portion of nitrogen oxide (NO_X) emissions from sources in the Bay Area. NO_X are a key criteria pollutant as a precursor to ozone and secondary particulate matter (PM) formation. The amendments would require more stringent NO_X emission standards for space- and water-heating appliances within the BAAQMD's jurisdiction starting in year 2023 and would substantially reduce NO_X emissions from these appliances commonly found in single-family homes and commercial applications. The amendments to Rules 9-4 and 9-6 include the following elements: • Sales and installation of smaller water heaters and boilers (below 75,000 BTU/hour) must be zero emission, starting in 2027. • Sales and installation of furnaces (heat input rate less than 175,000 BTU/hour) must be zero emission starting in 2029. • Sales of larger water heaters and boilers (between 75,000 and 2 million BTU/hour) must be zero emission starting in 2031.

POLICY OR LEGISLATION	DATE	DESCRIPTION
		Existing appliances can remain in operation but the rule would apply once they need replacement. **Nitrogen Oxides from Natural Gas-Fired Furnaces** BAAQMD adopted the amendment to Regulation 9, Inorganic Gaseous Pollutants, Rule 4, Nitrogen Oxides from Natural Gas-Fired Furnaces (Rule 9-4). Space- and water-heating appliances generate a large portion of nitrogen oxide (NO_X) emissions from sources in the Bay Area. NO_X are a key criteria pollutant as a precursor to ozone and secondary particulate matter (PM) formation. The amended rule introduces new NO_X standards for new, natural gas-fired furnaces, requiring reduced NO_x emissions for devices beginning in 2024 and zero NO_x emissions for furnaces beginning in 2029. This more stringent NO_X emission standards for space-heating appliances within the BAAQMD's jurisdiction would substantially reduce NO_X emissions from these appliances commonly found in single-family homes. **Nitrogen Oxides from Natural Gas-Fired Boilers and Water Heaters** BAAQMD adopted the amendment to Regulation 9, Inorganic Gaseous Pollutants, Rule 6, Nitrogen Oxides Emissions from Natural Gas-Fired Boilers and Water Heaters (Rule 9-6). As mentioned, space- and water-heating appliances generate a large portion of NO_X emissions from sources in the Bay Area. This amendment would require a new zero-NO_X standards with compliance dates ranging from 2027 to 2031 to new, natural gas-fired devices. More stringent NO_X emission standards for water-heating appliances within the BAAQMD's jurisdiction would substantially reduce NO_X emissions from these appliances commonly found in single-family homes and commercial applications.
Advanced Clean Fleets	2023	California Air Resources Board (CARB) adopted the Advanced Clean Fleet standards in August of 2023. This regulation requires California state and local government fleets, including city, county, special district, and State agency fleets, to ensure 50% ~~percent~~ of vehicle purchases are zero-emissions beginning in 2024 and 100% ~~percent~~ of vehicle purchases are zero-emissions by 2027. They must also initially submit a compliance report by April 1, 2024. Small government fleets of 10 or fewer vehicles and those in designated counties would start their ZEV purchases beginning in 2027. Alternatively, State and local government fleet owners may elect to use the ZEV Milestones Option. State and local government fleets may purchase either ZEVs or near-ZEVs, or a combination of ZEVs and near-ZEVs,

POLICY OR LEGISLATION	DATE	DESCRIPTION
		until 2035. Starting in 2035, only ZEVs will meet the requirements.
Title 24, Part 6, Building Energy-Efficiency Standards	2022, updated every three years	The California Energy Resources Conservation and Development Commission (now the CEC) adopted energy conservation standards for new residential and nonresidential buildings in June 1977 and most recently revised in 2022. (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2022 Building Energy Efficiency Standards, which were adopted on August 11, 2022, went into effect January 1, 2023.
Title 24, Part 11, Green Building Standards Code (CALGreen)	2022, updated every three years	On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards, the California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") as part of the California Building Standards Code. CALGreen establishes planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The mandatory provisions of CALGreen became effective January 1, 2011. Like the other parts of Title 24, CALGreen is updated every three years. The current version of CALGreen was adopted in 2022 and became effective on January 1, 2023.
Title 20, Appliance Efficiency Regulations	2020, updated every three years	The CEC adopted the 2016 Appliance Efficiency Regulations (Title 20 CCR Sections 1601–1608), which include standards for both federally regulated appliances and non–federally regulated appliances. Though these regulations are now often viewed as "business as usual," they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand. California introduced Title 20 requirements in two phases, with Tier I going into effect January 1, 2018, and Tier II in effect July 1, 2019.
Advanced Clean Car II standards	2022	California Air Resources Board (CARB) adopted the Advanced Clean Car II standards in August of 2022. This regulation requires that all new light-duty vehicles (e.g., passenger cars, small trucks, and SUVs) sold in the state to be zero-emission by 2035, with interim targets for new light-duty vehicle sales beginning in 2026. There are some limited exceptions for plug-in hybrid vehicles.

Policy or Legislation	Date	Description
Senate Bill 852	2022	Authorizes cities, counties, special districts, or a combination of any of the above to form a climate resilience district for the purposes of raising and allocating funding for eligible projects and the operating expenses of eligible projects.
Assembly Bill 1757	2022	Requires the California Natural Resources Agency (CNRA), by January 1, 2024, in collaboration with CARB, the California Environmental Protection Agency (CalEPA), the California Department of Food and Agriculture (CDFA), and an expert advisory committee, to set targets for natural carbon sequestration and nature-based climate solutions for 2030, 2038, and 2045, which must be integrated into the Scoping Plan and other State policies. CARB must ensure that double counting of emissions reductions is avoided and emissions reduction projects and actions that receive State funding will not be eligible to generate credits under any market-based compliance mechanism. CARB, by January 1, 2025, must develop standard methods for State agencies to track GHG emissions and reductions, carbon sequestration, and, where feasible, additional benefits from natural and working lands over time. CNRA, by January 1, 2025, in collaboration with CARB, CalEPA, and CDFA, must review and update the Climate Smart Strategy to achieve the targets and post data on its website on progress made toward targets, including on State expenditures made to implement the targets.
Assembly Bill 1279	2022	The California Climate Crisis Act codifies the statewide carbon neutrality goal. It directs the State to achieve net zero GHG emissions as soon as possible, but no later than 2045, and to achieve and maintain net negative GHG emissions thereafter, and to ensure that by 2045, statewide anthropogenic GHG emissions are reduced to at least 85% below the 1990 levels.
Senate Bill 596	2021	Requires CARB to establish a strategy to reduce GHG emissions in the concrete and cement sector by 40% from 2019 levels by 2030 and to achieve carbon neutrality as soon as possible, but no later than 2045.
Senate Bill 27	2021	Creates the California Carbon Sequestration and Climate Resilience Project Registry in order to maintain a list of eligible but unfunded projects, which then may be funded by public or private entities in order to mitigate California's GHG emissions and improve climate resilience. Also directs CARB to add carbon sequestration to the state's climate projection efforts.
Advanced Clean Trucks	2023	California Air Resources Board (CARB) adopted the Advanced Clean Trucks standards in August of 2022 accelerate a large-scale transition of zero-emission medium-and heavy-duty vehicles from Class 2b to Class 8.

POLICY OR LEGISLATION	DATE	DESCRIPTION
N-82-20	2020	The order directs state agencies to deploy a number of strategies to store carbon in the state's natural and working lands and remove it from the atmosphere. The order also sets a first-in-the-nation goal to conserve 30 ~~percent~~% of the state's land and coastal water by 2030 (30x30) to fight species loss and ecosystem destruction. Directs state agencies to pursue innovative actions, strategies and partnerships to maximize the full climate benefits of natural and working land, through healthy soils management, including planting cover crops, hedgerows and compost applications; wetlands restoration to protect coastal areas; active forest management to reduce catastrophic risk and restore forest health; and boosting green infrastructure in urban areas like trees and parks.
N-79-20	2020	~~Signed September 23, 2020.~~ Identifies three zero-~~-~~emissions goals: (1) 100% ~~percent~~ of in-state sales of new light-duty vehicles (i.e., passenger cars and trucks) will be zero-emission by 2035; (2) 100% ~~percent~~ of medium- and heavy-duty vehicles in the State be zero-emission by 2045 for all operations where feasible; and (3) the State will transition to 100% ~~percent~~ zero-emission off-road vehicles and equipment by 2035 where feasible. The order directs CARB to develop regulations and strategies to achieve these goals. CARB adopted regulations for light-duty vehicles in August 2022 through the Advanced Clean Cars II rulemaking process.
Assembly Bill 2800	2020	Establishes~~d~~ Climate-Safe Infrastructure Working Group for the purpose of examining how to integrate scientific data concerning projected climate change impacts into state infrastructure engineering.
Senate Bill 743	2020	Amends the standards for determining negative environmental impacts from new development under the California Environmental Quality Act (CEQA) from level of service (traffic congestion levels) to vehicles miles traveled (VMT).
Senate Bill 1035	2018	Requires local planning agencies to review and, if necessary, revise the safety element upon each revision of the housing element or local hazard mitigation plan, not less than every 8 years, to identify new information relating to flood and fire hazards and climate adaptation and resiliency strategies. Allows cities and counties to identify new information relating to flood and fire hazards and climate adaptation and resiliency strategies that was not available during the previous revision of the safety element.
Senate Bill 100	2018	100 Percent Clean Energy Act of 2018. Requires the state to purchase 100% ~~percent~~ of total retail sales of electricity from eligible renewable energy resources and zero-carbon resources by 2045.

Policy or Legislation	Date	Description
B-55-18	2018	Signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." Directs CARB to work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80% ~~percent~~ below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions should be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.
Assembly Bill 617	2017	Companion to Cap-and-Trade Extension. Establishes a groundbreaking program to measure and reduce air pollution from mobile and stationary sources at the neighborhood level in the communities most impacted by air pollutants. Requires the Air Resources Board to work closely with local air districts and communities to establish neighborhood air quality monitoring networks and to develop and implement plans to reduce emissions. The focus on community-based air monitoring and emission reductions will provide a national model for enhanced community protection.
Assembly Bill 398	2017	Cap-and-Trade Extension. Extends and improves the Cap and Trade Program, which will enable the state to meet its 2030 emission reduction goals in the most cost-effective manner. Furthermore, extending the Cap-and-Trade Program will provide billions of dollars in auction proceeds to invest in communities across California.
Senate Bill 1	2017	Transportation funding legislation that increases the state's gasoline tax by $0.12 per gallon, raising over $5 billion per year for transportation projects including improvements in efficiency and emission reduction.
Senate Bill 1383	2016	Short-Lived Climate Pollutants Strategy. Establishes statewide reduction targets for short-lived climate pollutants, including black carbon and methane (CH_4). Black carbon is the light-absorbing component of fine particulate matter produced during incomplete combustion of fuels. SB 1383 requires the state board, no later than January 1, 2018, to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40% ~~percent~~, hydrofluorocarbon gases by 40% ~~percent~~, and anthropogenic black carbon by 50% ~~percent~~ below 2013 levels by 2030. The bill also establishes targets for reducing organic waste in landfills. On March 14, 2017, CARB adopted the Short-Lived Climate Pollutant

POLICY OR LEGISLATION	DATE	DESCRIPTION
		Reduction Strategy, which identifies the state's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes.
Assembly Bill 197	2016	Greenhouse gas regulations. Prioritizes direct emission reductions from large stationary sources and mobile sources.
Senate Bill 32	2016	GHG emission reduction target for 2030. Establishes a statewide GHG emission reduction target of 40% ~~percent~~ below 1990 levels by 2030.
B-30-15	2015	Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions within the State to 40% ~~percent~~ of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the State and requires State agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in Executive Order S-03-05.
Assembly Bill 1482	2015	Requires Natural Resources Agency, beginning July 1, 2017, and every 3 years thereafter, to update the state's climate adaptation strategy. Requires state agencies to maximize specified objectives, including, among others, promoting the use of the climate adaptation strategy to inform planning decisions and ensure that state investments consider climate change impacts, as well as promote the use of natural systems and natural infrastructure, as defined, when developing physical infrastructure to address adaptation.
Senate Bill 379	2015	Climate Adaptation and Resiliency Strategies. Requires cities and counties to include climate adaptation and resiliency strategies in the safety elements of their general plans. Cities and counties with an adopted local hazard mitigation plan prior to 2017, are to address climate change in the safety element of the general plan upon the next revisions or update of the local hazard mitigation plan. Cities and counties that do not have an adopted local hazard mitigation plan must update the safety element of the general plan to address climate adaptation and resiliency by January 1, 2022. The bill requires the climate adaptation update to include a set of goals, policies, and objectives based on a vulnerability assessment, as well as implementation measures, including the conservation and implementation of natural infrastructure that may be used in adaptation projects.

Policy or Legislation	Date	Description
Senate Bill 350	2015	Clean Energy and Pollution Reduction Act of 2015. Establishes targets to increase retail sales of renewable electricity to 50% ~~percent~~ by 2030 and double the energy-efficiency savings in electricity and natural gas end uses by 2030.
Assembly Bill 246	2015	Establishes the Integrated Climate Adaptation and Resiliency Program to be administered by the Office of Planning and Research to coordinate regional and local efforts with state climate adaptation strategies to adapt to the impacts of climate change, as specified. Also requires within one year of an update to the Safeguarding California Plan, the Office of Emergency Services, in coordination with the Natural Resources Agency, the Office of Planning and Research, and relevant public and private entities, to review and update, as necessary, the Adaptation Planning Guide, as specified. The bill establishes an advisory council to support the goals of the Office of Planning and Research and a clearinghouse for climate adaptation information.
Senate Bill 605	2014	Short-lived climate pollutants. Requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants by January 1, 2016.
Senate Bill 1826	2014	Organic Waste Diversion. Requires businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses and multifamily residential dwellings with five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed with food waste.
Senate Bill 1275	2014	Charge Ahead California Initiative. Establishes a state goal of 1 million zero-emission and near-zero-emission vehicles in service by 2020. Amends the enhanced fleet modernization program to provide a mobility option. Establishes the Charge Ahead California Initiative requiring planning and reporting on vehicle incentive programs and increasing access to and benefits from zero-emission vehicles for disadvantaged, low-income, and moderate-income communities and consumers.
Senate Bill 1204	2014	California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program. Creates the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program funded by the Greenhouse Gas Reduction Fund for development, demonstration, precommercial pilot, and early commercial deployment of zero- and near-zero emission truck,

Policy or Legislation	Date	Description
		bus, and off-road vehicle and equipment technologies, with priority given to projects benefiting disadvantaged communities.
Assembly Bill 8	2013	Alternative fuel and vehicle technologies funding programs. Extends until January 1, 2024, extra fees on vehicle registrations, boat registrations, and tire sales in order to fund the AB 118, Carl Moyer, and AB 923 programs that support the production, distribution, and sale of alternative fuels and vehicle technologies and air emissions reduction efforts. The bill suspends until 2024 CARB's regulation requiring gasoline refiners to provide hydrogen fueling stations and appropriates up to $220 million, of AB 118 money to create hydrogen fueling infrastructure in the state.
Assembly Bill 1092	2013	Building standards for electric vehicle charging infrastructure. Requires the Building Standards Commission to adopt mandatory building standards for the installation of future electric vehicle charging infrastructure for parking spaces in multifamily dwellings and nonresidential development.
Senate Bill 535	2012	Greenhouse Gas Reduction Fund and Disadvantaged Communities. Requires the California Environmental Protection Agency to identify disadvantaged communities; requires that 25% of all funds allocated to the Greenhouse Gas Reduction Fund established by AB 32 go to projects that benefit disadvantaged communities, with at least 10% going to projects located within these communities. Requires the Department of Finance to include a description of how these requirements are fulfilled in an annual report.
Assembly Bill 1532	2012	Greenhouse Gas Reduction Fund in the Budget. Requires the Department of Finance to develop and submit to the Legislature an investment plan every three years for the use of the Greenhouse Gas Reduction Fund; requires revenue collected pursuant to a market-based compliance mechanism to be appropriated in the Annual Budget Act; requires the department to report annually to the Legislature on the status of projects funded; and specifies that findings issued by the Governor related to "linkage" as part of a market-base compliance mechanism are not subject to judicial review.
Senate Bill X1-2	2011	Directs the California Public Utilities~~y~~ Commission's (CPUC's) Renewable Energy Resources Program to increase the amount of electricity generated from eligible renewable energy resources per year to an amount that equals at least 20% of the total electricity sold to retail customers in California per year by December 31, 2013, 25% by December 31, 2016 and 33% by December 31, 2020. In 2018, Senate Bill 100 was signed into law, which increases the RPS to 60% by 2030 and requires all the state's electricity to come from carbon-free resources by

Policy or Legislation	Date	Description
		2045 (see above). The new RPS goals ~~applies~~apply to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. This new RPS preempts the California Air Resources Board's 33% ~~percent~~ Renewable Electricity Standard.
Assembly Bill 1504	2011	Requires Department of Forestry and Fire Protection and Air Resources Board to assess the capacity of its forest and rangeland regulations to meet or exceed the state's greenhouse goals, pursuant to AB 32.
Assembly Bill 341	2011	AB 341 (Chapter 476, Statutes of 2011) increase~~d~~s the statewide goal for waste diversion to 75% ~~percent~~ by 2020 and requires recycling of waste from commercial and multifamily residential land uses. Section 5.408 of CALGreen also requires that at least 65% ~~percent~~ of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.
Senate Bill X7-7	2010	20x20 Water Conservation Plan. Mandates urban water conservation and authorized the Department of Water Resources (DWR) to prepare a plan implementing urban water conservation requirements (20x2020 Water Conservation Plan). In addition, it requires agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 requires urban water providers to adopt a water conservation target of 20% ~~percent~~ reduction in urban per capita water use by 2020 compared to 2005 baseline use.
Assembly Bill 2514	2010	~~Law~~ R~~r~~equire~~s~~~~ing~~ electric utilities to install minimum levels of grid-scale energy storage infrastructure.
Senate Bill 375	2008	Requires CARB to develop regional GHG emission reduction targets for passenger vehicles. CARB established targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations (MPO). CARB is required to update the targets for the MPOs every eight years.
Assembly Bill 118	2007	Creates the Alternative and Renewable Fuel and Vehicle Technology Program, to be administered by the Energy Commission, to provide funding to public projects to develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies.
Senate Bill 97	2007	Directs Governor's Office of Planning and Research to develop CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions."

POLICY OR LEGISLATION	DATE	DESCRIPTION
Assembly Bill 1881	2006	The Water Conservation in Landscaping Act of 2006 requires local agencies to adopt the updated DWR model ordinance or an equivalent. Requires the CEC to consult with the DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.
Assembly Bill 1803	2006	GHG inventory transferred to Air Resources Board from the Energy Commission.
Senate Bill 1	2006	California's Million Solar Roofs plan is enhanced by the CPUC and CEC's adoption of the California Solar Initiative. SB 1 directs CPUC and CEC to expand this program to more customers and requires the state's municipal utilities to create their own solar rebate programs. This bill would require, beginning January 1, 2011, a seller of new homes to offer the option of a solar energy system to all customers negotiating to purchase a new home constructed on land meeting certain criteria and to disclose certain information.
Senate Bill 107	2006	Directs CPUC's Renewable Energy Resources Program to increase the amount of renewable electricity (RPS) generated per year, from 17% to an amount that equals at least 20% of the total electricity sold to retail customers in California per year by December 31, 2010.
Assembly Bill 32	2006	California Global Warming Solutions Act of 2006. Requires CARB to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990 to be achieved by 2020. CARB shall adopt regulations to require the reporting and verification of statewide GHG emissions and to monitor and enforce compliance with this program. AB 32 directs Climate Action Team established by the Governor to coordinate the efforts set forth under Executive Order S-3-05 to continue its role in coordinating overall climate policy.
Executive Order S-03-05	2005	Signed June 1, 2005, set the following GHG reduction targets for the state: 2000 levels by 2010, 1990 levels by 2020, and 80% ~~percent~~ below 1990 levels by 2050.
Senate Bill 1078	2002	Establishes the California RPS Program, which requires electric utilities and other entities under the jurisdiction of the CPUC to meet 20% of their renewable power by December 31, 2017, for the purposes of increasing the diversity, reliability, public health and environmental benefits of the energy mix.

Policy or Legislation	Date	Description
Senate Bill 812	2002	Adds forest management practices to the California Climate Action Registry members' reportable emissions actions and directed the Registry to adopt forestry procedures and protocols to monitor, estimate, calculate, report and certify carbon stores and carbon dioxide emissions that resulted from the conservation-based management of forests in California.
Assembly Bill 1493	2002	State law requiring the first set of GHG emission standards for passenger vehicles. Requires the registry, in consultation with CARB, to adopt procedures and protocols for the reporting and certification of reductions in GHG emissions from mobile sources for use by the state board in granting the emission reduction credits. This bill requires the state board to develop and adopt, by January 1, 2005, regulations that achieve the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks.
Senate Bill 527	2001	Revises the functions and duties of the California Climate Action Registry and requires the Registry, in coordination with CEC to adopt third-party verification metrics, developing GHG emissions protocols and qualifying third-party organizations to provide technical assistance and certification of emissions baselines and inventories. SB 527 amended SB 1771 to emphasize third-party verification.
Senate Bill 1771	2000	Establishes the creation of the non-profit organization, the California Climate Action Registry and specifies functions and responsibilities to develop a process to identify and qualify third-party organizations approved to provide technical assistance and advice in monitoring GHG emissions and setting GHG emissions baselines in coordination with CEC. Also, the bill directs the Registry to enable participating entities to voluntarily record their annual GHG emissions inventories. Also, SB 1771 directs CEC to update the state's GHG inventory from an existing 1998 report and continuing to update it every five years.
Assembly Bill 939	1989	California's Integrated Waste Management Act of 1989, AB 939 (Public Resources Code §§ 40050 et seq.) sets a requirement for cities and counties throughout the state to divert 50% ~~percent~~ of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

POLICY OR LEGISLATION	DATE	DESCRIPTION
Assembly Bill 4420	1988	Directs t~~T~~he CEC ~~was statutorily~~is ~~directed~~ to prepare and maintain the inventory of GHG emissions and to study the effects of GHGs and ~~the~~ climate change impacts on the state's energy supply and demand, economy, environment, agriculture, and water supplies. The study also required recommendations for avoiding, reducing, and addressing related impacts - and required the CEC to coordinate the study and any research with federal, state, academic, and industry research projects.
Sources: Statewide Energy Efficiency Climate Collaborative Climate Action Plan 2.0 Template; University of California Berkeley Center for Law, Energy, and the Environment, California Climate Policy Dashboard~~; PlaceWorks, 2021~~.		

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APPENDIX B: TECHNICAL GHG APPENDIX

This appendix provides details for Contra Costa County's greenhouse gas (GHG) emissions inventory and forecast in Chapter 3 of the 2024 Climate Action and Adaptation Plan (CAAP) and the GHG emission reduction pathway presented in Chapter 4 of the 2024 CAAP. It summarizes the technical details and findings from these analyses as well as the data sources, assumptions, and performance metrics used to assess the potential for GHG savings from State and local existing and planned efforts and the reduction strategies associated with the CAAP.

Inventory and Forecast

As part of the preparation of the 2015 CAP, Contra Costa County and its regional partners and technical consultants prepared community-wide and County operations GHG inventories for the calendar years 2005 and 2013. The 2015 CAP identified the year 2005 as the baseline year for emission reductions, as this was considered a year with good data availability at the time, consistent with State guidance, and without any unusual factors that might affect GHG emissions.

As part of the 2024 CAAP update process, the project teams prepared inventories of community-wide emissions for the years 2017 and 2019. County staff made some updates to the 2005 and 2013 community-wide inventories in the 2015 CAP to ensure a consistent method and approach across all inventory years.

County staff have also prepared a County operations GHG emissions inventory for the year 2017.

This document presents the full results of the Contra Costa County community-wide GHG inventory and the County operations inventory and is the most up-to-date summary of Contra Costa County's GHG emissions.

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PROTOCOLS

A series of guidance documents, called protocols, provide recommendations on how to adequately assess GHG emissions. The project team prepared the new GHG inventories and updates to past GHG inventories consistent with the guidance in widely adopted, standard protocol documents. These protocols provide guidance on what activities should be evaluated in the GHG inventories and how emissions from those activities should be assessed. Using standard methods also allows for an easy comparison of GHG emission levels across multiple years and communities.

- The County operations GHG inventory relies on the Local Government Operations Protocol (LGOP), which was first developed in 2008 and was updated in 2010. The LGOP is a tool for accounting and reporting GHG emissions of local government (municipal) operations and is used throughout California and the United States. The LGOP includes guidance from several existing programs as well as the state's mandatory GHG reporting regulations.
- The community-wide GHG inventory uses the United States Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (U.S. Community Protocol), which was first developed in 2012 and updated most recently in 2019. The California Governor's Office of Planning and Research encourages cities and counties in California to follow the U.S. Community Protocol for community-wide GHG emissions.
- A third protocol, the Global Protocol for Community-Scale Greenhouse Gas Inventories (Global Protocol) was first developed in 2014 and is intended for use in preparing international community-scale GHG inventories. It is largely consistent with the U.S. Community Protocol, although it contains additional guidance and resources to support a wider range of activities that may be found in other countries. The project team has used the Global Protocol to assess GHG emissions from sources that are not covered in the U.S. Community Protocol.

GHG inventories are estimates of GHG emissions based on these standard methods and verified datasets. While they are not direct measurements of GHG emissions, the use of the standard methods identified in the protocols, in combination with accurate data from appropriate sources, allows GHG inventories to provide reliable estimates of local emission levels. Due to potential data limitations, some inconsistencies in methods may remain. Any concerns about inconsistent methods are noted in the appropriate sector discussion.

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UNITS OF MEASUREMENT

GHG inventories and forecasts assess emissions in a unit called carbon dioxide equivalent (CO_2e), which is a combined unit of all GHGs analyzed in the inventory. As different GHGs have different effects on the processes that drive climate change, CO_2e is a weighted unit that reflects the relative potency of the different GHGs. These inventories report amounts of GHGs in metric tons of CO_2e ($MTCO_2e$), equal to 1,000 kilograms or approximately 2,205 pounds.

EMISSION FACTORS

An emission factor describes how many $MTCO_2e$ are released per unit of an activity. For instance, an emission factor for electricity describes the $MTCO_2e$ produced per kilowatt hours (kWh) of electricity used. Since different sources of electricity can have different emission factors, the emission factors in **Table B-1** represent a weighted average of emission factors across electricity sources and portfolios (e.g. MCE's Light Green and Deep Green products). The emission factor for on-road transportation describes the $MTCO_2e$ produced per mile of driving. The project team calculated most of the GHG emissions using data on GHG-generating activities in combination with emission factors. Some sources of GHG emissions (known as sectors), including agriculture and off-road emissions, are calculated using formulae or models and do not have specific emission factors. **Table B-1** shows the emission factors for the inventory years for the unincorporated area.

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TABLE B-1: GHG INVENTORY EMISSION FACTORS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change	Source
PG&E electricity ($MTCO_2e$/kWh)	0.000226	0.000195	0.000096	0.000108	-52%	PG&E
Direct access electricity ($MTCO_2e$/ kWh)	0.000388	0.000309	0.000208	0.000187	-52%	California Energy Commission
MCE electricity ($MTCO_2e$/ kWh)	N/A	N/A	0.000059	0.000045	-24% *	MCE
Natural gas ($MTCO_2e$/therm)	0.005311	0.005311	0.005311	0.005311	0%	US Community Protocol
Propane ($MTCO_2e$/gallon)	0.005844	0.005844	0.005844	0.005844	0%	US Community Protocol
Kerosene ($MTCO_2e$/gallon)	0.010569	0.010569	0.010569	0.010569	0%	US Community Protocol
Wood ($MTCO_2e$/MMBTU)	0.095624	0.095624	0.095624	0.095624	0%	US Community Protocol
On-road vehicles ($MTCO_2e$/VMT)	0.000486	0.000483	0.000421	0.000408	-16%	California Air Resources Board
BART ($MTCO_2e$/ passenger mile)	0.000093	0.000093	0.000093	0.000013	-86%	BART
Municipal solid waste ($MTCO_2e$/ton)	0.293179	0.293184	0.286047	0.261659	-11%	CalRecycle
Alternative daily cover ($MTCO_2e$/ton)	0.191850	0.245890	0.245694	0.245693	28%	CalRecycle

* MCE's percentage change is from 2017 to 2019.

COMMUNITY-WIDE EMISSIONS

Sectors

The community-wide GHG inventory assessed GHG emissions from the following 11 categories of activities, known as sectors.



- **Transportation** includes GHG emissions created by driving on-road vehicles in the unincorporated county, including passenger and freight vehicles.



- **Residential energy** includes GHG emissions attributed to the use of electricity, natural gas, and other home heating fuels in residential buildings.



- **Solid waste** includes the GHG emissions released from trash collected in the unincorporated areas of Contra Costa County, as well as collective annual emissions from waste already in place at the Acme, Keller Canyon, and West Contra Costa Landfills.



- **Nonresidential energy** includes GHG emissions attributed to the use of electricity and natural gas in nonresidential buildings.



- **Agriculture** includes GHG emissions from various agricultural activities in the unincorporated county, including agricultural equipment, crop cultivation and harvesting, fertilizer application, and livestock operations.



- **Off-road equipment** includes GHG emissions from equipment that does not provide on-road transportation (excluding agricultural equipment), such as tractors for construction, ~~or~~ equipment used for landscape maintenance, commercial and industrial equipment, and outdoor recreational equipment.



- **Water and wastewater** accounts for the electricity used to transport and process water and wastewater used or generated by unincorporated county residents and businesses, as well as direct emissions resulting from wastewater treatment activities.



- **Bay Area Rapid Transit (BART)** includes GHG emissions associated with the operation of BART for unincorporated county residents.

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- **Land use and sequestration** includes GHG emissions absorbed and stored in trees and soils on locally controlled lands as part of healthy ecosystems and released into the atmosphere from development of previously undeveloped land.



- **Stationary sources** are emissions from fuel use at major industrial facilities, permitted by state and regional air quality authorities. These emissions are informational and are not counted as part of the community total.



- **Wildfire** includes emissions released as a result of wildfires. These emissions are informational and are not counted as part of the community total.



- **Direct access electricity** is electricity purchased directly from an Electric Service Provider (ESP) rather than a conventional utility company or Community Choice Energy provider such as MCE, generally to power large industrial, commercial, and institutional facilities.



Community-Wide Inventory Results

Table B-2 show the community-wide GHG emissions for the unincorporated area associated for the four inventory years. Total community-wide emissions declined 22 percent from 2005 to 2019. The most significant decreases in emissions came from BART, water and wastewater, residential energy use, and transportation, which all saw their associated emissions decrease by more than 25 percent. Only off-road equipment saw a significant (58 percent) increase in associated GHG emissions.

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TABLE B-2: ABSOLUTE ANNUAL GHG EMISSIONS, 2005–2019 ($MTCO_2E$)

Sector	2005	2013	2017	2019	Percentage Change, 2005 - 2019
Transportation	628,200	651,130	571,650	464,040	-26%
Residential energy	294,930	280,870	212,420	191,780	-35%
Nonresidential energy	118,740	125,350	98,8501	85,390	-28%
Solid waste	243,940	224,570	223,100	220,760	-10%
Agriculture	33,350	39,300	44,880	36,130	8%
Off-road equipment	34,160	36,290	42,840	54,010	58%
Water and wastewater	8,080	7,400	4,400	4,870	-40%
BART	1,040	1,320	1,440	190	-82%
Land use and sequestration	-70,860	-70,860	-70,860	-70,860	0%
Total Annual $MTCO_2e$	**1,291,580**	**1,295,370**	**1,128,720**	**986,310**	**-24%**
Informational Items					
Stationary sources	13,983,030	11,956,000	11,232,290	10,867,670	-22%
Wildfire	14,270	66,080	02*	10,100	N/A3
Direct access electricity	0[4]	0[4]	0[4]	74,130	N/A

Note: All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.
1 Estimates of nonresidential electricity use in 2013 are used in 2017 to account for a lack of available data in 2017.
2 No wildfires were recorded in the unincorporated county in 2017.
3 Overall change between 2005 and 2019 for wildfire is not calculated because of the high degree of year-to-year variability.
4 PG&E did not provide direct access electricity use data in these years. ~~All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.~~
~~*No wildfires were recorded within the unincorporated County in 2017.~~

Regarding stationary sources, there are several factors outside of the County's control that influence the operations and related emissions and energy use at these facilities. The County has therefore elected to exclude the direct emissins and energy use at these facilities from consideration of the County's GHG reduction goals for the following reasons:

- These facilities are regulated primarily through the Federal Energy Regulatory Commission and the California Energy Commission (CEC), and are subject to air quality and emissions standards set forth by USEPA, CARB, and BAAQMD.
- The energy used at some of these facilities fluctuates from year to year depending on the demand for resources and the availability of other electricity-generating sources such as hydropower or renewable resources. This makes it difficult to accurately forecast the energy use at these facilities.

- The County has limited jurisdictional authority to reduce GHG emissions from these sources as they are subject to cap-and-trade regulations set forth by CARB.
- The approach to excluding energy from sources that are outside of the County's jurisdictional control is consistent with the *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*.

The resultant jurisdictional inventory more accurately reflects the energy use from nonresidential customers in unincorporated Contra Costa County and allows the County to focus on actions that are within its control.

Contra Costa County is developing a Just Transition Economic Revitalization Plan, a long-term strategic plan for transitioning to a net zero-emission economy.

COMMUNITY-WIDE GHG INVENTORY RESULTS BY SECTOR

Transportation

On-road transportation activity accounts for vehicle miles driven between two points in the unincorporated area, or between the unincorporated area or another community. It does not include miles for trips that begin and end in other communities but pass through the unincorporated area (e.g., from Sacramento to Oakland). Unincorporated Contra Costa County community members drove approximately 1.3 billion vehicle miles in 2005, decreasing 12 percent to approximately 1.1 billion vehicle miles in 2019. The VMT in 2005 resulted in GHG emissions of approximately 628,200 $MTCO_2e$, which dropped to approximately 464,040 in 2019, a 26-percent decrease. GHG emissions decreased due to this reduction in VMT, increasingly fuel-efficient vehicles, and a wider adoption of electric vehicles. The average vehicle on the road in unincorporated Contra Costa County generated 16 percent fewer GHG emissions per mile in 2019 than in 2005, as reported by Caltrans. **Table B-3** provides a breakdown of the activity data and emissions for on-road transportation for the unincorporated area by each individual year included in the updated community inventory.

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TABLE B-3: TRANSPORTATION ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

SECTOR	2005	2013	2017	2019	PERCENTAGE CHANGE, 2005 - 2019
Activity Data (VMT)					
On-road transportation	1,291,819,230	1,349,279,980	1,357,121,160	1,136,911,090	-12%
Emissions ($MTCO_2e$)					
On-road transportation	628,200	651,130	571,650	464,040	-26%
All numbers are rounded to the nearest 10.					

Residential Energy

Contra Costa County's GHG emissions from residential energy totaled approximately 191,780 $MTCO_2e$ in 2019, compared to 294,930 $MTCO_2e$ in 2005, a decline of 35 percent. Residential electricity GHG emissions decreased due to a decrease in overall use and usage of cleaner sources of electricity. Residential electricity use fell 40 percent from 2005 to 2019, from 488,236,740 kWh to 293,561,300 kWh. Over this period, as seen in **Table B-1**, a unit of electricity supplied by Pacific Gas and Electricity Company (PG&E) emitted 52 percent less GHG in 2019 than in 2005. Electricity from MCE, which supplied electricity to community residents in 2017 and 2019, generated even fewer GHG emissions per unit of electricity than PG&E-supplied electricity, which has also contributed to the decline in this sector. Natural gas use and GHG emissions saw a small decrease from 2005 to 2019 of 3 percent despite a growing population. Propane and wood use and GHG emissions also declined over this period, although GHG emissions from these fuels are only a small proportion of those from the residential energy sector. **Table B-4** provides a breakdown of the activity data and GHG emissions for residential energy for the unincorporated area.

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TABLE B-4: RESIDENTIAL ENERGY ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

SECTOR	2005	2013	2017	2019	PERCENTAGE CHANGE, 2005 - 2019
Activity Data					
Residential PG&E electricity (kWh)	488,236,740	478,219,710	461,970,670	46,158,330	-91%
Residential MCE electricity (kWh)	-	-	307,820	247,402,970	80,273%*
Residential natural gas (therms)	30,919,160	31,007,110	28,634,420	30,100,640	-3%
Residential propane (gallons)	1,525,330	1,106,900	1,043,270	1,021,340	-33%
Residential kerosene (gallons)	13,160	10,960	8,030	16,320	24%
Residential wood (MMBTU)	117,000	165,830	100,960	101,710	-13%
Emissions ($MTCO_2e$)					
Residential PG&E electricity	110,120	93,380	44,510	5,000	-95%
Residential MCE electricity	0	0	20	11,060	55,200%*
Residential natural gas	164,570	165,040	152,060	159,850	-3%
Residential propane	8,910	6,470	6,100	5,970	-33%
Residential kerosene	140	120	80	170	21%
Residential wood	11,190	15,860	9,650	9,730	-13%
Total Annual $MTCO_2e$	**294,930**	**280,870**	**212,420**	**191,780**	**-35%**

* MCE did not operate in the unincorporated County until 2017, and 2017 operations were very limited. MCE percentage changes are for changes from 2017 to 2019.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Solid Waste

Contra Costa County's community-wide GHG emissions associated with solid waste includes four subsectors.

- Municipal solid waste (MSW) is the material that is discarded by community members and reflects the actual waste generated by the community.
- Alternative daily cover (ADC) is organic material applied at landfills by the landfill operator as a means of controlling debris and pests.

- Waste in place is the solid waste and associated GHG emissions deposited in the County's landfills in previous years.
- The flaring subsector accounts for GHG emissions from the combustion of gases generated by the decomposing waste.

Between 2005 and 2019, total solid waste GHG emissions decreased by 10 percent due to decreases in solid waste generated and ADC applied, likely as a result of increased community awareness about recycling and composting and the availability of curbside recycling programs. Although annual waste generation decreased, waste in place at the landfills increased as waste is added to the landfills each year. **Table B-5** presents solid waste emissions data for each year for the unincorporated area.

TABLE B-5: SOLID WASTE ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Activity Data (Tons)					
Solid waste	154,820	78,790	79,520	79,340	-49%
ADC	15,950	13,990	11,470	7,580	-52%
Waste in place	34,455,010	41,785,650	45,776,140	47,618,290	38%
Landfill flaring	5,270	5,260	5,250	5,270	Less than 1%
Emissions ($MTCO_2e$)					
Solid waste	45,390	23,100	22,750	20,760	-54%
ADC	3,060	3,440	2,820	1,860	-39%
Waste in place	193,950	196,500	196,000	196,610	1%
Landfill flaring	1,540	1,530	13,550	13,590	-1%
Total Annual $MTCO_2e$	243,940	224,570	235,120	232,820	-10%

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Nonresidential Energy

Contra Costa County's GHG emissions from nonresidential energy totaled approximately 85,390~~159,520~~ $MTCO_2e$ in 2019, compared to 118,740 $MTCO_2e$ in 2005, a~~n~~ decrease~~increase~~ of 28~~34~~ percent. Electricity emissions from retail electricity suppliers (PG&E and MCE) have fallen significantly, driven by a small decrease in electricity use and a large increase in the amount of electricity for renewable and carbon-free sources (see **Table B-1**). Between 2005 and 2019, nonresidential electricity obtained from PG&E

decreased by 90 percent and nonresidential electricity obtained from MCE increased from virtually nothing in 2017 to approximately 200 million kWh in 2019. Natural gas use and associated emissions have reportedly increased, although this may be less of an actual increase and more so the result of data being omitted by PG&E as a way of complying with Sstate privacy regulations. As a consequence of this, the project team has kept nonresidential natural gas use constant at 2013 levels, a conservative estimate that may not account for actual decreases in this subsector. ~~Similarly, direct access electricity (electricity purchased from third parties instead of PG&E or MCE, usually by large customers such as major industrial facilities) was only reported for 2019, although this electricity use likely occurred in previous years but was not reported due to privacy regulations.~~ **Table B-6** provides a breakdown of the activity data and GHG emissions for nonresidential energy for the unincorporated area.

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TABLE B-6: NONRESIDENTIAL ENERGY ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
Nonresidential PG&E Electricity (kWh) [1]	284,558,070	266,216,660	266,216,660	29,062,250	-90%
Nonresidential MCE electricity (kWh) [2]	0	0	28,730	200,181,720	696,669%
~~Nonresidential Direct Access electricity (kWh)~~ [3]	~~0~~	~~0~~	~~0~~	~~396,805,940~~	~~N/A~~
Nonresidential natural gas (therms) [4]	10,251,360	13,784,410	13,784,410	13,784,410	-58%
Emissions ($MTCO_2e$)					
Nonresidential PG&E electricity [1]	64,180	51,980	25,650	3,150	-95%
Nonresidential MCE electricity [2]	0	0	Less than 10	9,040	451,900%
~~Nonresidential Direct Access electricity~~ [3]	~~0~~	~~0~~	~~0~~	~~74,130~~	~~N/A~~
Nonresidential natural gas [34]	54,560	73,370	73,200	73,200	34%
Total Annual $MTCO_2e$	118,740	125,350	98,850	85,390	34%

1: Due to omissions in data reported by PG&E for the calendar year 2017, the project team assumed that electricity use remained constant from 2013 levels.

2: MCE did not operate in the unincorporated County until 2017, and 2017 operations were very limited. MCE percentage changes are for changes from 2017 to 2019.

~~3: Direct access electricity was only reported for 2019. As PG&E also reports MCE-supplied electricity as Direct Access, the numbers given in this table are the electricity use after MCE data are removed.~~

34: Due to omissions in data reported by PG&E for the calendar years 2017 and 2019, the project team assumed that natural gas use remained constant from 2013 levels.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Agricultural Emissions

GHG emissions associated with the agriculture sector for the unincorporated area increased by approximately 8 percent between 2005 and 2019, as shown in **Table B-7**. This increase is due primarily to a minor increase (5 percent) in the amount of cattle in the county. Although crop acreages declined from 2005 to 2019, more fertilizer was applied in

2019 than in 2005 due to a shift in the types of crops being grown that required slightly more fertilizer.

TABLE B-7: AGRICULTURE ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
Crops (acreage)	200,980	204,031	197,360	183,730	-9%
Nitrogen applied (pounds)	3,261,620	3,560,480	3,698,500	3,608,340	11%
Livestock (effective annual population)	16,500	19,110	22,060	17,340	5%
Emissions ($MTCO_2e$)					
Crops	3,920	4,280	4,450	4,340	11%
Enteric fermentation	28,510	33,920	39,160	30,790	8%
Manure management	920	1,100	1,270	1,000	9%
Total Annual $MTCO_2e$	33,350	39,300	44,880	36,130	8%

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Off-Road Equipment Emissions

According to data shown in **Table B-8**, emissions from off-road equipment in unincorporated Contra Costa County increased approximately 73 percent between 2005 and 2019, although the sector overall remains a small proportion of the total community-wide emissions. This increase is primarily the result of a significant rise in diesel tractor and other agricultural equipment use over this period, along with increases in commercial and industrial/warehouse equipment use. Since this is modeling directly reported by State agencies, it is possible that changes in modeling methods may be affecting the results. Note that the State provides these GHG emission levels directly, so there is no activity data to display.

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TABLE B-8: OFF-ROAD EQUIPMENT GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Agricultural equipment	1,200	1,190	1,180	10,170	748%
Cargo handling equipment	900	380	330	310	-66%
Commercial harbor equipment *	0	0	0	2,600	N/A
Construction and mining equipment	6,780	7,170	8,880	7,200	6%
Industrial equipment	8,320	8,840	9,470	9,780	18%
Lawn and garden equipment	3,580	3,280	3,760	3,880	8%
Light commercial equipment	2,230	2,780	3,060	3,270	47%
Locomotives	3,170	3,260	3,540	3,620	14%
Oil drilling equipment	20	20	20	20	0%
Pleasure craft	1,890	1,810	1,800	1,830	-3%
Portable equipment	4,830	6,240	6,700	6,970	44%
Recreational equipment	650	670	610	630	-3%
Transport Refrigeration Units	590	650	3,490	3,730	532%
Total Annual $MTCO_2e$	**34,160**	**36,290**	**42,840**	**54,010**	**58%**

* State modeling only provided emissions for commercial harbor equipment for 2019.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

According to records maintained by the California Department of Conservation's Geologic Energy Management Division, there are no active oil or gas extraction wells in the unincorporated area. There are 16 natural gas storage wells in the hills between Clyde and Bay Point, along with an observation well. As these sites are not being used for active extraction, there are no further emissions associated with fossil fuel production at well sites in this inventory.

Water and Wastewater Emissions

Emissions associated with the water and wastewater sector are counted as indirect or direct emissions. Indirect water emissions refer to emissions created by the electricity required to treat and move water to where it is used. Indirect wastewater emissions refer to electricity needed to move wastewater to water treatment facilities, and to process and discharge it. Direct wastewater emissions refer to emissions produced directly by decomposing materials in wastewater.

GHG emissions from Contra Costa County's water and wastewater activity decreased 40 percent between 2005 and 2019. Indirect water GHG emissions declined by 62 percent between 2005 and 2019 while indirect wastewater GHG emissions decreased by 66 percent. Community members used substantially less water (31 percent less) and generated less wastewater (30 percent less) in 2019 than in 2005 despite population growth. This is likely a result of increased water efficiency by community residents and businesses. Additionally, the electricity used in water and wastewater pumping and treatment has been increasingly supplied by renewable and carbon-free sources, decreasing GHG emissions. Direct wastewater emissions did rise by approximately 199 percent from 2005 to 2019, but given that the amount of wastewater generated declined by this period, this is likely due to changes in modeling approaches and available data. The emissions data for the unincorporated area in **Table B-9** shows that overall emissions increased slightly within the water and wastewater sector.

TABLE B-9: WATER AND WASTEWATER ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Activity Data					
Water use (million gallons)	11,530	11,650	7,380	8,010	-31%
Water electricity use (kWh)	26,443,770	28,004,290	19,137,620	20,783,930	-21%
Wastewater generation (million gallons)	4,560	4,610	3,150	3,170	-30%
Wastewater electricity use (kWh)	6,199,120	6,198,590	4,268,050	4,295,780	-31%
Emissions ($MTCO_2e$)					
Indirect water	5,960	5,470	1,840	2,250	-62%
Indirect wastewater	1,400	1,210	410	470	-66%
Direct wastewater	720	720	2,150	2,150	199%
Total Annual $MTCO_2e$	**8,080**	**7,400**	**4,400**	**4,870**	**-40%**

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

BART Emissions

Emissions associated with BART ridership decreased 82 percent between 2005 and 2019. This decline is attributable to changes in BART's electricity portfolio, which in recent years have shifted to favor more renewable and carbon-free sources of energy. BART ridership from community members in unincorporated Contra Costa County increased 29 percent between 2005 and 2019, as shown in **Table B-10**. Ridership at all stations serving the unincorporated area increased by 10 to 35 percent over this period except for Pittsburg/Bay Point, which saw some of its ridership shift to Pittsburg Center and Antioch with the opening of the BART to Antioch extension in 2018.

TABLE B-10: BART ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
BART Ridership (passenger miles)	11,231,870	14,228,420	15,528,840	14,444,740	29%
Emissions ($MTCO_2e$)					
Total Annual $MTCO_2e$	1,040	1,320	1,440	190	-82%
All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.					

Land Use and Sequestration

GHG emissions from land use and sequestration can be either positive (a source of emissions) or negative (removing emissions from the atmosphere, creating what is known as an emissions "sink"). Natural lands and trees in urban areas absorb carbon, storing it in wood, plants, and soil. As a result, when natural land is preserved or when more trees are planted, emissions from this sector are negative because GHGs are being removed from the atmosphere. However, developing natural lands or converting them to a different form (for example, replacing forests with crop land) or removing street trees causes carbon to be released, creating GHG emissions.

This sector includes emission sources and sinks from three types of activities: sequestration of GHG emissions in locally controlled forested lands, sequestration of GHG emissions in street trees in urbanized unincorporated areas, and emissions caused by permanently removing vegetation from natural lands or farmlands as a part of development.

Emissions and sequestered amounts remained constant in both years for all three activities. Locally-controlled forests and urban trees have not had their sequestration capabilities changed by human activities during the inventory period. While there was some development activity that caused a loss of sequestered GHG emissions, records of when the development specifically occurred are not available, and so the GHG emissions have been assigned equally to both inventory years, hence the lack of changes. Forests sequestered 58,110 $MTCO_2e$ annually, while urban trees sequestered 12,750 $MTCO_2e$, for a total carbon sink of 70,860 $MTCO_2e$ for the unincorporated area, as shown in **Table B-11**.

TABLE B-11: LAND USE AND SEQUESTRATION ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Activity Data					
Acres of forested land	60,050	60,050	60,050	60,050	0%
Acres of urban trees	32,780	32,780	32,780	32,780	0%
Acres of land use changes	0	0	0	0	0%
Emissions ($MTCO_2e$)					
Forest sequestration	-58,110	-58,110	-58,110	-58,110	0%
Street tree sequestration	-12,750	-12,750	-12,750	-12,750	0%
Land use changes	0	0	0	0	0%
Total Annual $MTCO_2e$	**-70,860**	**-70,860**	**-70,860**	**-70,860**	**0%**
All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.					

Wildfire

Wildfires create GHG emissions by burning organic materials such as trees and plants, releasing the carbon sequestered in these materials. Larger fires and those that burn through forested areas, as opposed to less densely vegetated ecosystems, release more GHG emissions. The County reported wildfires in the unincorporated area in 2005, 2013, and 2019, but not in 2017. The acreages and emissions of these fires for the unincorporated area are reported in **Table B-12**. Although wildfire emissions and acreages were lower in 2019 than in 2005, wildfire activity varies widely from year to year, and is generally expected to increase in future years due to climate change. Wildfire emissions are not calculated in the totals presented in this appendix and are for informational purposes only.

TABLE B-12: WILDFIRE ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

SECTOR	2005	2013	2017	2019	PERCENTAGE CHANGE, 2005–2019
Activity Data					
Acres burned	2,070	6,320	0	1,830	-31%
Emissions ($MTCO_2e$)					
Total Annual $MTCO_2e$	14,270	66,080	0	10,100	-29%

2005 wildfires: Bragdon Fire, BNSF Fire, Byron Fire, Vasco Airport Fire, and an unnamed fire south of Antioch.

2013 wildfires: Kirker Fire and Morgan Fire.

2019 wildfires: Marsh 3 Fire, Marsh 5 Fire, Marsh 6 Fire.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Stationary Source Emissions

Stationary source emissions result from fuel use, such as natural gas or propane, at large industrial facilities. These facilities include refineries, power plants, factories, and similar installations. Natural gas use at these facilities may be included as part of the nonresidential natural gas use reported by PG&E. These facilities are regulated by the State and BAAQMD, and the County does not have direct control over their operations. Emissions from these facilities are therefore not counted toward the County's total GHG emissions.

Table B-13 shows the emissions from stationary sources for the unincorporated area. This information is directly reported by the California Air Resources Board as total emissions. The Board does not report activity data for stationary sources, which would include amounts of fuel burned at these facilities. These emissions are not included in the totals presented in this memorandum and are for informational purposes only.

TABLE B-13: STATIONARY SOURCE GHG EMISSIONS, 2005–2019

SECTOR	2005	2013	2017	2019	PERCENTAGE CHANGE, 2005–2019
Emissions ($MTCO_2e$)					
Total Annual $MTCO_2e$	13,983,030	11,956,000	11,232,290	10,867,670	-22%

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Direct Access Electricity Emissions

PG&E provided direct access electricity data only for 2019. In 2019, Contra Costa County direct access electricity customers used 396, 805, 940 kWh of electricity, producing 74,130 $MTCO_2e$ of emissions. Direct access electricty, supplied by an ESP to large nonresidential customers, is regulated by the California Public Utilities Commission. The identities of direct access customers and the specific ESPs from which they purchase electricity are not made available to the public. Given the County's limited ability to monitor and regulate the sale and use of direct access electricity, as well as historical inconsistences in how direct access electricity use is reported, direct access emissions are reported for informational purposes only.

COUNTY OPERATIONS EMISSIONS

Sectors

The County operations inventory looks at GHG emissions from the following sectors:

- **Employee commute** includes GHG emissions from County employees commuting to and from work, as well as emissions associated with business travel.
- **Buildings and facilities** includes the electricity and natural gas use at County-owned facilities.
- **Government fleet** includes the fuel-use from County-owned vehicles.
- **Government-generated solid waste** includes the waste materials generated at County facilities.
- **Public lighting** includes the electricity use for publicly owned lights, including streetlights and traffic signals.
- **Water and wastewater** includes emissions associated with water use and wastewater generation at County facilities.
- **Refrigerants** includes the leaks of GHGs from air conditioning systems in County-owned vehicles and buildings.

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County Operations Inventory Results

In 2006, Contra Costa County government operations emissions totaled 54,090 $MTCO_2e$ for the sectors reported in this inventory, as shown in **Table B-14**. In 2017, County government operations GHG emissions were 43,380 $MTCO_2e$, a 20 percent decrease from 2006 levels. This decrease is primarily the result of reductions in energy use, reductions in County fleet emissions, and reductions in employee waste disposal. The 2017 inventory also includes emissions from wastewater treatment and refrigerants, which were not included in the 2006 inventory.

TABLE B-14: 2006 BASELINE AND 2017 COUNTY-OPERATIONS GHG EMISSIONS SUMMARY

Sector	2006 GHG Emissions ($MTCO_2E$)	2017 GHG Emissions ($MTCO_2E$)	Percentage Change
Employee commute	23,530	25,800	10%
Buildings and facilities	19,260	12,500	-35%
Government fleet	8,500	3,430	-60%
Government-generated solid waste	1,980	900	-54%
Public lighting	830	440	-47%
Water and wastewater	Not included	220	—
Refrigerants	Not included	90	—
Total	**54,090**	**43,380**	**-20%**

These inventories assume 8,420 County employees in 2006 and 10,030 employees in 2017, a 19% increase.

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

COUNTY OPERATIONS GHG INVENTORY RESULTS BY SECTOR

Employee Commute and Travel

Tables B-15 and **B-16** summarize changes in 2006 and 2017 related to employee commute activities.

TABLE B-15: 2006 BASELINE AND 2017 EMPLOYEE COMMUTE AND TRAVEL EMISSIONS

Activity/Source	2006 $MTCO_2E$	2017 $MTCO_2E$	Percentage Change
Employee commute	23,530	25,800	10%

TABLE B-16: 2017 EMPLOYEE COMMUTE ACTIVITY DATA AND GHG EMISSIONS

ACTIVITY/SOURCE	ACTIVITY DATA	UNITS	GHG EMISSIONS ($MTCO_2E$)	PERCENTAGE
Driving alone (gas)	77,173,500	Vehicle miles	24,600	95%
Driving alone (electric)	4,494,570	Vehicle miles	0	0%
Carpool	1,155,500	Passenger miles	350	1%
Transit (BART, bus)	641,830	Passenger miles	100	Less than 1%
Motorcycle	425,050	Vehicle miles	749	3%
Active transportation (walk, bike)	66,590	Miles	0	0%
Telecommute	88,816	Miles	0	0%
Total	**84,045,860**	**Miles**	**25,800**	**100%**

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

Although employees' personal commute is not under the direct operational control of the County, there are a variety of tools and resources available to influence employees' commute patterns. For this reason, emissions are included in this inventory. Employee commute accounted for in the emissions inventory includes business travel; travel via personal vehicles; carpool; alternative transportation methods, including biking and walking; air travel; and public transit.

In 2017, County employees' commute to work contributed to 25,795 $MTCO_2e$. This is a 10 percent increase in GHG emissions from the 23,530 $MTCO_2e$ reported in 2006. Over the years, there was an increase in the number of employees from 8,420 to 10,030 between 2006 and 2017. Commute emissions reflect increased vehicle fuel efficiency, although changes in the number of employees and increases in commute distance balance that out.

Buildings and Facilities

The buildings and facilities sector includes electricity and natural gas use at County-owned and operated buildings and facilities. Emissions from this sector totaled 19,210 $MTCO_2e$ in 2006 and 12,500 $MTCO_2e$ in 2017 (see **Table B-17**), a 35 percent decrease.

TABLE B-17: 2006 BASELINE AND 2017 BUILDINGS AND FACILITIES ENERGY USE EMISSIONS

SUBSECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENTAGE CHANGE
Buildings and facilities – natural gas	11,360	6,300	-44%
Buildings and facilities – electricity	7,670	6,200	-19%
Total	19,030	12,500	-35%

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

Government (County) Fleet

The vehicles and equipment used in the County's daily operations burn gasoline, diesel, propane, and compressed natural gas fuel, resulting in the emission of GHGs.

Contra Costa's 2017 vehicle fleet emissions totaled 3,430 $MTCO_2e$ (see **Table B-18**). This is a 59-percent decrease in GHG emissions from the 8,500 $MTCO_2e$ in the 2006 inventory. This is primarily the result of a decrease in on-road vehicle miles traveled and an increase in fuel efficiency between inventory years.

TABLE B-18: 2006 BASELINE AND 2017 VEHICLE FLEET EMISSIONS

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENTAGE CHANGE
Government fleet	8,500	3,430	-59%

Solid Waste

County operations generates solid waste during normal activity, much of which is eventually landfilled. Emissions from this sector are estimates of methane generation that will result in future years from the waste that was sent to the landfill in the inventory year. Solid waste generated by County employees contributed to a total of 900 $MTCO_2e$ in year 2017 (see **Table B-19**). Solid waste collected from County operations saw a reduction of 54 percent in emissions since the 2006 baseline, where this sector contributed to 1,980 $MTCO_2e$.

TABLE B-19: 2006 BASELINE AND 2017 GOVERNMENT-GENERATED SOLID WASTE

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENTAGE CHANGE
Government-generated solid waste	1,980	900	-54%

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Public Lighting

Emissions from public lighting owned by the County, such as streetlights, totaled 440 $MTCO_2e$ in 2017 (see **Table B-20**). This is a 47-percent decrease from the 830 $MTCO_2e$ reported in 2006.

TABLE B-20: 2006 BASELINE AND 2017 PUBLIC LIGHTING

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENTAGE CHANGE
Public lighting	830	440	-47%

Water and Wastewater

The water and wastewater treatment sector includes the emissions generated by the electricity needed to move and process the water used and the wastewater generated by County government facilities (indirect water and wastewater), along with direct emissions caused by the processing of County-generated wastewater. Water use and wastewater generation at County facilities generated a total of 220 $MTCO_2e$ in 2017 (see **Table B-21**). The water and wastewater sector was not included in the 2006 baseline inventory.

TABLE B-21: 2006 BASELINE AND 2017 WASTEWATER TREATMENT

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$
Indirect Water	Not included	180
Indirect Wastewater	Not included	20
Direct Wastewater	Not included	20
Total	**Not included**	**240**

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

Refrigerants

Vehicles and buildings with air conditioning use refrigerants that can leak from engines and appliances during normal operation and maintenance. These refrigerants are often GHGs that trap a very large amount of heat per unit of gas, known as gases with a very high global warming potential (GWP). Emissions from refrigerant leaks were accounted for in the 2017 GHG emissions inventory for County government operations. This sector was not included in the 2006 baseline inventory.

Refrigerant emissions contributed to 90 $MTCO_2e$ in 2017 (see **Table B-22**).

TABLE B-22: 2006 BASELINE AND 2017 REFRIGERANTS

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$
Refrigerants	Not included	90

CONSUMPTION-BASED INVENTORY EMISSIONS

As discussed in Chapter 3, the consumption-based inventory accounts for GHG emissions created by the goods and services used by community members of the unincorporated county, including residents, businesses, and employees. A consumption-based inventory assesses emissions associated with the manufacture, transportation, and disposal of these goods and services, regardless of where they occur.

In 2015, BAAQMD worked with the Cool Climate Network at the University of California, Berkeley, to prepare a consumption-based inventory for all Bay Area jurisdictions. This inventory includes GHG emissions from the following sources:

- **Travel:** GHG emissions from fuel use by on-road vehicles, vehicle manufacturing and repairs, public transportation, and air travel.
- **Housing:** GHG emissions from electricity and natural gas use in homes as well as other fuels associated with home heating (such as kerosene or fuel oil), electricity emissions from water and wastewater activities, and waste emissions. This category also includes emissions from the manufacture, transportation, and construction and demolition of materials used to construct houses.
- **Food:** GHG emissions from the growth, processing/manufacturing, and transportation of food products.
- **Goods:** GHG emissions from the manufacture, transportation, and disposal of consumer products, such as home furnishings, appliances and electronics, clothing, and healthcare and personal items.
- **Services:** GHG emissions from personal and business services, including entertainment and recreation, communication, education, healthcare, and maintenance and repair activities.

Some of these GHG emission sources are also included in the production-based inventory prepared as part of the 2024 CAP, and others are covered by either the production-based or consumption-based inventory but not both. **Table B-23** compares the sources of GHG

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emissions in the 2024 CAAP production-based inventory and the BAAQMD/Cool Climate Network consumption-based inventory.

TABLE B-23 COMPARISON OF SOURCES IN PRODUCTION-BASED AND CONSUMPTION-BASED GHG EMISSION INVENTORIES

Source of Emissions	Production-Based CAAP Inventory	BAAQMD/Cool Climate Network Consumption-Based Inventory
Generation of electricity used	Included	Included
Combustion of natural gas used	Included	Included
Combustion of other home heating fuels used	Not included	Included
Fuel use from on-road vehicles	Included	Included
Fuel use from public transportation	Included	Included
Electricity use from BART	Included	Included
Vehicle manufacturing and repairs	Partially included*	Included
Air travel	Not included	Included
Fuel use from off-road equipment, including construction and landscaping equipment	Included	Not included
Generation of electricity used for water processing and transportation	Included	Included
Generation of electricity used for wastewater processing and transportation	Included	Unknown†
Direct wastewater process emissions	Included	Not included
Landfilling of solid waste	Included	Included
Reprocessing of recyclables	Partially included*	Included
Compost processing	Partially included*	Included
Manufacturing of home-construction materials	Partially included*	Included
Food growth, processing, production, and transportation	Partially included*	Included
Carbon sequestration in forests and street trees	Included	Not included
Other embedded emissions in goods and services	Not included	Included

Note: Due to differences in data sources and analysis methods, the same source of emissions in both inventories may produce different results.

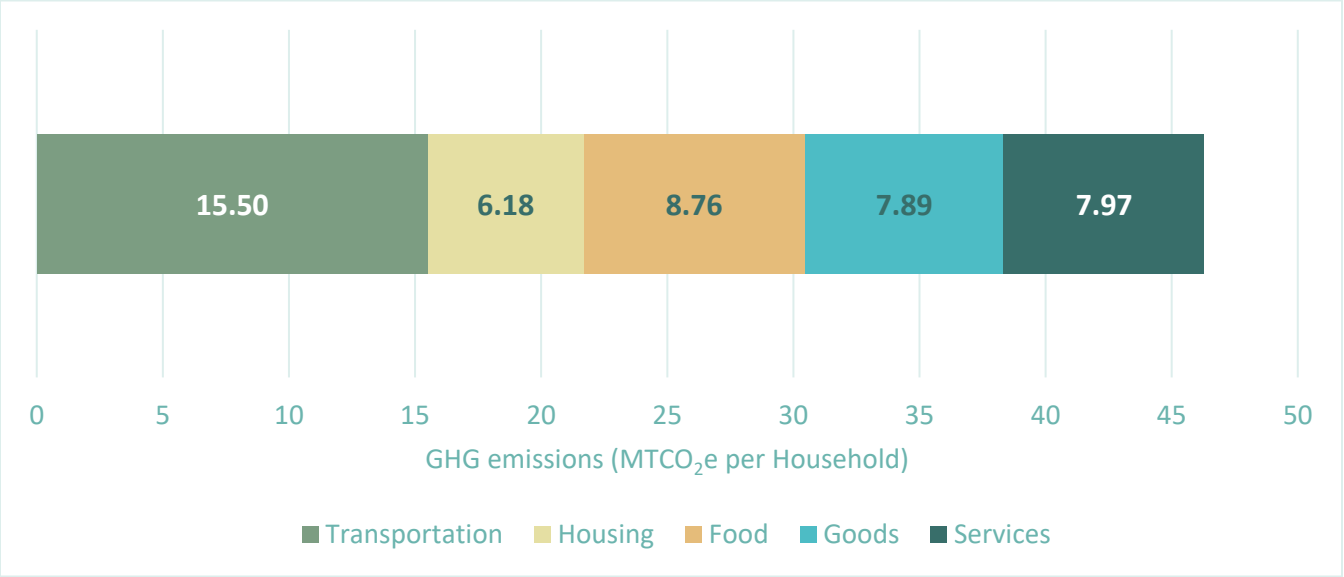
* Emissions from energy use, water use, and waste generation associated with these activities are included in the 2024 CAAP Update inventory if these activities occur in Contra Costa County. Emissions from these activities outside of Contra Costa County and other emissions associated with these activities in Contra Costa County are not included in the 2024 CAAP inventory.

† Emissions from these activities are not explicitly called out in the BAAQMD/Cool Climate Network consumption-based inventory but may be included in the total electricity use category.

Due to differences in data sources and analysis methods, the same source of emissions in both inventories may produce different results.

According to the consumption-based inventory, transportation is responsible for 15.5 $MTCO_2e$ per household, or 34 percent of emissions produced by activities conducted and goods consumed ~~with~~in ~~unincorporated~~ Contra Costa County. Food is responsible for 8.79 $MTCO_2e$ per household (19 percent), goods and services for 7.89 $MTCO_2e$ per household and 7.97 $MTCO_2e$ per household, respectively (17 percent each), and housing for 6.18 $MTCO_2e$ per household or 13 percent (see **Figure B-1**).

FIGURE B-1. CONSUMPTION-BASED INVENTORY RESULTS



Community-Wide Forecast

The forecast of community-wide GHG emissions for the unincorporated area is based on the results of the 2019 community GHG emissions inventory. The project team assumed growth in these emissions consistent with the anticipated growth in unincorporated Contra Costa County's future population, jobs, and development patterns, developed as part of the Envision Contra Costa buildout calculations. The project team forecast GHG emissions for the calendar years 2030 and 2045. The forecast is a "worst case" scenario that does not assume any efforts are taken, at any level, to reduce GHG emissions beyond the policies that are already in effect in 2019.

For many sectors, the GHG forecast assumes that each person in the unincorporated area will continue to contribute the same amount of GHG emissions as they did in 2019, so that the amount of GHG emissions increases proportionally to demographic growth. There are some sectors that are not projected this way:

- Transportation, which is projected using a regional traffic demand model based partially on demographics and partially on the location of various land uses.
- Agriculture, which is forecast using future land use projections for the amount of agricultural land in the unincorporated area.
- Land use and sequestration, which is forecast using future land use projections for developed land, forested land, and any agricultural and open space land that is developed.
- Within the off-road equipment sector, emissions from construction and mining equipment are projected using the rate of population and job growth, emissions from industrial equipment are projected using future land use projections for industrial land, and emissions from Transportation Refrigeration Units are projected using the proportion of county-wide road miles in the unincorporated area.

The forecast does not project any change in activity or GHG emissions for alternative home heating fuels (propane, kerosene, and wood), direct access electricity, cargo-handling equipment, or oil drilling equipment. Additionally, emissions for the two informational sectors (stationary sources and wildfires) are not forecasted, owing to their informational and substantial uncertainty in projecting future activities for these sectors. These GHG emissions do not have a demographic indicator that staff can use to reasonably project the volume of these emissions in the future, particularly given that they are informational

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items and not included in the total community-wide emissions. **Table B-23** shows the demographic projections and their sources for the unincorporated area.

TABLE B-23: DEMOGRAPHIC PROJECTIONS, 2019 – 2045

DEMOGRAPHIC	2019	2030	2045	PERCENTAGE CHANGE, 2019-2045	SOURCE
Population	174,150	199,360	239,720	38%	ABAG/MTC, Envision Contra Costa
Households	60,320	69,210	83,500	38%	ABAG/MTC, Envision Contra Costa
Jobs	38,760	42,480	48,150	24%	US Census Bureau, Envision Contra Costa
Service population*	212,910	241,840	287,870	35%	ABAG/MTC, US Census Bureau, Envision Contra Costa

* Service population is the sum of population and jobs

All numbers are rounded to the nearest 10.

Table B-24 shows unincorporated Contra Costa County's projected future GHG emissions relative to the 2019 inventory. Most sectors show an increase in GHG emissions due to the growing population. Agricultural emissions decrease because the amount of land use for agricultural purposes is projected to decline. Although the land use and sequestration sector is expected to remain a net carbon sink (negative emissions), the amount of emissions sequestered (removed from the atmosphere) by the activities in this sector are projected to decline. This is due to anticipated development of currently undeveloped land, removing the potential for this land to sequester carbon. Sequestration in forested and urbanized areas is projected to increase slightly.

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TABLE B-24: ABSOLUTE BUSINESS-AS-USUAL GHG EMISSIONS FORECAST, 2019–2045

SECTOR	2019 $MTCO_2E$	2030 $MTCO_2E$	2045 $MTCO_2E$	PERCENTAGE CHANGE, 2019–2045
Transportation	464,040	542,020	605,080	30%
Residential energy	191,780	217,710	259,380	35%
Nonresidential energy	85,590	93,590	106,070	24%
Solid waste	220,760	229,450	260,490	18%
Agriculture	36,130	34,770	33,410	-8%
Off-road equipment	54,010	69,520	76,100	41%
Water and wastewater	4,870	5,530	6,590	35%
BART	190	220	260	37%
Land use and sequestration	-70,860	-67,580	-58,890	-17%
Total Annual $MTCO_2e$	986,310	1,125,230	1,288,490	31%

All values rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.

Quantification

STATE AND REGIONAL GHG EMISSION REDUCTIONS FROM EXISTING ACTIONS

California has adopted and is committed to implementing policies that reduce statewide GHG emissions, including those in Contra Costa County. Many of these policies are laid out in the Climate Change Scoping Plan (Scoping Plan), a state document that outlines regulatory and market-based solutions to achieving California's GHG emission reduction goals. The Scoping Plan was first prepared in 2008, with successive updates in 2014, 2017, and 2022. These updates revised the state-level actions and identified additional opportunities for GHG emission reductions.

The Scoping Plan and related documents lay out several policies to reduce California's GHG emissions, although not all are directly applicable to Contra Costa County. The project team has assessed Contra Costa County's GHG emissions and identified five Sstate policies that are direclty relevant to the community. This allows the 2024 CAAP to provide "credit" to Contra Costa County for these policies. These Sstate efforts are:

- **The Renewables Portfolio Standard (RPS)**, which requires increases in renewable and carbon-free electricity supplies. RPS was first established in 2002 and has been amended multiple times, most recently by SB 100 in 2018. It requires all electricity

providers in the state to obtain at least 33 percent of their electricity from eligible renewable resources by the end of 2020, 60 percent of their electricity from eligible renewable resources by the end of 2030, and all of their electricity from carbon-free (although not necessarily eligible renewable) resources by the end of 2045. This policy reduces GHG emission from electricity use, including electricity used to transport and process water and wastewater, and electricity used for electric vehicles.

- **The Clean Car Standards,** which require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels. In 2002, California adopted AB 1493, the New Passenger Motor Vehicle Greenhouse Gas Emission Standards or Pavley standard. It required a reduction in tailpipe GHG emissions from new vehicles produced from 2009 to 2015. In 2012 CARB adopted an extension of this policy, the Advanced Clean Car Standards, which requires more stringent reductions in tailpipe GHG emissions from vehicles produced from 2016 to 2025. The Clean Car Standards reduce GHG emissions from on-road transportation. In August 2022, CARB adopted another expansion of these standards, known as the Advanced Clean Cars II standards. This regulation requires that all new light-duty vehicles (e.g., passenger cars, small trucks, and SUVs) sold in the state to be zero-emission by 2035, with interim targets for new light-duty vehicle sales beginning in 2026. There are some limited exceptions for plug-in hybrid vehicles. CARB adopted similar rules for heavy-duty vehicles and state and local government fleets in 2020 (Advanced Clean Trucks) and 2023 (Advanced Clean Fleets). Advanced Clean Cars II and Advanced Clean Fleets are not included in the modeling used to assess GHG reductions from the Clean Car Standards. These GHG reductions are counted as part of the reductions associated with Strategy TR-2.
- **The updated Title 24 building energy efficiency standards** require new buildings to achieve increased energy-efficiency targets. The latest version of these standards is set to go into effect January 1, 2023. California Code of Regulations, Title 24, Part 6 is California's energy efficiency standards for new and renovated buildings, applied at the local level through the project review and building permit process. The standards are strengthened every three years, with the ultimate goal of making new buildings net-zero energy, meaning that they would generate as much energy as they use. The most recent set of Title 24 standards went into effect on January 1, 2020. On August 11, 2021, the California Energy Commission (CEC) adopted the 2022 Title 24 standards. In December, it was approved by the California Building Standards Commission for inclusion into the California Building Standards Code. The 2022 Title 24 standards encourage efficient electric heat pumps, establish electric-ready requirements for new homes, expand solar photovoltaic and battery storage standards, and strengthen

ventilation standards. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Title 24 standards.

- **The Low Carbon Fuel Standard (LCFS)** mandates reduced carbon intensity of fuels used in off-road equipment. The Low Carbon Fuel Standard was adopted in 2009 and required a 10 percent reduction in the carbon intensity of all transportation and equipment fuels by 2020. This policy reduces GHG emissions from on-road transportation and from off-road equipment. The LCFS has since been revised several times, most recently in 2020. The 2020 LCFS requires further reductions in carbon intensity of around 1.25 percent every year until 2030.
- **The Short-Lived Climate Pollutant Reduction Strategy**, also known as Senate Bill (SB) 1383, requires that communities divert 75 percent of organic waste (food scraps, grass, and plant trimmings, etc.) away from landfills and toward alternatives such as composting or energy generation. As a part of this requirement, all jurisdictions must offer curbside composting to single-family and small multifamily properties (less than five units). Larger multifamily properties and businesses must either participate in curbside composting or subscribe to self-haul organic waste to a composting program or collection site. SB 1383 also includes requirements related to diverting surplus food to people in need, increasing the use of products made from recycled organics, and providing more detailed reporting statistics.
- **Renewable Natural Gas** assumes that biomethane and renewable hydrogen fuels will be blended into the fossil gas pipeline and that, in the 2030s, dedicated hydrogen pipelines will be constructed to serve certain industrial clusters.

In addition to these five state-level policies, the County's default electricity provider, MCE, has also taken action to reduce the GHG emissions from the electricity it supplies to Contra Costa community members, beyond the minimum required by RPS. In 2019, MCE electricity was approximately 60 percent renewable and 90 percent carbon-free. In 2023, MCE sourced over 95 percent of its electricity from carbon-free sources. Since MCE supplies more electricity from carbon-free sources than RPS requires it to, the County can receive "credit" for the GHG reductions that result from going beyond the State mininum. The County also enacted an all-electric reach code (suspended in February 2024), which required many types of new buildings to be built using only electricity, not use natural gas, thereby reducing GHG emissions associated with residential and nonresidential energy. The County is developing a new ordinance that will support high levels of energy efficiency and low levels of GHG emissions for new construction. This ordinance is expected to take

effect on January 1, 2025, and will be updated during future revisions to the Building Standards Code.

Overall, these existing policies are expected to reduce Contra Costa County's future GHG emissions. Without these policies in place, community-wide GHG emissions in the unincorporated area are expected to be approximatley 1,300,320 $MTCO_2e$ by 2045, or 289 percent above 2019 levels. With these polices enacted, community-wide GHG absolute emissions in the unincorporated area are projected to be approximately 874,420~~36,100~~ $MTCO_2e$ by 2045, or 187 percent below 2019 levels. **Table B-25** shows the absolute reductions achieved by these policies.

TABLE B-25: GHG EMISSION REDUCTIONS FROM EXISTING AND PLANNED STATE, REGIONAL, AND LOCAL ACTIONS (2019–2045)

	2019	2030	2045	PERCENTAGE CHANGE, 2019–2045
Forecast emissions without state and regional actions	986,310	1,125,230	1,288,490	31%
Reductions from RPS	-	-24,620	-115,400	-
Reductions from Clean Car standards	-	-110,250	-214,120	-
Reductions from Title 24	-	-9,880	31,600	-
Reductions from LCFS (off-road only)*	-	-740	7,430	-
Reductions from SB 1383	-	-21,880	-53,870	-
Reductions from renewable natural gas		-18,460	-78,050	
Reductions from MCE clean energy procurement	-	-1,240	-	-
Reductions from all-electric reach code (suspended February 2024)	-	-3,150	-2,590	-
Reductions from all existing and planned state and regional actions	**-**	**-188,740**	**-488,200**	**-**
Emissions with all existing and planned state and regional actions	986,310	957,470	874,420	-11%

Note: All numbers are rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.

* Due to the methods used in the forecast and assessment of state GHG reduction potential, future projections for off-road equipment GHG emissions are higher than forecast above.

TECHNICAL DATA FOR GHG REDUCTION STRATEGIES

This section discusses the data sources, methods, and assumptions for the quantification of the GHG-reduction strategies included in the Contra Costa County 2024 CAAP. In addition to the sources presented here, these calculations also rely on the GHG inventory and forecast. These calculations rely on emission factors that reflect the reductions already achieved by the existing actions discussed in the previous section. **Table B-26** shows these emission factors.

TABLE B-26: EMISSION FACTORS WITH EXISTING ACTIONS (2019–2045)

Activity Type	Units	2019	2030	2045
Electricity (PG&E)	$MTCO_2e$/kWh	0.000108	0.000077	0.000000
Electricity (MCE)	$MTCO_2e$/kWh	0.000045	0.000044	0.000000
Electricity (direct access)	$MTCO_2e$/kWh	0.000187	0.000134	0.000000
Electricity (PG&E and MCE)	$MTCO_2e$/kWh	0.000054	0.000047	0.000000
Natural gas	$MTCO_2e$/Therms	0.005310	0.005311	0.005310
Propane	$MTCO_2e$/Gallons	0.005845	0.005845	0.005845
Kerosene	$MTCO_2e$/Gallons	0.010417	0.010417	0.010417
Wood	$MTCO_2e$/MMBTU	0.095664	0.095664	0.095664
On-road transportation	$MTCO_2e$/VMT	0.000408	0.000325	0.000408
Solid waste (MSW)	$MTCO_2e$/Tons	0.261659	0.261678	0.261676
Solid waste (ADC)	$MTCO_2e$/Tons	0.245383	0.245132	0.245854
Solid waste (combined)	$MTCO_2e$/Tons	0.004628	0.003958	0.260191
BART	$MTCO_2e$/Passenger miles	0.000013	0.000008	0.000013

For each strategy, this appendix discusses the following items:

- The savings in activity data (e.g., kWh of electricity or tons of solid waste) in 2030 and 2045 resulting from implementing the strategy as described. A negative value indicates an increase in activity data.
- The decreases in GHG emissions in 2030 and 2045 resulting from implementing the strategy as described.
- The assumptions made about the strategy's performance, such as the level of community participation required to achieve the specified reductions by 2030 and 2045.
- The performance targets, which are quantifiable metrics about the projected level of success the strategy must meet to achieve the specified reductions by 2030 and 2045.

- Sources: Key studies, analyses, and other sources of data used to inform the quantification. This does not include the GHG inventory, forecast, or other technical analyses prepared as part of the 2024 CAAP or the 2045 Contra Costa General Plan.

CLEAN AND EFFICIENT BUILT ENVIRONMENT

Strategy BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Natural gas savings (therms)	889,870	2,754,380
Electricity savings (kWh)	-1,198,930	-6,086,080

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	4,340	10,970

KEY ASSUMPTIONS

	2030	2045
Cumulative percentage of residential new construction influenced by EDR code (once implemented)~~built to be all-electric~~	95%	95%
Cumulative percentage of new eligible nonresidential ~~office~~ construction influenced by EDR code (once implemented)~~built to be all-electric~~	95%	95%
Cumulative percentage of new nonresidential buildings eligible for EDR code ~~non-office commercial construction built to be all-electric~~	50%	50%
Year EDR reach code is first implemented~~Cumulative % new non-residential buildings that are office space:~~	2025	2025

PERFORMANCE TARGETS

	2030	2045
Number of new EDR-compliant ~~all-electric~~ residential units	8,450	22,020
Number of new EDR-compliant~~all-electric~~ commercial buildings	140	360

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Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated County, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-~~neutral~~ free fuels.

In March 2023, BAAQMD adopted amendments to Regulation 9, Rules 4 and 6. These revisions require that, when existing natural-gas-powered space heaters and water heaters reach the end of their operational life, they be replaced with electric-powered models. These requirements are scheduled to take effect in 2027 to 2031 for water heaters (depending on the capacity of the unit) and in 2029 for space heaters.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity savings (kWh) – With BAAQMD rule	100,583,970	190,187,380
Natural gas savings (therms) – With BAAQMD rule	6,596,190	16,882,720
Propane savings (gallons) – With BAAQMD rule	130,620	344,450
Gallons kerosene	2,090	5,500
MMBTU wood	13,010	34,300

GHG SAVINGS

With BAAQMD rule	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	55,990	156,150

KEY ASSUMPTIONS

	2030	2045
Percentage of existing homes conducting standard retrofits	20%	40%
Percentage of existing homes upgrading to Title 24 Standards	20%	40%
Percentage of existing mobile homes conducting standard retrofits	30%	60%
Percentage of businesses conducting standard retrofits (not including fuel switching)	15%	25%
Percentage of businesses retrofitting to current Title 24 standards (not including fuel switching)	15%	25%
Cumulative percentage of homes electrifying water heaters (BAAQMD compliance)	15%	85%
Cumulative percentage of homes electrifying space heaters (BAAQMD compliance)	10%	90%
Cumulative percentage of businesses electrifying water heaters (BAAQMD compliance)	Less than 10%	70%
Cumulative percentage of businesses electrifying space heaters (BAAQMD compliance)	5%	90%
Percentage of commercial buildings covered by BAAQMD rules	50%	50%
Cumulative percentage of homes electrifying cooking appliances	5%	65%
Cumulative percentage of homes electrifying clothes drying appliances	10%	80%
Cumulative percentage of businesses electrifying cooking appliances	5%	60%

PERFORMANCE TARGETS

	2030	2045
Number of housing units undergoing ~~energy efficiency~~ retrofits	14,160	28,310
Number of housing units renovated ~~brought up~~ to ~~current~~ Title 24 energy efficiency standards	13,210	26,430
Number of commercial buildings undergoing ~~energy efficiency~~ retrofits	490	820
Number of commercial buildings- ~~brought up~~renovated to ~~current~~ Title 24 energy efficiency standards	490	820

SOURCES

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Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity savings (kWh)	114,969,980	271,666,080

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	10,832~~2~~0	0

KEY ASSUMPTIONS

	2030	2045
Percentage of existing homes installing solar energy systems	15%	35%
Percentage of existing homes with solar energy systems and installing battery storage systems	20%	50%
Percentage of new homes installing battery storage systems	40%	60%
Percentage of existing businesses installing solar energy systems	3%	11%
Percentage of existing businesses with solar energy systems and battery storage systems	15%	45%
Percentage of residents enrolling in MCE	90%	90%
Percentage of businesses enrolling in MCE	90%	90%
Percentage of residents enrolling in 100% renewable tiers	10%	30%
Percentage of businesses enrolling in 100% renewable tiers	5%	20%
Percentage of direct access customers switching to MCE	5%	10%

PERFORMANCE TARGETS

	2030	2045
Residential solar systems installed	9,190	23,030
Residential battery systems installed	5,330	0
Nonresidential solar systems installed	30	290
Nonresidential battery systems installed	10	0
Residential electricity supplied by MCE (kWh)	272,202,760	292,636,220
Residential electricity provided at Deep Green tier (kWh)	25,842,700	83,347,910
Nonresidential electricity provided by MCE (kWh)	219,413,250	220,477,040
Nonresidential electricity provided at Deep Green tier (kWh)	10,533,730	42,339,190

SOURCES

California Distributed Generation Statistics. 2021. Interconnected Project Sites, 2021-09-30 [data set]. https://www.californiadgstats.ca.gov/archives/interconnection_rule21_projects/.

MCE. 2020. *Operational Integrated Resource Plan, 2021- 2030*. https://www.mcecleanenergy.org/wp-content/uploads/2020/10/MCE-Operational-Integrated-Resource-Plan_2021.pdf.

National Renewable Energy Laboratory. n.d. "PVWatts". https://pvwatts.nrel.gov/.

NO WASTE CONTRA COSTA

Strategy NW-1: Increase composting of organic waste.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Waste savings (tons)	5,580	9,190

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	2,240	4,000

KEY ASSUMPTIONS

	2030	2045
Current compost diversion rate	77%	77%
Target compost diversion rate	90%	95%

PERFORMANCE TARGETS

	2030	2045
Number of households with composting service	62,290	79,330
Number of businesses with composting service	2,930	3,510

SOURCES

California Air Resources Board. 2011. Landfill Methane Emissions Tool [data table]. https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool.

California Department of Resources Recycling and Recovery. 2019. "Residential Waste Stream by Material Type". https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=7&cy=7.

California Department of Resources Recycling and Recovery. 2019. "Waste Characterization Tool for California Jurisdictions". https://www2.calrecycle.ca.gov/WasteCharacterization/.

Contra Costa County. 2020. *Climate Action Plan Progress Report for 2020*. https://www.contracosta.ca.gov/AgendaCenter/ViewFile/Agenda/_12142020-3083.

Strategy NW-2: Reduce waste from County operations.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Waste savings (tons)	2,630	3,510

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	1,090	1,620

KEY ASSUMPTIONS

	2030	2045
Target composting diversion rate for County activities	85%	95%
Target recycling diversion rate for County activities	85%	95%

PERFORMANCE TARGETS

	2030	2045
Weekly average cubic yards of composted organics (uncompacted)	1,050	1,140
Weekly average cubic yards of recycled materials (uncompacted)	270	300

SOURCES

California Air Resources Board. 2011. Landfill Methane Emissions Tool [data table]. https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool.

California Department of Resources Recycling and Recovery. 2019. "Residential Waste Stream by Material Type." https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=7&cy=7.

California Department of Resources Recycling and Recovery. 2019. "Waste Characterization Tool for California Jurisdictions". https://www2.calrecycle.ca.gov/WasteCharacterization/.

Intergovernmental Panel on Climate Change. 2006. "2006 IPCC Guidelines for National Greenhouse Gas Inventories." https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html.

Strategy NW-3: Increase community-wide recycling and waste programs.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Waste savings (tons)	5,560	16,770

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	520	2,530

KEY ASSUMPTIONS

	2030	2045
Target community diversion rate	77%	85%
Decrease in non-organic and non-recyclable waste tonnage	20%	50%

PERFORMANCE TARGETS

	2030	2045
Reduction in landfilled recyclables (tons)	0	1,280
Decrease in non-compostable/recyclable tonnage (tons)	5,560	15,490
Pounds of waste per person per day	2.08	1.85

SOURCES

California Air Resources Board. 2011. Landfill Methane Emissions Tool [data table]. https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool.

California Department of Resources Recycling and Recovery. 2019. "Residential Waste Stream by Material Type". https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=7&cy=7.

California Department of Resources Recycling and Recovery. 2019. "Waste Characterization Tool for California Jurisdictions". https://www2.calrecycle.ca.gov/WasteCharacterization/.

United States Environmental Protection Agency. 2016. *Volume-to-Weight Conversion Factors*. https://www.epa.gov/sites/default/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf.

Strategy NW-4: Reduce emissions from landfill gas.

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	57,460	61,410

KEY ASSUMPTIONS

	2030	2045
Current methane capture rate	75%	75%
Future methane capture rate (Keller and Acme only)	85%	85%
Decrease in flared landfill gas	15%	30%

PERFORMANCE TARGETS

	2030	2045
Methane capture rate at Keller and Acme landfills	15%	30%
Tons of flared landfill gas	5,460	4,330

SOURCES

Contra Costa County Department of Conservation and Development. 2020. "Attachment 8: November 2020 Draft MND SCH #2020100267." http://64.166.146.245/docs/2021/BOS/20210713_1776/46178_8%20November%202020%20Draft%20MND%20SCH%20%232020100267.pdf.

REDUCE WATER USE AND INCREASE DROUGHT RESILIENCE

Strategy DR-1: Reduce indoor and outdoor water use.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity savings (kWh)	1,436,210	2,560,780
Water (MG)	360	650

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	970	1,440

KEY ASSUMPTIONS

	2030	2045
Percentage of existing homes with graywater systems	5%	20%
Percentage of existing businesses with graywater systems	2%	10%
Percentage of existing homes retrofitting water fixtures	60%	90%
Percentage of existing businesses retrofitting water fixtures	60%	90%
Percentage of new homes with graywater systems	10%	35%
Percentage of new businesses with graywater systems	5%	20%

PERFORMANCE TARGETS

	2030	2045
Number of residential graywater system installations	3,910	20,180
Number of commercial graywater systems installations	70	440
Number of nonresidential buildings receiving water efficiency upgrades	1,790	2,680
Number of residential buildings receiving water efficiency upgrades	36,190	54,290

SOURCES

Environmental Protection Agency. 2009. "Water Efficiency in the Commercial and Institutional Sector: Considerations for a WaterSense Program." https://www.epa.gov/sites/default/files/2017-03/documents/ws-commercial-ci-whitepaper.pdf

State of California, Natural Resources Agency, Department of Water Resources. 2014. "California Water Plan Update 2013."

State of California, Natural Resources Agency, Department of Water Resources. 2019. "California Water Plan Update 2018." https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/CaliforniB-Water-Plan/Docs/Update2018/Final/CaliforniB-Water-Plan-Update-2018.pdf

Water Research Foundation. 2016. "Residential End Uses of Water Study, Version 2: Executive Report."

Strategy DR-2: Ensure sustainable and diverse water supplies.

This is a supportive measure that does not result in direct measureable GHG emissions. There are no activity or GHG savings, assumptions, performance indicators, or sources associated with this measure.

CLEAN TRANSPORTATION NETWORK

Strategy TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit for travel within, to, and from the county.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Vehicle Miles Traveled (VMT)	52,447,950	153,067,310

GHG SAVINGS

	2030 $MTCO_2E$	20545$MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	17,050	40,370

KEY ASSUMPTIONS

	2030	2045
Miles of bicycle lanes	45	132
Average round trip length for bicycle~~e~~ trips (miles)	2.1	2.1
Is bike parking provided in most nonresidential locations?	Yes	Yes
Percentage~~%~~ increase in combined housing units/acre due to TOD	15%	63%
Percentage~~%~~ increase in jobs/acre due to TOD	10%	45%
Percentage increase in transit frequency	5%	15%
Level of implementation (increase in transit frequency)	10%	25%
Percentage increase in transit service miles	5%	15%
Percentage of employers participating in TDM	5%	20%
Average trip reduction from voluntary TDM participation	15%	45%
Percentage of county with expanded sidewalks	5%	15%
Change in percentage of households that have access to electric bike sharing	5%	9%
Percentage of multifamily units permanently designated as affordable	5%	15%
Percentage of transit routes that receive supportive treatments	1%	2%

PERFORMANCE TARGETS

	2030	2045
Miles of bicycle lanes	50	130
Bicycle mode share	1%	1%
Bus ridership (commute share)	5%	15%
BART ridership (passenger miles)	17,227,850	22,459,900
VMT reduction from TDM programs	1,705,370	25,757,280
New affordable multifamily units	70	540
Percentage of transit routes that receive supportive treatments	1%	2%
Change in percentage of households that have access to electric bike sharing	5%	9%

SOURCES

California Air Pollution Control Officers Association. 2010. "Quantifying Greenhouse Gas Mitigation Measures." http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoB-quantifying-greenhouse-gas-mitigation-measures.pdf.

Contra Costa Transportation Authority. 2018. "Contra Costa Countywide Bicycle Pedestrian Plan." https://ccta.net/wp-content/uploads/2018/10/5b8ec26192756.pdf.

US Census. "Contra Costa County 2019 ACS 5-Year Estimates, Table B08006."

Strategy TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity used (kWh)	-111,003,180	-260,019,140
Natural gas (gallons)	2,760	5,450
Diesel (gallons)	530,690	1,353,420
VMT	14,260	14,260

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	148,000	343,890

KEY ASSUMPTIONS

	2030	2045
Percentage of ~~c~~County vehicles that are zero-emission	80%	95%
Percentage of community fleet that is zero-emission (light-duty)	35%	85%
Target percentage of total community TNC VMT from electric vehicles	75%	90%
Percentage of community fleet that is zero-emission (heavy-duty)	10%	70%
Target percentage total commercial Natural Gas VMT replaced by biomethane	2%	5%
Target percentage total commercial Diesel VMT replaced by biomethane	5%	15%
Percentage of lawn and garden fuel use converted to electric	30%	80%
Percentage construction equipment fuel use converted to electric	30%	60%
Percentage other commercial fuel use converted to electric	20%	55%
Number of EVs in EV car sharing	50	100

PERFORMANCE TARGETS

	2030	2045
New VMT from electric vehicles, community-wide, including municipal operations	325,676,160	968,702,100
Reduction in municipal vehicle gasoline use (gallons)	230,120	250,030
New VMT from electric vehicles, TNC	82,961,910	101,629,820
Reduction in offroad gasoline use (gallons)	2,113,740	0
Reduction in offroad diesel use (gallons)	3,625,240	0
Increase in biomethane VMT	3,003,670	8,050,840
Number of EVs in car sharing	50	100

SOURCES

California Air Pollution Control Officers Association. 2010. "Quantifying Greenhouse Gas Mitigation Measures." http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoB-quantifying-greenhouse-gas-mitigation-measures.pdf.

California Air Resources Board. 2010. "Local Government Operations Protocol For the quantification and reporting of greenhouse gas emissions inventories." https://ww3.arb.ca.gov/cc/protocols/localgov/pubs/lgo_protocol_v1_1_2010-05-03.pdf.

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California Air Resources Board. 2021. "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity."

https://www.airquality.org/ClimateChange/Documents/Handbook%20Public%20Draft_2021-Aug.pdf.

California Air Resources Board. 2021. EMFAC2021 V1.0.1 Emission Inventory. https://arb.ca.gov/emfac/emissions-inventory/.

Contra Costa Transportation Authority. 2018. "Contra Costa Countywide Bicycle Pedestrian Plan." https://ccta.net/wp-content/uploads/2018/10/5b8ec26192756.pdf.

Contra Costa Transportation Authority. 2019. "Contra Costa Electric Vehicle Readiness Blueprint." https://ccta.net/wp-content/uploads/2019/07/CCTB-EV-Blueprint.pdf.

US Department of Energy. 2021. "FuelEconomy.gov". https://fueleconomy.gov/.

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RESILIENT COMMUNITIES AND NATURAL INFRASTRUCTURE

Strategy NI-4: Sequester carbon on natural and working lands in Contra Costa County.

ACTIVITY DATA SAVINGS

There are no activity data savings associated with this strategy.

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	22,630	88,910

KEY ASSUMPTIONS

	2030	2045
Percentage of irrigated crops with seasonal cover crops	15%	35%
Percentage of irrigated crops practicing mulching	5%	35%
Percentage of irrigated crops with compost application	15%	80%
Percentage of irrigated crops with field borders	2%	8%
Percentage of irrigated crops practicing alley cropping	10%	30%
Percentage of irrigated crops with conservation crop rotation	25%	50%
Percentage of irrigated crops practicing reduced tillage	15%	35%
Percentage of irrigated crops practicing no tillage	5%	10%
Percentage of orchards/vineyards with seasonal cover crops	5%	25%
Percentage of orchards/vineyards practicing mulching	5%	25%
Percentage of orchards/vineyards with compost application	15%	80%
Percentage of orchards/vineyards with windbreaks	0%	2%
Percentage of orchards with reduced tilling	10%	35%
Percentage of vineyards with reduced tilling	10%	35%
Percentage of pastures and rangeland with compost application	5%	15%
Percentage of pastures and rangeland with prescribed grazing	15%	40%
Percentage of pastures and rangeland practicing oak restoration	1%	5%
Percentage of pastures and rangeland practicing riparian restoration	0%	1.2%
Percentage of rangeland with range planting	2%	10%
Percentage of grasslands with native grass restoration	2%	10%
Percentage of forested areas undergoing annual fuel reduction	5%	25%

PERFORMANCE TARGETS

	2030	2045
Acres of irrigated crops with seasonal cover crops	3,770	8,130
Acres of irrigated crops practicing mulching	1,260	8,130
Acres of irrigated crops with compost application	3,770	18,590
Acres of irrigated crops with field borders	500	1,860
Acres of irrigated crops converted due to alley cropping	510	1,480
Acres of irrigated crops with conservation crop rotation	6,280	11,620
Acres of irrigated crops practicing reduced tillage	3,770	8,130
Acres of irrigated crops practicing no tillage	1,260	2,320
Acres of orchards or vineyards with seasonal cover crops	220	1,060
Acres of orchards or vineyards practicing mulching	220	1,060
Acres of orchards or vineyards with compost application	660	3,380
Acres of orchards or vineyards with windbreaks	-	80
Acres of orchards with reduced tilling	250	790
Acres of vineyards with reduced tilling	210	690
Acres of pastures and rangeland with compost application	7,430	21,430
Acres of pastures and rangeland with prescribed grazing	22,300	57,140
Acres of pastures and rangeland practicing oak restoration	1,490	7,140
Acres of pastures and rangeland practicing riparian restoration	-	1,710
Acres of rangeland with range planting	2,870	13,780
Acres of grasslands with native grass restoration	2,610	13,150
Acres of forested areas undergoing annual fuel reduction	3,030	15,250

SOURCES

California Air Resources Board. 2010. "Local Government Operations Protocol For the quantification and reporting of greenhouse gas emissions inventories." https://ww3.arb.ca.gov/cc/protocols/localgov/pubs/lgo_protocol_v1_1_2010-05-03.pdf.

APPENDIX C: VULNERABILITY ASSESSMENT

In January 2019, Contra Costa County prepared a Vvulnerability Aassessment in compliance with Section 65302 of the California Government Code in order to identify key vulnerable assets and populations within the cCounty and set the groundwork for short- and long-term adaptation efforts. This Vvulnerability Aassessment highlighted the cCounty's potential vulnerabilities to agricultural pests and diseases, changes in air quality, drought, extreme heat, flooding, fog, human health hazards, landslides and debris flows, severe storms, sea level rise, shoreline flooding, and wildfire.

METHOD

The Vulnerability Assessment follows the recommended process in the *California Adaptation Planning Guide* (APG). The APG suggests vulnerability assessments follow a four-step process, including the following steps, as shown in **Figure C-1**:

- **Identify Exposure.** Exposure is the presence of people; infrastructure; natural systems; and economic, cultural, and social resources in areas subject to harm from hazardous conditions. A *hazard,* or climate hazard, is an event or physical condition that has the potential to cause types of harm or loss. The project team looked at the exposure of different populations and assets to specific climate change hazards.
- **Analyze Sensitivity and Potential Impacts.** *Sensitivity* is the level to which changing climate conditions affect a species, natural system, community, government, etc. Potential *impacts* are the effects of a climate change hazard, or the combination of *exposure* and *sensitivity*. The project team first identified which hazard would likely affect particular populations and assets because not all hazards will affect all populations or assets. For example, human health hazards are likely to affect most populations, but they would not affect the structural stability of a bridge or a dam. The project team then evaluated the severity of the impacts from the climate change hazard, to generate an impact score ranging from High (most severe) to Low (least severe).

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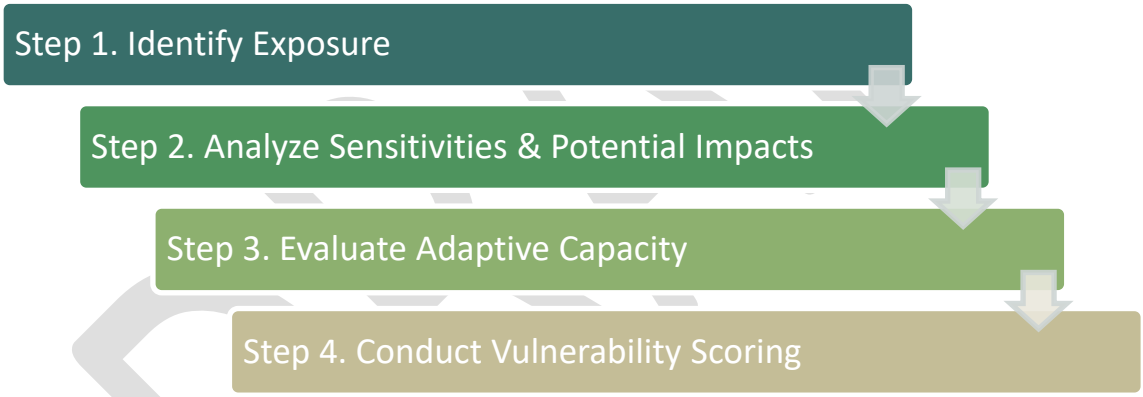
- **Evaluate Adaptive Capacity.** *Adaptive capacity* is the ability of people and assets to adjust to potential damage from climate change hazards, to take advantage of existing opportunities such as funding, tools, and resources, or to respond to the impacts of climate change. The project team evaluated the adaptive capacity of each population or asset for each applicable identified hazard. As with impact scoring, the project team scored the adaptive capacity of populations or assets ranging from High (more adaptable to a hazard) to Low (least adaptable to a hazard).
- **Conduct Vulnerability Scoring.** *Vulnerability* is the degree to which populations and assets are susceptible to harm, based on a combination of impact and adaptive capacity for each applicable identified hazard as affected by the level of exposure to changing climate conditions. In accordance with the process in the APG, the project team used the impact and adaptive capacity scoring to identify and prioritize the most vulnerable populations and assets in Contra Costa County.

FIGURE C-1. CALIFORNIA ADAPTATION PLANNING GUIDE RECOMMENDED MODEL



Key Concepts in Climate Change Vulnerability

Exposures: the presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harmFor example, the number and frequency of extreme heat days is expected to increase across Contra Costa County. To prepare this vulnerability assessment, the project team determined which effects of climate change are expected to occur in and around Contra Costa County, as well as those that may already be occurring.

Sensivity: the degree to which a species, natural system, or community, government, and other associated systems would be affected by changing climate conditions. The project team prepared a list of the various types of people and assets in and around Contra Costa County that could be affected by climate change to be included in the vulnerability assessment.

Impact: a specific negative result of a climate change effect, generally on a particular population or asset. Impact is often determined by the combination of exposure and sensitivity. For example, if the effect of climate change is that droughts are likely to become more frequent and severe, a potential impact to farmers is that less water could be available for irrigation. Every population and asset in Contra Costa County is likely to experience different impacts. In this vulnerability assessment, the project team looked at the potential impacts to each sensitivity from each identified exposure.

Adaptive Capacity: the combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts [or] moderate harm or to exploit beneficial opportunities." Adaptive capacity it is the ability to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. For example, during extreme heat events, populations with a greater risk of heat-related illnesses can go to cooling centers, which improve their adaptive capacity. The project team looked at the adaptive capacity of each sensitivity for each identified exposure as part of the vulnerability assessment.

Assessment Process

Following the APG's recommended process, the project team selected the hazards that made the most sense to analyze in the vulnerability assessment. The project team reviewed various guidance documents and reports to select these exposures and sensitivities, including the Adaptation Planning Guide, the Contra Costa County Hazard Mitigation Plan, and the County's existing General Plan.

Once these were identified, the project team looked at who and what in the community are likely to be affected by which hazards since not all hazards will affect all populations and assets. For example, human health hazards affect most population sensitivities, but they would not affect the structural stability of a bridge or a dam. The project team then assessed the impacts and adaptive capacity for each relevant hazard for all affected populations and assets.

Potential Impact

Cascading Impacts: Climate change hazards can have cascading or compounding effects throughout the county. Cascading or compounding climate change effects means one climate change hazard leads to another, and the effects can "cascade" into a disaster. Human health hazards, for example, have cascading effects, such as rendering workers unable to work and visitors unable to travel to an area, that harm both economic drivers and key community services. The project team accounted for these when developing the applicability matrix, during the assessment process, and while summarizing the vulnerability results.

County staff from various departments and a representative from the Contra Costa County Sustainability Commission with related technical expertise reviewed the impact, adaptive capacity, and vulnerability scores to provide local knowledge and additional accuracy for the assessment.

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To identify the magnitude of the impacts of each relevant hazards on the populations and assets, the project team considered a number of different questions that helped ensure that the assessment broadly covers the range of potential harm. Examples of these questions include:

- What types of impacts may occur? Could they cause physical injury or damage? Is there a risk of behavioral or mental harm, loss of economic activity, or other nonphysical effects?
- How many people or community assets could be affected by both direct and indirect harm?
- How long would the impacts persist?
- Is there a substantial chance of death or widespread destruction?

Direct and Indirect Impacts

Direct and Indirect Impacts: The project team marked the hazard as applicable to the population or asset if the hazard directly or indirectly affects a population or asset. Direct impacts affect physical assets, health, or immediate operations, which can lead to indirect impacts on the broader system or community, including asset types in a different category. For example, severe weather can directly damage electrical transmission lines and cause power outages, which can indirectly impact persons with chronic illnesses who depend on electricity for life support systems. Therefore, the project team marked both electrical transmission lines and persons with chronic illnesses who depend on life support systems as being potentially affected by severe weather, the project team evaluated them for their susceptibility to severe weather in the Vulnerability Assessment .

Based on the results of the impact assessment (IM), the County ranked each population and asset on a five-point scale (0 – 4) for each relevant hazard. IM0 is the lowest score (lowest impact), and IM4 is the highest score (highest impact). Impact is a negative quality, so a lower impact score is better. Contra Costa County adjusted these scores up or down to account for risk levels and onset.

Table C-1 provides more detail about what each impact score means.

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TABLE C-1: IMPACT SCORE RUBRIC

Impact Score	Meaning (People and Ecosystems)	Meaning (Buildings, Infrastructure, Services, and Economic Drivers)
IM0. Minimal Impact	Community members may not notice any change.	Damage, interruption in service, or impacts on the local economy are small or intermittent enough to mostly go unnoticed.
IM1. Low Impact	Community members notice minor effects. Daily life may experience mild, occasional disruptions.	There are minor but noticeable interruptions in service, damage, or negative effects on the economy.
IM2. Moderate Impact	There is a marked impact to the community. Quality of life may decline. Impacts may be chronic, and at times substantial.	Damage, service interruptions, and other impacts are clearly evident. Impacts may be chronic and occasionally substantial.
IM3. Significant Impact	The well-being of the community declines significantly. The community's current lifestyle and behavior may no longer be possible.	Impacts are chronic. Buildings, infrastructure, and services may be often or always unable to meet community demand. Large sections of the economy experience major hardships.
IM4. Severe Impact	There is a severe risk of widespread injury or death to people, or of significant or total ecosystem loss.	Buildings, infrastructure, and services cannot function as intended or needed. Economic activities are not viable.

Adaptive Capacity

The project team next assessed the adaptive capacity of each population and asset for each relevant hazard. Using a similar process as the team used to analyzed impacts, the County considered various questions to help ensure that the adaptive capacity assessment addresses the full potential of a sensitivity to resist and recover from harm. Examples of these questions include:

- Are there existing programs and policies to provide assistance? Can affected community members take advantage of these programs?
- Are there barriers that limit response or recovery? Are these barriers financial limitations, political challenges, lack of access to technology or other resources, or others?

- For community assets, do alternatives exist in or near Contra Costa County that community members can use?

Based on the results of the adaptive capacity (AC) assessment, the project team ranked each sensitivity on a five-point scale (0 - 4) ranging from AC0 (the lowest adaptive capacity) to AC4 (the highest adaptive capacity). Adaptive capacity is a positive quality, so a higher adaptive capacity score is better. As recommended by the APG, the project team adjusted the adaptive capacity scores to ensure that they reflect risk levels and onset periods.

Table C-2 provides more detail about what each adaptive capacity score means.

TABLE C-2: ADAPTIVE CAPACITY SCORE RUBRIC

Adaptive Capacity Score	Meaning (All Sensitivities)
AC0. No Adaptive Capacity	Currently, there are no feasible means of adapting.
AC1. Low Adaptive Capacity	Adaptive solutions are available, but they are expensive, technologically difficult, and/or politically unpopular.
AC2. Some Adaptive Capacity	Some adaptation methods are available, but not always feasible. Adapting may create significant challenges for some sensitivities.
AC3. High Adaptive Capacity	Adaptation solutions are feasible for most or all sensitivities. There may be occasional or small-scale challenges to implementing adaptation methods.
AC4. Outstanding Adaptive Capacity	Sensitivities can adapt with little or no effort. Quality of life is unchanged or may improve.

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Vulnerability Scoring

The project team used the impact and adaptive capacity scores for each sensitivity and relevant exposure to determine a vulnerability score. The vulnerability (V) score reflects how susceptible the sensitivity is to be harmed by a particular exposure.

Vulnerability is assessed on a scale of V1 to V5:

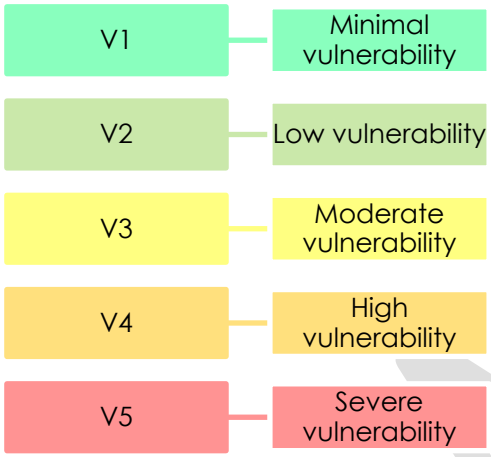

Table C-3 shows how different impact and adaptive capacity scores translate to a vulnerability score.

TABLE C-3: SCORING MATRIX

		Impact Score				
		IM0	IM1	IM2	IM3	IM4
Adaptive Capacity Score	AC0	V3	V4	V5	V5	V5
	AC1	V2	V3	V4	V5	V5
	AC2	V1	V2	V3	V4	V5
	AC3	V1	V1	V2	V3	V4
	AC4	V1	V1	V1	V2	V3

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Data Sources

The County used data from a variety of credible sources to prepare the vulnerability assessment, determine the impact and adaptive capacity scores, and support conclusions. These resources include the following:

- **Scholarly Research:** Much of the information came from an extensive body of scientific research that discusses how climate change may affect people and community assets. Much of this research is peer reviewed, which ensures greater accuracy, including studies published in the Proceedings of the National Academy of Science, Geophysical Research Letters, and Climate Change journals.
- **Local Data:** Regional government agencies have already prepared a number of plans and reports that support the vulnerability assessment or contain information relevant to the analysis. The County relied on several local plans and reports to prepare the vulnerability assessment, most notably the 2018 Contra Costa County Hazard Mitigation Plan and Contra Costa County Adapting to Rising Tides Project.
- **State and federal Data:** The County supplemented the scholarly research and local data with data from State and federal agencies, including published reports and datasets. The County relied on information from several agencies, including the Centers for Disease Control and Prevention, Federal Emergency Management Agency (FEMA), the California Energy Commission, California Office of Emergency Services (Cal OES), the California Governor's Office of Planning Resources (OPR), California Natural Resources Agency (CNRA), and the California Department of Forestry and Fire Protection (CAL FIRE).

Population and Asset Consideration

When selecting assets and populations to include in the vulnerability assessment, the County considered the following:

- **Sample pool:** the sample pool is a subset of the overall group of people that are being measured or studied. For example, in a political poll among registered voters, the sample pool only includes registered voters, since unregistered voters do not fall into this category. This concept is important for the Contra Costa County Vulnerability Assessment because some of the demographics used in the Vulnerability Assessment have different sample pools. Most of the demographic data come from the US Census Bureau's American Community Survey (ACS), and most of these data have a sample

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pool of either all residents or all households in the county. However, a few are different. This does not affect the outcome of the Vulnerability Assessment, but it creates slight differences in the number of people counted as part of each population. Some of these differences in the sample pool size include:

  - Data on persons with limited English proficiency only count people who are at least 14 years old instead of the total population, since young children generally are not proficient in any language.
  - Statistics that only count the noninstitutionalized population (e.g., people not in prisons or long-term care homes).

- **Data limitations:** The vulnerability assessment pulls data from a wide array of sources. The project team took care to only use reliable, credible sources with the best available information. In some cases, the vulnerability assessment is constrained by the lack of available high-quality information, such as the number of undocumented persons or outdoor workers.
- **Related assets:** Throughout the 65 populations and assets in the vulnerability assessment, there are a few that may appear redundant. For example, the vulnerability assessment looks at both public safety buildings (as a Buildings asset) and at public safety response (as a Key Community Service asset). To be as comprehensive as possible, the vulnerability assessment looks at physical structures separately from the services or benefits they provide. Similarly, this assessment looks at vulnerable people separately from the homes they live in or the industries where they are employed. This is because the effects of climate change on one type of population or asset can be different from the effects on related populations and assets.

POPULATION VULNERABILITIES

A number of factors can contribute to differences in climate change vulnerability across age, occupation, socio-economic status, and lifestyle conditions. The four primary overarching drivers of climate change vulnerability for populations are:

- **Physiology:** Older individuals, children, individuals with disabilities, and those who are immunocompromised or with chronic health conditions may be more physically susceptible to the health effects of heat, wildfire smoke exposure, and human health hazards. These individuals may encounter barriers to evacuating in the event of a fire, flood, or other emergency.

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- **Access to financial resources:** Low-income households, households in poverty, and those with precarious employment may struggle to acquire the financial resources necessary to prepare for and recover from the effects of climate change.
- **Exposure:** Outdoor workers and those in low-resilience or precarious housing are more likely to be directly exposed to effects of climate change such as high heat, poor air quality, severe storms, and flooding.
- **Exclusion and social isolation:** Individuals who are physically or socially isolated from the rest of the community, especially from community decision-making, may lack communication or transportation access, face language or cultural barriers, or may lack social connections. Excluded and isolated persons are often at risk because they are overlooked in community planning and are less able to access supportive resources.

A given individual or community may experience more than one of these underlying contributors to climate change vulnerability. These underlying contributors are often structural in nature. This means that, in order for these vulnerabilities to be comprehensively addressed, community members and policymakers must look beyond the level of individual choice and actively investigate how federal, state, and local economic, health and safety, and housing policy can both exacerbate vulnerability and help resolve it.

Some of Contra Costa County's most vulnerable communities and the climate hazards to which they are most vulnerable are highlighted below:

Children Under 10

Children are considered those that are 10 years of age or younger. According to the 2017 ACS, approximately 20,500 children live within the unincorporated areas of Contra Costa County, or approximately 12 percent of the total population. High concentrations of children live in parts of Concord, Richmond, Pittsburg, Brentwood, and San Ramon.

On average, children spend more time than adults outdoor, which leaves them more susceptible to allergens and pollution from poor air quality and wildfire.[1] Poor air quality can cause asthma and lung diseases, in addition to exacerbating existing conditions that children may have.[2] Infants and young children are physiologically less able to regulate their body temperature than adults, and children also may not recognize the need to hydrate and cool down when overheated. Schools or daycares where children spend a majority of their time could be damaged by a flood or landslide.[3] Children could have to stay home, which may have greater economic challenges as parents would also have to

stay home or find daycare options for their children. Children could also be swept away and drown from flood waters.


Air Quality


Wildfire


Extreme Heat


Shoreline Flooding


Flooding


Landslides and Debris Flows

Households in Poverty

Households with an income below the poverty line, which is $24,300 for a household of four people. Approximately 7,600 households in Contra Costa County live in poverty, or approximately 12 percent of total households for which poverty status can be determined. Within Contra Costa County, the areas with the highest concentrations of poverty occur in central Richmond, North Richmond and San Pablo, tracts of Concord and Martinez, and in Bay Point, Pittsburg, and Antioch.

 Air Quality	Households in poverty are located within areas that currently have high levels of DPM, PM 2.5, and high ground-level ozone concentrations, which can worsen as air temperatures continue to increase.[4] Households in poverty are likely to be more exposed to poor air quality due to lack of vegetation and trees and lower access to air conditioning.[5, 6] Persons in these households may become more susceptible to respiratory and cardiovascular related illnesses.[7]
 Extreme Heat	Poverty is associated with greater vulnerability to heat in a number of ways. The long-standing association between low-income and poor health outcomes, as well as pre-existing health conditions among people in poverty, play a key role in vulnerability. Impoverished and low-income people who are uninsured may be less likely to seek medical help if they do become ill, may live in poorly insulated housing, and may also be less likely to use fans or air conditioning out of concern for high utility bills. During extreme heat days, temperatures in uninsulated homes may reach unhealthy temperatures. Households in poverty are located throughout the County, however those in central and eastern Contra Costa may face the greatest exposure from extreme heat.

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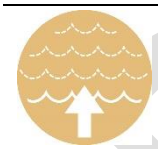
 Shoreline Flooding  Flooding	Households in poverty affected by coastal flooding are primarily located within North Richmond, Bay Point, and the tracts and islands in the Delta.[8] Most of the households in poverty are located within or near 100-year flood zones.[9] Flooding can damage homes, cause mildew and mold to grow, destroy infrastructure, and contaminate water supplies.
 Human Health Hazards	Households in poverty may be living in conditions that increase the chances of catching a vector-borne illness, pathogens, or diseases. Households in poverty may be disproportionately affected higher rates of pollution and poor air quality.
 Landslides and Debris Flows	Households in poverty may live in homes that are less structurally sound. Rodeo, Crockett, Bay Point, and Port Costa have a high concentration of households in poverty and also have high landslide susceptibility areas.[10, 11] Landslides can damage the foundations of homes or destroy them completely.[12]
 Sea Level Rise	Vine Hill, Bay Point, and North Richmond households in poverty may be affected by sea level rise. Households in poverty may live in structures that are not waterproofed or built above the current 100-year flood elevation.[13] These households are more likely to live in low-lying areas that are already subject to flooding, which may worsen as sea levels rise.
 Severe Storms	Households in poverty may live in structures that are less resilient to severe weather.[14] This increases the likelihood that high winds, thunderstorms, and heavy rain storms can damage their homes or cause mold or mildew growth. Persons living in these households can be physically harmed or experience a decrease in quality of life due to severe weather.

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 Wildfire	Households in poverty may be subject to greater damage from wildfires, due to financial limitations or neighborhood characteristics that make it difficult to maintain defensible space in fire-prone areas. Some households in poverty are located within the wildland-urban interface, which is the most susceptible to damage from wildfires.[15] Smoke and ash from wildfires can also harm households in poverty.

Low-Income Households

Households with an income of 80 percent or less of the median income, which is approximately $104,400 in Contra Costa County. Approximately 25,340 households or 41 percent of all households in the County are within the low-income category. Low-income households may have fewer financial resources to devote to preparing for and recovering from the effects of climate change.

Many low-income households are located within or near a flood zone or dam inundation area, especially in north and east county.[16] High concentrations of low-income households vulnerable to shoreline flooding occur in Rodeo, Crockett, the islands in the Delta, and Discovery Bay.[17] Low-income households may live in structures that are not waterproofed or built above the current 100-year flood elevation.[18] Coastal flooding can damage homes, cause mildew and mold to grow, and destroy infrastructure.


Shoreline Flooding


Flooding

Outdoor Workers

People who mostly work outdoor, including construction workers, agricultural workers, and people who work at outdoor recreation centers throughout Contra Costa County.

 Agricultural Pests and Diseases	Outdoor workers may not be directly affected by agricultural pests and diseases. However, outdoor workers can be indirectly affected due to damage to crops and vineyards within the County. This can reduce work opportunities and create economic hardship for outdoor workers. Those working outside of agriculture may not be impacted by agricultural pests and diseases.

 Air Quality	Outdoor workers are directly exposed to poor air quality due to the nature of their occupation. Exposure to increased pesticides, ground level ozone concentrations, and particulate matter can lead to asthma, lung disease, cardiovascular health risks.[19] If outdoor work is stopped due to poor air quality, outdoor workers may face economic hardship.
 Drought	Drought can reduce water availability for agricultural operations, parks, and recreation areas, which can indirectly harm outdoor workers. Agricultural operations and Delta recreational opportunities can be halted, which may cause outdoor workers to lose jobs.
 Extreme Heat	Outdoor workers in the agriculture, construction, building maintenance, landscaping and refinery operations fields are disproportionately impacted by extreme heat because they are required to be outside and risk heat exhaustion from exertion at jobs.[20] Outdoor work is often physically intense, increasing the risk of individuals suffering heat-related medical complications. Outdoor work may also be halted during high temperatures, which can cause significant economic hardships.

Persons Experiencing Homelessness

Persons who do not have a permanent home, including those who live in their vehicles or temporary shelters. There are approximately 2,230 persons experiencing homelessness in Contra Costa County, according to the County's 2018 homeless count, although most of these persons are likely in incorporated communities.

Persons experiencing homelessness lack permanent, and often temporary, shelter, and therefore are more exposed to climate change impacts. Most of the homeless encampments within Contra Costa County occur along the coastline and near or within coastal flood areas.[21] Coastal flooding and sea level rise can destroy homeless encampments and homeless facilities near the shoreline, creating additional hardships for persons experiencing homelessness. These events could become more frequent as sea levels rise and coastal storms intensify.

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Persons experiencing homelessness, especially those in central and east county, face greater exposure to extreme heat because they lack access to permanent, and often temporary shelter. Dehydration is common among homeless persons, which makes health-related complications from extreme heat more likely. Homeless persons are more likely to suffer respiratory infections, which are exacerbated by extreme heat. Homeless persons on medication are also at greater risk from extreme heat, as some medication interferes with the body's ability to maintain a safe internal temperature during times of extreme temperatures. Homeless persons may face a significant decline in health due to direct exposure to poor air quality that can cause reduced lung function, pneumonia, asthma, and cardio-vascular-related morbidity.[22] Homeless encampments located near Bay Point and other wildland-urban interface areas may also be in danger of being burned in the event of a wildfire.[23]



Air Quality | Shoreline Flooding | Extreme Heat | Flooding | Human Health Hazards | Sea Level Rise | Severe Weather | Wildfire

Persons Living on Single Access Roads

Persons living in areas with a sole route in and out of the neighborhood or area. Several neighborhoods and communities in the Delta and in the hillside areas of central and western Contra Costa County are only accessible via one roadway.

Flooding events, landslides, and wildfire can block, damage, and destroy roadways that are essential for persons living on single access roads. Bethel Island and Delta islands are accesible by single access roads, and many residential areas with single access roads are in the hilly areas in the center of the County. If roadways become impassable, persons living on single access roads can become isolated from the community and emergency services may not be able to reach these communities. Those that are not connected to urban water systems can also have water contamination.[24]


Shoreline Flooding


Flooding


Landslides and Debris Flows


Sea Level Rise


Wildfire

Persons with Chronic Illnesses

People who have a long-term or permanent health condition that can create regular challenges in their day-to-day lives. These health problems include cancer, asthma, heart disease, and arthritis.

 Air Quality	Persons with chronic illnesses may face increased health risks during poor air quality conditions. Poor air quality can exacerbate existing conditions such as asthma and respiratory illnesses, in addition to cause pneumonia.[25]
 Shoreline Flooding	Persons with chronic illnesses, such as cardiovascular diseases and asthma, that may experience coastal flooding are primarily located in Rodeo, Bay Point, and the islands and tracts in the Delta region on the County.[26] Persons with chronic illnesses may live in homes that are not flood-proofed and can have mold growth or be damaged during coastal flooding.
 Extreme Heat	Persons with chronic health problems, including cardiovascular disease, respiratory disease and diabetes, may face a significantly elevated risk of heat-related illness and death during extreme heat events.[27] Extreme heat can exacerbate existing conditions such as diabetes, cardiovascular conditions, respiratory ailments, and cerebrovascular diseases.[28] [29] [30] Persons with chronic illnesses may also be on medication that can reduce the ability of the body to maintain a safe internal temperature.[31]
 Human Health Hazards	Persons with chronic illnesses may have weaker immune systems due to pre-existing conditions that make it more difficult to fight off new illnesses.[32] Allergens and vector-borne illnesses can exacerbate existing illnesses, which can create difficulties in existing or new treatment.

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 Severe Storms	Severe weather may cause power outages throughout the County, which can affect the life support systems that persons with chronic illnesses may rely on.[33]
 Wildfire	Wildfires can create smoke that travels 50-100 miles of the fire, which can exacerbate illnesses that persons with chronic illnesses have and cause asthma, acute bronchitis, chronic obstructive disease, pneumonia.[34]

Persons with Limited English Proficiency

This group includes people who say they do not speak English "well" or "very well," although the Census Bureau does not formally define what these terms mean. The 2017 ACS reports that approximately 10,060 people in Contra Costa County who are at least 5 years old have limited English proficiency, or approximately 6 percent of the total population. Other languages spoken in the County are primarily Spanish, Mandarin, Cantonese, Tagalog, and Persian. The highest proportion of households with limited English proficiency occur in Richmond, Concord, and San Pablo.

 Air Quality	Persons with limited English proficiency are more likely to live in areas that have poor air quality, such as particulate matter and lower level ozone. Exposure to increased ground level ozone concentrations and particulate matter can lead to asthma, lung disease, and cardiovascular health risks.[35] They may also not be aware of air quality warnings or other alerts.
 Flooding  Severe Storms	Persons with limited English proficiency are more likely to be in low-income areas, which are also more likely to be located in low-lying areas. Flooding from atmospheric rivers can damage homes and cause them to become uninhabitable or unhealthy to live in. Homes are also more likely to be damaged by high winds or hail events.

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 Human Health Hazards	Persons with limited English proficiency may work outdoors or live in conditions that make them more susceptible to vector-borne illnesses or diseases. These conditions could exacerbate existing illnesses.
 Wildfire	Persons with limited English proficiency may not have control over their homes or live in neighborhoods that make it difficult to maintain defensible space. These persons may live in the wildland-urban interface or may not have shelter from smoke conditions.

Persons Without Access to Lifelines

These are individuals who do not have access to basic technology or services, such as transportation or modern communication. These persons may live in areas where these lifelines are not available or feasible, may not be able to afford these lifelines, or for personal reason may choose not to have them. While data is not available on all persons without lifelines, the 2017 ACS reports that approximately 2,850 households in Contra Costa County do not have vehicles, or approximately 5 percent of all households.

Persons without access to lifelines, such as cars and communication systems, may encounter barriers in preparing for and responding to emergency events. They may be unaware of an approaching emergency, may be unable to evacuate in a timely manner, and may become isolated if power services or transit systems are not working. Areas where large numbers of households do not have access to private vehicles may be important sites to strengthen public transit and also to provide mass transportation options to cooling centers during extreme heat events. Areas with clusters of households that do not have access to a vehicle occur in Concord, Richmond, Martinez, and San Pablo.


Shoreline flooding


Flooding


Wildfire

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Seniors

Seniors are defied as persons 65 years of age or older. The 2017 ACS reports that there are approximately 26,110 seniors in Contra Costa County, or approximately 15 percent of the total population. Some areas within Contra Costa County, including central Contra Costa County, Bethel Island, the eastern part of Richmond, and several parts of Walnut Creek, have particularly high concentrations of seniors due to both institutional and residential retirement communities. People living in supportive senior housing, such as Rossmoor, may have access to protective resources, including staff paying attention to their well-being.

Seniors' physiology makes these individuals especially vulnerable to the health effects associated with poor air quality, extreme heat, and wildfire exposure. Meanwhile, physical limitations may make it harder for seniors to evacuate in the event of an emergency. Communities with high concentrations of seniors are primarily located on the hillsides in Contra Costa County, which are within high landslide susceptibility areas and are at elevated wildfire risk.[36]



Air quality



Extreme Heat



Landslides and Debris Flows



Wildfire

Seniors Living Alone

This group includes senior citizens who are the only people living in their homes, although they may have one or more caretaker. According to the 2017 ACS, approximately 5,070 senior citizens live alone in Contra Costa County, or approximately 19 percent of seniors.

Like other seniors, seniors living alone may be especially vulnerable to the health effects associated with high heat, poor air quality, and wildfire smoke. Seniors living alone generally face elevated overall vulnerability compared to other seniors because they may lack access to social connections and community support to assist in preparing for and responding to emergency events, evacuating, improving home resiliency, managing medical needs, and locating support services. These individuals may be especially isolated in the event of a power outage or road closure. Communities with high concentrations of

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seniors are primarily located on the hillsides in Contra Costa, which are within high landslide susceptibility and wildfire risk areas.[37]



Air Quality | Shoreline Flooding | Extreme Heat | Flooding | Human Health Hazards | Landslides and Debris Flows | Severe Weather | Wildfire

Undocumented Persons

This group includes people who do not have formal permission to live in the United States (they do not have citizenship, permanent residency, visas, or other similar status). There are no official counts of how many undocumented persons live in Contra Costa County, but a 2017 study estimated that the total number of undocumented persons in Contra Costa County (including those living in incorporated areas) was 77,500.

Many undocumented persons have outdoor occupations or work in highly unregulated environments, which leaves them susceptible to harm from extreme heat conditions, exposure to poor air quality, and exposure to diease vectors such as ticks and mosquitoes. Outdoor work is often physically intense, increasing the risk of individuals suffering heat-related medical complications. Outdoor work may also be halted during high temperatures, which can cause significant economic hardships. Undocumented agricultural workers may face economic hardship if crops, vineyards, or rangeland are damaged by agricultural pests and diseases. Agricultural workers who are undocumented are more likely to be let go when farms experience economic hardship.

Undocumented persons are most likely to fall in the households in poverty or low-income categories, and are more likely to live in low-lying areas that may be inundated during flooding or damaged by severe weather. Undocumented persons may live in structures that are not waterproofed or built above the current 100-year flood elevation.[38] Flooding can damage homes, cause mildew and mold to grow, and destroy infrastructure.

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Agricultural pests and diseases



Air Quality



Shoreline Flooding



Extreme Heat



Flooding



Human Health Hazards



Landslides and Debris Flows



Severe Weather



Wildfire

INFRASTRUCTURE VULNERABILITIES

Bridges

Bridges may carry roads, rails, or trails. In Contra Costa County, these range from the large, state-owned bridges that carry interstate freeways, to locally owned bridges that carry rural roads and pedestrians over small creeks. There are over 400 bridges countywide, with approximately 80 owned by the Contra Costa County and approximately 160 owned by Caltrans. Damage to bridges could interrupt local and regional transportation patterns, disrupting economic activity and potentially emergency response. Bridge damage or failure could also lead to injury or loss of life.



Shoreline Flooding

According to the Local Hazard Mitigation Plan, 8 bridges are within the coastal flood zones within the County, including 4 on local roads, 3 on Interstate 680, and 1 on State Route 4 west bound.[39] Major bridges include the Benecia-Martinez Bridge and the Carquinez Bridge, which are major transportation routes within the Bay Area. Additional bridges that provide key linkages are the Highway 160 bridge and Bethel Island bridge. Damage to these bridges would cause major congestion on other roadways and bridges in the County.[40] Failure of the Bethel Island bridge could also leave residents and business owners stranded on the island.

 Flooding	There are 26 bridges within the 100-year flood zone and dam inundation areas.[41] Some of these bridges are located in low-lying areas that could become covered in floodwater.
 Landslides and Debris Flows	Forty bridges, including those on State Route 4 and Interstates 80 and 680 are within the moderate to very high landslide areas.[42] Landslides can cause these bridges to become unstable and fail.
 Severe Storms	Bridges may be damaged or periodically closed due to severe weather.[43]

Electricity Transmission and Distribution Lines

Electrical transmission and distribution lines are power lines that carry high-voltage electricity long distances between power plants and electricity customers. There are transmission lines located throughout the county, primarily owned by Pacific Gas & Electric (PG&E). Other transmission lines in eastern Contra Costa County are owned by the Western Area Power Administration (WAPA) and the Transmission Agency of Northern California.[44]

 Extreme Heat	Extreme heat conditions may most likely affect electricity transmission and distribution lines in east and central Contra Costa, as temperatures in those areas are projected to increase substantially on extreme heat days. Extreme heat can cause an increase in air conditioning use, which can stress and overload the grid, subsequently causing power outages and damage to the lines.
 Landslides and Debris Flows	Many electrical transmission lines pass over hills and mountains in east and west Contra Costa and are also within high landslide potential areas.[45] Landslides can damage or destroy the power lines and towers that support them. These power lines carry electricity to other regions in the Bay Area and could cause widespread power outages if multiple lines are disrupted at the same time.

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 Severe Storms	Electricity transmission and distribution lines can be damaged or destroyed by high velocity winds. This can cause secondary impacts such as power outages, that would impact County residents and businesses.
 Wildfire	Several electrical transmission and distribution lines go through mountainous areas that are within high fire hazard severity zones. Electrical transmission lines and the poles that support them can be damaged or destroyed by the flames and high temperatures created by wildfires. This can cause residents and businesses within the County to lose power if electricity lines fail. This can cause economic hardship and potential public safety concerns.

Flood Control Infrastructure

Flood control infrastructure includes levees, dikes, and drainage channels, and other infrastructure meant to help prevent the creeks, Delta, and other water bodies throughout Contra Costa County from overflowing their banks and causing floods. The Contra Costa County Flood Control District is the agency responsible for local flood control projects. Many of the levees and drainage facilities in the Delta region of the county are privately owned and operated.

Levees near North Richmond, Vine Hill, and the Delta could all be damaged and/or overtopped due to the increase in tidal levels from a coastal storm. Coastal storms can damage or destroy levees and other flood-control infrastructure, making them unable to function as intended or needed. Sea level rise may exacerbate these effects.


Shoreline Flooding


Sea Level Rise

Major Roads and Highways

Major roads and highways within Contra Costa County include Interstates 80, 680, and 580; State Routes 4, 24, and 123; and local roads such as Richmond Parkway, San Pablo Avenue, San Pablo Dam Road, Ygnacio Valley Road and Kirker Pass, Vasco Road, Byron Highway, Marsh Creek Road, and Morgan Territory Road.

 Shoreline Flooding  Flooding  Sea Level Rise	Major regional roadways, including Interstates 680 and 80, as well as State Route 4 are within flooding zones. Interstates 680 and 80 and State Route 160 are within sea level rise inundation areas. Flooding to these roadways, in addition to major local roadways could cause major disruptions to local and regional transportation, transit, and commuters.[46] Large sections of the economy could face economic hardship if commuters in the Bay Area are unable to reach their jobs and communities are isolated because of flooding.
 Landslides and Debris Flows	Major roadways, such as Interstate 80 and 680, and State Routes 4 and 24 are within high landslide susceptibility areas[47]. These roadways could be damaged and become impassable, including the fourth bore of the Caldecott Tunnel. This could substantially disrupt regional transportation and connections between Contra Costa County and the rest of the Bay Area.
 Wildfire	State Route 4, 24, and Interstate 80 go through moderate to very high fire hazard zones within Contra Costa[48]. Wildfires can damage roadways and cause road closures, which can cause major disruption to commute and traffic patterns in the Bay Area. Closure of Highway 4 and 24 may prevent those living in eastern and central Contra Costa from traveling to west Contra Costa County.

Railroads and BART

There are three standard rail lines that run through Contra Costa County. The rail lines are operated by Union Pacific, Burlington Northern Santa Fe, and Richmond Pacific Railroad Corporation that run along the western, northern, and eastern boundaries on the county along Interstate 80, State Route 4, and Byron Highway.[49] Each rail line is used for freight trains, and the Capitol Corridor commuter train runs along the Union Pacific railway. The Bay Area Rapid Transit District (BART) operates its own separate rail lines which are used exclusively for public transit. There are two BART rain lines in Contra Costa County, one

beginning in Richmond and heading south toward Berkeley, and the second in the central part of the county extending from Orinda to Antioch.

 Shoreline Flooding  Flooding  Sea Level Rise	Amtrak, freight lines, and BART are within the flood areas within coastal and northern of Contra Costa.[50] Flooding can damage the track bed and ballast material, and the entire system could shut down. Some of these rail lines, including the Martinez and Antioch Amtrak stations, rail lines along Bay Point, Montalvin Manor, Rodeo, Port Costa serve as first line of defense to coastal flooding for communities.[51] Damage to the rail and BART lines could mean disruptions to regional transit networks that are essential for economic activity.[52]
 Landslides and Debris Flows	The North Concord/Martinez BART station, Martinez Amtrak station, Pittsburg/Bay Point BART station, and Lafayette BART station, in addition to the adjacent rail lines are within moderate to high landslide susceptibility zones.[53] Landslides could damage the tracks or destroy a station, which could prevent rail cars from passing through the station in either direction. This could limit transit opportunities within east and west county.

Single Access Roads

These are roadways that are one of few, or the only, ways in and out of some communities of neighborhoods. The single or limited number of entry and exit points does not make the road itself more vulnerable than other roads, but the loss of these roadways can effectively cut off large number of people from the rest of Contra Costa County. Single access roadways are primarily located in Bay shoreline and Delta fronting neighborhoods, as well as communities located on the San Pablo Ridge, Canyon, and Briones Hills.

Single access roads can be damaged or blocked by falling trees, flooding, landslides, and wildfire. Single access roads are primarily located in hillside community that are also within high or very high fire hazard severity zones.[54] Within these forested areas, trees can be damaged by redwood bark beetle or sudden oak death. These diseases can weaken trees can cause them to fall on and damage roadways.

Single access roads in Bay Point, Bethel Island, and in the Delta may be affected by coastal flooding; single access roads throughout the County are located within the 100 and 500 year floodplain. Single access roads can become inundated and be damaged by a flood event, especially those that rely on bridges that cross through the Delta. This can leave residents and business owners stranded and isolated during a flood.

Damage to or blockage of a single access road can leave residents stranded during an emergency and can inconvenience residents and businesses that rely on access to these roads.



Agricultural pests and diseases



Shoreline Flooding



Flooding



Landslides and Debris Flows



Wildfire

Wastewater Treatment Plants

These facilities treat wastewater so it can be safely discharged into the environment. There are 10 wastewater treatment plants in the county, which treat wastewater for people living in cities and unincorporated areas of Contra Costa County.[55] Failure of these treatment plants could cause sewer systems to backup and potentially contaminate streams and water systems with raw sewage.



Shoreline Flooding

Three wastewater treatment plants (WWTP): Rodeo sewage treatment plant, West Contra Costa Wastewater, and Mt View Sanitary District are within low lying or coastal flooding areas.[56] Coastal flooding can exacerbate wet weather flows into the treatment plants with higher levels of stormwater and rising sea levels, which can prevent the system from functioning properly.[57] Pumps and control panels that are not waterproofed or salt-resistant could also fail.

 Flooding	Two WWTPs are within the 100 & 500 year floodplain, one WWTP is within dam inundation zone, including the West Contra Costa and Pinole Hercules plants.[58]
 Sea Level Rise	Three wastewater treatment plants: Rodeo sewage treatment plant, West Contra Costa Wastewater, and Mt View Sanitary District are within low lying areas along the shoreline.[59] Inundation due to sea level rise can exacerbate wet weather flows into the treatment plants with higher levels of stormwater and rising sea levels, which can prevent the system from functioning properly.[60] Pumps and control panels that are not waterproofed or salt-resistant could also fail.

Water and Wastewater Infrastructure

These facilities convey water from water treatment plants for public use and convey wastewater to wastewater treatment plants through sewer systems. This includes piping, pump stations, wells, and septic systems.

The Mokelumne Aqueduct could be exposed to coastal flooding if the Delta levees fail.[61] Contra Costa Canal and the Clifton Court Forebay are also within the coastal flooding area. If the levees fail during a coastal flooding events, these pieces of infrastructure would also fail, and fresh water would become contaminated with salt water, reducing the amount of suitable drinking water and agricultural water. This could halt economic activities in Contra Costa and the greater California area. These hazards could be exacerbated by sea level rise.


Shoreline Flooding


Flooding


Sea Level Rise

BUILDING VULNERABILITIES

Industrial Buildings

These are buildings that contain industrial and manufacturing uses and businesses. There are approximately 270 industrial buildings in the unincorporated area of Contra Costa County.

 Shoreline Flooding	Approximately 61 industrial buildings in Contra Costa County are within coastal flooding areas.[62] Coastal flooding can cause damage to industrial structures and increase the potential for hazardous materials release that would contaminate soil, water, and air in surrounding areas.[63] Industrial structures that are currently outside of the 100-year flood zone are also unlikely to be waterproofed or flood resistant.[64]
 Flooding	There are 68 industrial buildings within the 500-year floodplain and 99 industrial buildings within a dam inundation area[65]. This includes 5 hazardous materials facilities that could potentially release toxic substances into the ground, air, and water if damaged.[66]
 Landslides and Debris Flow	There are 34 industrial structures within landslide-prone areas.[67] Landslides can disturb holding tanks or damage industrial buildings, and cause chemicals to be released into the air, water, or ground in the surrounding areas.
 Sea Level Rise	Approximately 44 industrial buildings in Contra Costa County are within sea level rise inundation areas.[68, 69] Sea level rise can cause damage to industrial structures over time and increase the potential for hazardous materials release that would contaminate soil, water, and air in surrounding areas due to high mean high tide levels.[70] Industrial structures that are currently outside of the 100-year flood zone are also unlikely to be waterproofed or flood resistant.[71]
 Wildfire	There are 24 industrial buildings within the fire hazard zone.[72] Wildfires can damage holding tanks or manufacturing centers that contain harmful chemicals. Damage to these facilities can release toxic materials into the air, water, and soil of the surrounding communities.

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ECONOMIC DRIVER VULNERABILITIES

Agriculture

This category includes field crops (such as tomatoes, sweet corn, and other vegetables), fruit and nut orchards, vineyards, and plant nurseries. These agricultural operations are primarily location in eastern Contra Costa County, between Mt. Diablo State Park and the Delta. In 2017, farms and orchards produced approximately $95 million in agricultural products.[73]

 Agricultural Pests and Diseases	Agriculture within Contra Costa County can be affected by fungal pathogens and invasive disease vectors, which could affect agriculture as an economic asset.[74] Pests and diseases can affect the quality or viability of crops and vineyards that are within the county. Impacts could become chronic as conditions continue to change and warmer temperatures persist.
 Shoreline Flooding	Agricultural land in the eastern and Delta portions of the County are within the coastal flood zone. Coastal flooding can inundate farmland and damage or destroy crops. Damage to the fresh water canals and aqueducts could also severely harm the agriculture industry. Eastern Contra Costa County may face significant economic hardship if agriculture is not viable.
 Drought	Agriculture may be directly harmed from drought conditions due to an increase in soil salinity, topsoil erosion, and reduced water supply.[75] This can limit crop production and in turn result in a loss of income for agriculture owners. The economy in eastern Contra Costa can be especially harmed by limited water for agricultural production.
 Extreme Heat	Extreme heat conditions can damage crops or reduce yield, which can create economic hardships in eastern Contra Costa. High heat conditions can also make crops more difficult to manage, and can lead to die off of crops. Wine grapes are expected to experience a decline in fruit quality due to extreme heat.[76]

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 Flooding	Agriculture within Contra Costa is located in low-lying areas that are in both the floodable areas and dam inundation areas. Flooding can cause significant damage to crop production because they can damage plants, wash away topsoil nutrients, and degrade essential microbial activity. This can harm plants and reduce agricultural productivity, subsequently harming the agricultural economy in east Contra Costa.[77]
 Sea Level Rise	Agricultural land in the eastern and Delta portions of the County are within the sea level rise inundation area. Sea level rise can inundate farmland creating higher salinity water and soils. Water supplies, including groundwater, can also experience salt water intrusion, which can be damaging to crops that do not grow in high salt conditions. Damage to the fresh water canals and aqueducts could also severly harm the agriculture industry. Eastern Contra Costa County may face significant economic hardship if agriculture is not viable.
 Severe Storms	High winds, hail, and thunderstorms can decimate agricultural operations. Crops can be flattened by high velocity winds and food crops can be damaged by hail.[78] This can severely damage the agricultural economy in east Contra Costa and bring economic hardship to farm owners in that area.
 Wildfire	Smoke and ash can damage crops, farms, and agricultural fields in Contra Costa County. While many of the agricultural areas are outside of fire hazard zones, smoke and ash can change crops such as wine grapes and change nutrients in the soil.[79] This may cause plants to die or not produce as many useable fruits. This can cause major economic hardship for farmers.

Industrial and Manufacturing Centers (including oil refineries)

Industrial and manufacturing centers include facilities that have light and heavy industrial and manufacturing businesses. In the unincorporated areas in Contra Costa County, these centers are located in North Richmond, Rodeo, Crockett, Bay Point, Pacheco, and Clyde. Oil refineries are included in this category, as they are industrial facilities where crude oil is

processed into gasoline and industrial byproducts for a variety of retail and wholesale markets. There are three of these facilities in the unincorporated areas of Contra Costa County, which are in Rodeo, Pacheco, and Martinez (straddling the City/County boundaries).

 Shoreline Flooding  Flooding  Sea Level Rise	The majority of these centers are located within the coastal flood hazard areas along the bayfront and Delta in western and northern Contra Costa County, with additional centers located within the flood hazard zones on the northern and western edges of the county. Industrial and manufacturing centers can be damaged by flooding, which could result in lost productivity, jobs, and income sources for employees. Coastal flooding hazards could be exacerbated by sea level rise.
 Landslides and Debris Flows	Industrial and manufacturing centers, including oil refineries, are located within the landslide prone areas on the northern and western edges of Contra Costa.[80] Landslides can damage these facilities and cause hazardous material release that can harms the oil refining industry and also the surrounding communities. Impacts may become chronic if landslides increase.
 Wildfire	Few industrial and manufacturing centers are located within fire hazard severity zones. However, oils refineries and holding tanks can be damaged by wildfires, which can cause hazardous materials to be released into the surrounding air, water, and soil. This can negatively impact both economic and public health.

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Rangeland

Rangeland are lands where many livestock species, including cattle, are raised. Rangeland is primarily located in eastern Contra Costa County. In 2017, rangeland produced approximately $26 million in livestock products. [81]

 Drought	Rangeland is primarily located on grassland habitats, which can lose topsoil and productivity due to the drier conditions created by droughts.[82] This can reduce the available foraging habitat for livestock and cause economic hardship for rangeland owners.
 Extreme Heat	Extreme heat is very harmful to livestock animals, especially cattle. Temperatures above 100 degrees can create heat stress, increase the risk of infection, reduce milk production and fertility, and may lead to death of animals. Animals that are already stressed by existing illnesses are at the highest risk.
 Flooding	Rangeland located on Bethel Island and the Delta areas are within the 100-year floodplain and dam inundation areas. Flood waters can damage important rangeland infrastructure and the natural grassland that feeds to cattle and livestock[83]. This can harm the local economy in east County.

Regional Parks

Regional parks within Contra Costa County are scattered throughout the county. East Bay Regional Park District operates over 113,000 acres of regional parkland in Alameda and Contra Costa Counties.[84]

 Sea Level Rise	Regional shorelines and parks on the Bay/Delta could be permanently inundated by sea level rise. This could make the regional parks unusable and the parks may not be able to meet the demands of the public.
 Wildfire	Many regional parks within the County are located within high or very high fire hazard severity zones.[85] Wildfires can destroy park facilities, damage trails and walking paths, and damage scenic views and vistas within these parks. This may reduce the number of visitors to the parks, as they may not be as desirable to visit.

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The Delta

The Sacramento-San Joaquin River Delta (Delta) spans from Pittsburg in the west, Locke in the east, Sacramento to the North, and Tracy to the south. The Delta primarily encompasses the northern and easternmost borders of Contra Costa County and provides opportunities for boating, fishing, transportation, and a water source for the County.

 Air Quality	The Delta supports fishing, water recreation, and park activities that could be curtailed due to poor air quality.[86] Those who rely on the Delta could have a periodic loss of economic activity as long as poor air quality curtails outdoor and water recreation.
 Shoreline Flooding	The Delta, including marinas, harbors, farmland, and recreational opportunities may be continuously flooded and inundated by coastal storms. This can significantly reduce the economic viability of the Delta due to damage to ecosystems, recreation facilities such as marinas and harbors, and farmland on the islands and tracts within the Delta.
 Drought	Reduced streamflow and water quality can decrease both commercial fishing, agricultural production, and recreational opportunities in the Delta.[87] Certain fish species may die off if water conditions change and high salinity water may not be able to be used for agricultural production.[88]
 Extreme Heat	The Delta supports fishing, water recreation, and park activities that could be curtailed due to extreme heat.[89] Extreme heat may also alter the water quality, cause water temperatures to rise, and cause fish die off and algae growth.
 Sea Level Rise	The Delta, including marinas, harbors, farmland, and recreational opportunities may be continuously flooded and inundated by sea level rise. This can significantly reduce the economic viability of the Delta due to damage to ecosystems, recreation facilities such as marinas and harbors, and farmland on the islands and tracts within the Delta. Salt water may also travel farther into the Delta, disrupting water quality and fish/wildlife populations.

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 Severe Storms	Severe weather can damage harbors, marinas, outdoor recreation centers within the Delta, which can harm both the fishery and recreation based economies in the Delta. Severe storms can also damage bridges that connect islands and tracks within the Delta, which can isolate them from other areas in the region.

ECOSYSTEM AND NATURAL RESOURCE VULNERABILITIES

Aquatic

Aquatic habitat includes streams, reservoirs, ponds, and sloughs or channels. This ecosystem includes the Delta and shoreline areas that are submerged by water. In Contra Costa County, the three large reservoirs include San Pablo Reservoir, Briones Reservoir, and Los Vaqueros Reservoir. Aquatic wildlife species include various duck species, California red-legged frog, western pond turtle, and juvenile and spawning adult Chinook salmon. [90]

 Drought	Drought can cause lower water levels and water quality, in addition to raising water temperatures in aquatic habitats. These conditions can cause algal blooms in Delta areas, harm salmonid populations, and cause system wide failures.[91, 92] Lower dissolved oxygen levels and increased algae growth can also harm a variety of aquatic species.[93]
 Extreme Heat	Extreme heat events can cause water temperatures in aquatic habitats to rise, which can alter water quality and other water characteristics. Native fish species may have a more difficult time surviving in warmer waters and non-native species may out compete native species.[94]
 Landslides and Debris Flows	Aquatic habitat within landslide prone areas includes lakes and streams, which are in the central and western parts of the county. Landslides can cause streams to be blocked and significantly affect fish and wildlife habitat through additional debris in aquatic systems.[95]

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 Sea Level Rise	Sea level rise may push salt water into the Delta aquatic system, which may degrade the water quality and harm fish and other aquatic organisms.[96] Aquatic habitats may also be harmed if industrial/oil facilities are inundated, as hazardous materials could be released into the soils and water.[97]

Riparian Woodland and Shrub

Riparian woodland and shrub ecosystems consist of Valley foothill riparian, undetermined shrub, and riverine habitat. These areas are scattered throughout Contra Costa County and have wildlife species such as gray fox, striped skunk, broad-handed mole, mule deer, dusky-footed woodrat, yellow warbler, northern flicker, white tailed kite, and Cooper's hawk. [98]

 Drought	Drought conditions can cause smaller streams to run dry, which can subsequently harm the plants and animal habitat within the ecosystem. Trees may not have adequate water during drought periods, which can lead to pests and diseases destroying important habitat for the Gray fox, Cooper's hawk, and mule deer.[99] Soil erosion can also occur on the banks of streams.[100]
 Severe Storms	Severe storms can cause trees to fall in riparian ecosystems, which can disrupt the flow of water through the systems and impact aquatic wildlife in the streams.
 Wildfire	Riparian ecosystems can be harmed by wildfires due to loss of canopy and changes in soil structure, erosion, and shifts in specific composition due to changes in habitat structure.[101] Impacts may become chronic as wildfire frequency increases.

Wetland

Wetland ecosystems include permanent wetland, seasonal wetland, fresh emergent wetland, alkali wetland, and marsh. These areas are located adjacent to the San Francisco Bay and Delta. Wildlife in these ecosystems includes Great blue heron, great egret, wood duck, green-winged teal, mallard, California red-legged frog, western pond turtle, garter

snakes, western spadefoot toad, western toad, California tiger salamander, tri-colored blackbird, and vernal pool fairy shrimp. [102]

 Shoreline Flooding	Coastal flooding and rising sea levels may inundate most of the wetland and tidal marshes by 2070.[103] The wildlife habitat, recreation, and flood protection that these ecosystems provide may not be able to be sustained.[104]
 Drought	Wetlands can be directly affect by reduced water quantity and quality due to drought conditions.[105] Drought can contribute to algal blooms, low streamflow, degraded water quality, higher temperatures, and increased erosion in both Delta and inland wetland habitats.[106] This can in turn harm wildlife such as the California red-legged frog and western pond turtle that depend on these ecosystems.[107]
 Extreme Heat	Warmer waters may change wetland habitats so that native species can no longer survive.[108] Warmer temperatures may also cause harmful algal growth that can harm both plant and wildlife species.
 Sea Level Rise	Rising sea levels may inundate most of the wetland and tidal marshes by 2070.[109] The wildlife habitat, recreation, and flood protection that these ecosystems provide may not be able to be sustained.[110]

Woodland

Woodland ecosystems include oak savannah, oak woodland, and mixed evergreen forest. These ecosystems are primarily located on the hillsides and mountainous regions of western and central Contra Costa County. Wildlife in these ecosystems include deer mouse, western gray squirrel, coyote, red-tailed hawk, barn owl, great horned owl, and acorn woodpecker. [111]

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 Agricultural Pests and Diseases	Both evergreen and oak woodlands in the county can be damaged by forestry pests and diseases such as sudden oak death and redwood bark beetles. This can decimate the ecosystems and wildlife such as coyote, gray fox, barn owl, red-tailed hawk, and Copper's hawk that depend on these ecosystem for habitat and foraging.[112]
 Fog	Redwoods, which are a common species in woodland habitats in western Contra Costa, depend on the coastal fog in the summer months. Redwoods can get up to one third of their water from fog in the summer.[113] The absence of coastal fog may cause higher evapotranspiration rates and increase the demand for water in woodland ecosystems during the drier summer months.
 Wildfire	Fire sensitivity varies by species, but most species have an elevated risk of damage. Large fires can cause widespread devastation throughout woodland areas in Contra Costa County, particularly if trees have been weakened or killed by drought, extreme heat, and/or pests or infestation.[114]

KEY COMMUNITY SERVICES VULNERABILITIES

Energy Delivery

Energy delivery services in Contra Costa County include electricity and natural gas delivered through high-capacity utility lines and pipelines. In more rural areas of Contra Costa County, propane may be delivered via truck. Energy is needed for vital functions such as space heating, telecommunications, as well as entertainment and comfort. Major energy providers are MCE and PG&E.

 Extreme Heat	Extreme heat can regularly cause power outages due to a combination of mechanical failure of electrical grid equipment, heat damage to the wires themselves, and high demand for electricity as a result of cooling equipment, all of which causes stress on the grid. As extreme heat events become more frequent and intense, disruptions in service are likely to become more frequent. The US Department of Energy estimates that a 9-degree increase in temperature reduces the capacity of power lines by 7 to 8 percent, and the capacity of electrical substations by 2 to 4 percent.[115]

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 Landslides and Debris Flows	Landslides can damage or destroy transmission lines and substations that are located in the hillside areas of the County. This could cause major disruptions in the power grid and could cause widespread power outages. Power outages can harm vulnerable populations and businesses.[116]
 Severe Storms	Energy delivery could be disrupted by severe weather if wind, hail, or thunderstorms cause the electrical grid to not function properly. If multiple sections or element of the system fail (substations, power plants, electricity lines) county residents and businesses could be without power for hours, days, or weeks depending on severity.
 Wildfire	Wildfires can damage or destroy energy delivery infrastructure, which can cause power outages that can last for days or weeks depending on the severity of the event. This can directly harm the economy, government operations, public safety, and hinder wildfire recovery efforts.

Public Transit Access

Public transit within Contra Costa County is provided by County Connection, WestCAT, Tri Delta Transit, and AC Transit. Additional public transit that provides access to other regional locations includes BART and Amtrak.

 Shoreline Flooding  Flooding	Public transit routes are at risk for disruption to the extent they rely on vulnerable roads and bridges. Disruption of these services would be detrimental to those who do not own or operate vehicles.[117] Residents may not be able to get essential goods and services, and commuters may be unable to go to work without public transit access. For rail and BART, if part of the lines is not functioning, then that could affect transit access on other parts of the line.

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 Landslides and Debris Flows	Landslides can block roadways, tunnels, and rail lines, which could substantially disrupt access to public transit in north, central, and west Contra Costa. These areas rely on public transit more and when disrupted, public transit may not be able to meet the needs of the community.

Water and Wastewater

These services involve treating and transporting water to be used by customers and transporting and treating wastewater so it can be safely released into the environment. Water and wastewater services are provided by several agencies and small private organizations throughout Contra Costa County and are critical to ensuring public and environmental health. Major water providers are East Bay Municipal Utilities District and Contra Costa Water District. Additional service districts within the county are Byron Sanitary District, Castle Rock County Water District, Central Contra Costa Sanitary District, County Sanitation District 6, Crockett Community Services District, Delta Diablo Sanitation District, Diablo Community Services District, Diablo Water District, Dublin-San Ramon Services District, Ironhouse Sanitary District, Mt. View Sanitary District, Rodeo Sanitary District, Stege Sanitary District, Town of Discovery Bay Community Services District, and West County Wastewater District.

 Shoreline Flooding  Flooding  Sea Level Rise	Water and wastewater services can be disrupted from flooding if the wastewater treatment plants are not functioning properly. Flooding can exacerbate wet weather flows into the treatment plants with higher levels of stormwater and rising sea levels, which can prevent the system from functioning properly.[118] Failure of these treatment plants could cause sewer systems to back up and potentially contaminate streams and water systems with raw sewage. Major points in the water delivery system could also be disrupted. Sea level rise may exacerbate these hazards.

 Landslides and Debris Flows	Water and wastewater services could be disrupted if the pipelines were to be damaged or destroyed from a landslide. This could cause both water and wastewater systems to not function properly.
 Wildfire	Wildfires in the County could impact the reservoir water sources.[119] Water quality can be degraded due to ash content or fire retardants that make their way into surface water storage. This may reduce the overall quantity of water that the water districts in the county have to supply agricultural, commercial, and residential demands.

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APPENDIX D: 2015 CAP GOALS

The 2015 Climate Action Plan (CAP) identified how the County planned to achieve the Assembly Bill (AB) 32 greenhouse gas (GHG) emissions reduction target of 15 percent below baseline levels by the year 2020, in addition to supporting other public health, energy efficiency, water conservation, and air quality goals identified in the County's General Plan and other policy documents. This appendix summarizes the key accomplishments of the 2015 CAP.

ENERGY EFFICIENCY

These measures focus on energy efficiency in new and existing homes in the unincorporated areas of the county. As shown in **Figures D-1** and **D-2**, the County has made strides towards achieving this goal with a total of 1,018 single-family home energy efficiency retrofits and 24 multifamily unit energy efficiency retrofits completed from 2015 through 2020.

FIGURE D-1: SINGLE-FAMILY HOME ENERGY EFFICIENCY PROJECTS COMPLETED IN THE UNINCORPORATED COUNTY

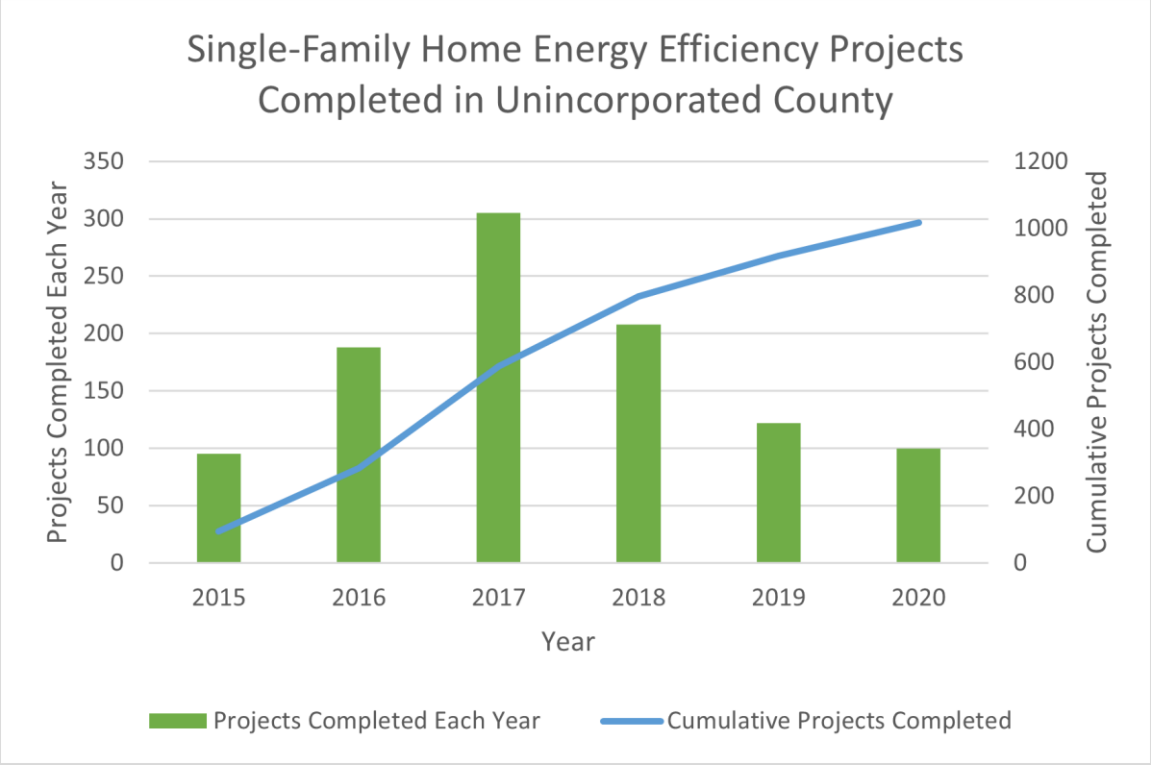
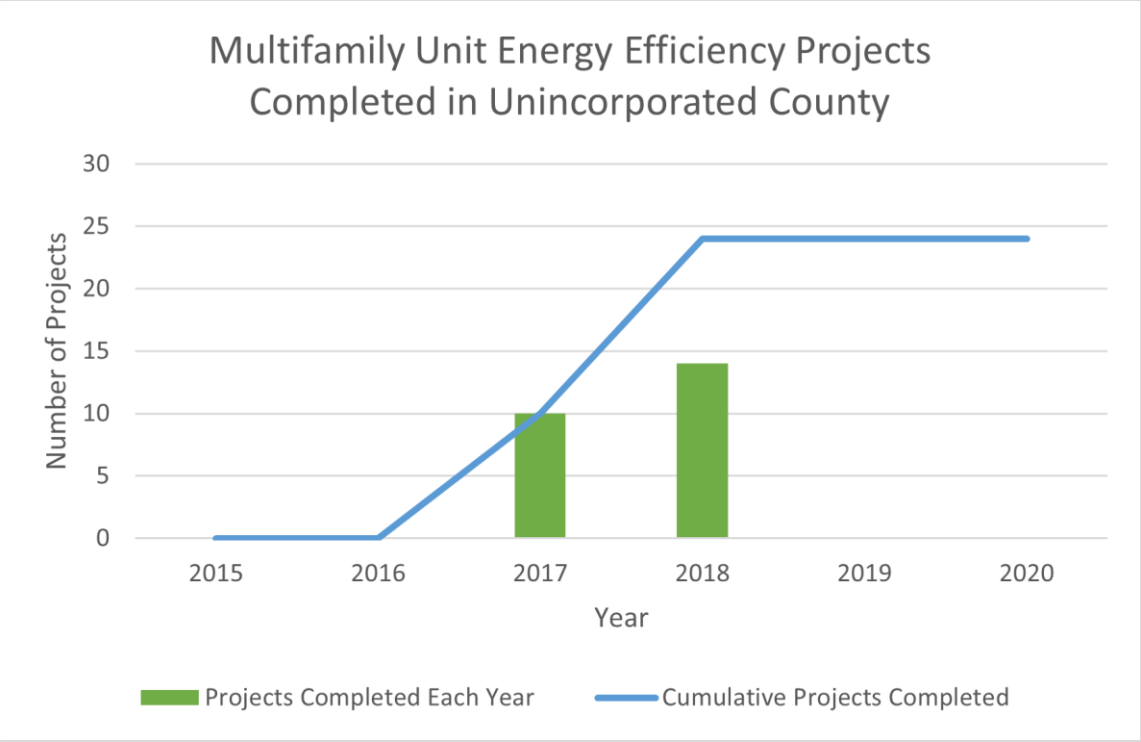


FIGURE D-2: MULTIFAMILY UNIT ENERGY EFFICIENCY PROJECTS COMPLETED IN UNINCORPORATED COUNTY



RENEWABLE ENERGY

The goals set in the 2015 CAP for renewable energy adoption included installing solar arrays to 50 new homes, 10 new businesses, 2,500 existing homes, and 60 existing businesses by 2020. As shown in **Figures D-3** and **D-4**, the County has shattered that goal, issuing over 5,000 residential photovoltaic (PV) permits between 2018 and 2020.

FIGURE D-3: RESIDENTIAL PV PERMITS IN UNINCORPORATED COUNTY

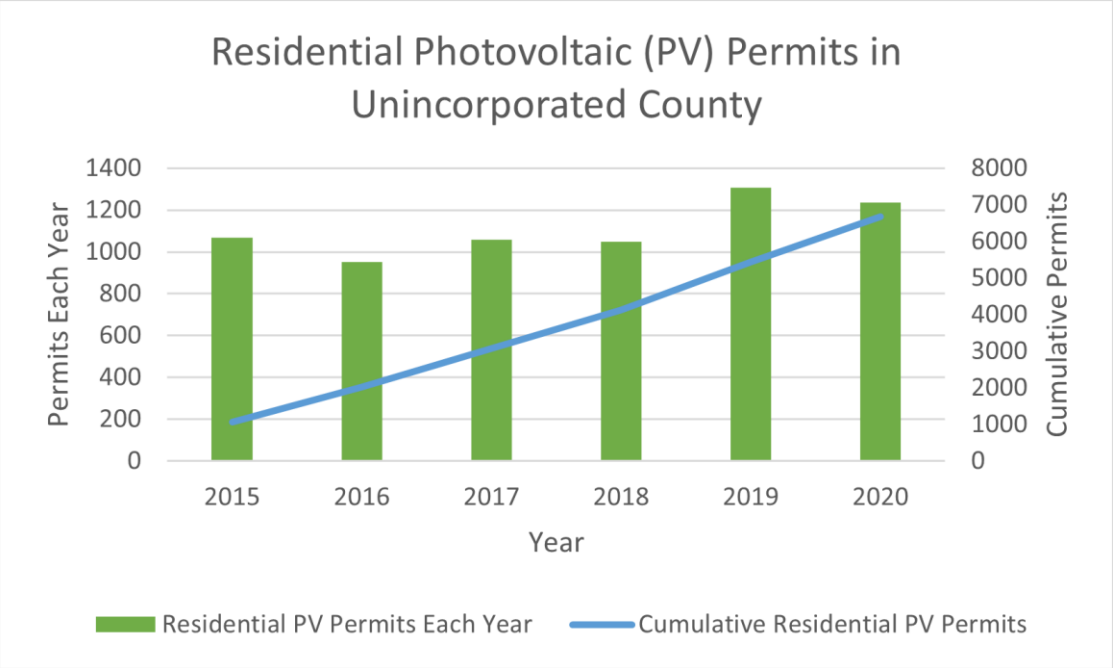
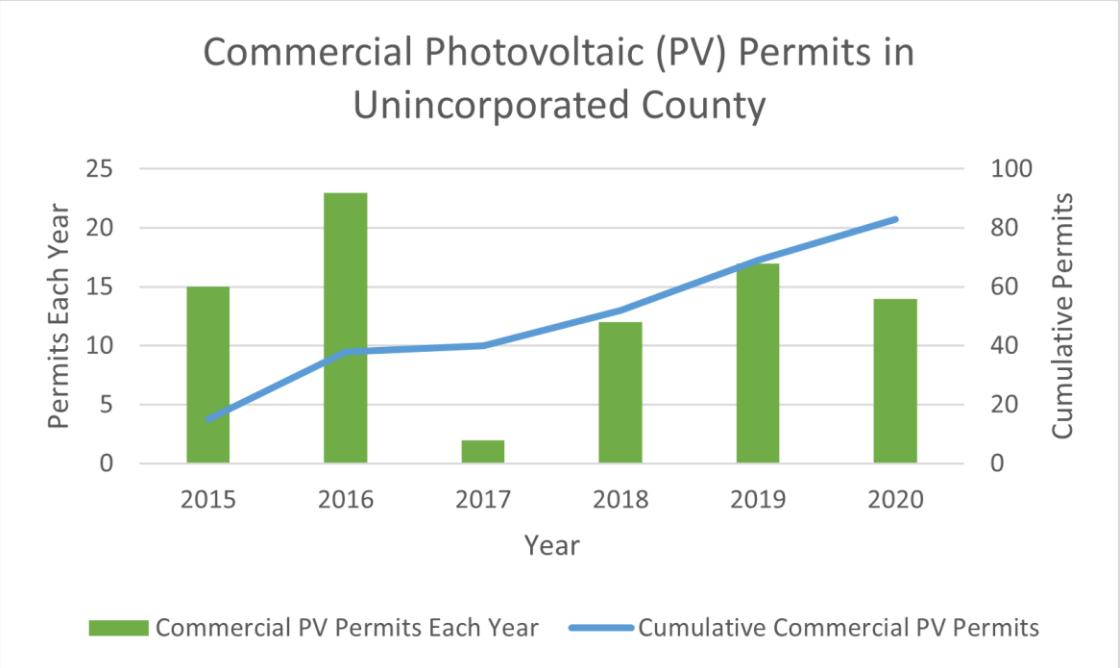


FIGURE D-4: COMMERCIAL PV PERMITS IN UNINCORPORATED COUNTY



LAND USE AND TRANSPORTATION

Improving mobility and encouraging alternative-fuel vehicle adoption were the biggest areas of focus in the County's 2015 CAP.

Mobility Improvements

The County Board of Supervisors has supported mobility improvements by accepting two mobility-related studies: the Iron Horse Corridor Active Transportation Study and the Marsh Creek Corridor Multi-Use Trail Feasibility Study. The Iron Horse Corridor Active Transportation Study will identify safety, access, and user-experience improvements on the 22-mile corridor. The Marsh Creek Corridor Multi-Use Trail Feasibility Study will inform the County on the feasibility of a new 12+ mile corridor between Clayton and the Round Valley Regional Preserve.

EV Charging Stations

For electric vehicle (EV) charging stations, the County has increased efforts to address the goals in the 2015 CAP.

- The Contra Costa Transportation Authority (CCTA) completed its EV Readiness Blueprint in 2019, with help from the County.
- In the same year, the Board of Supervisors streamlined the permitting process for EV chargers.

Both efforts combined led to 1,325 charging stations being distributed throughout the county and an additional 317 stations added through the MCE's rebate program as of December 2020. This influx in charging stations makes it possible to reach the 2015 CAP goals centered around distance traveled per EV.

WASTE REDUCTION

The County set a waste reduction goal of a 75 percent reduction in Pounds of Disposal Per Person Per Day (PPD). The County used 3.9 PPD as the target PPD. In 2020, the County recorded a PPD rate of 2.2, which equates to a 72 percent reduction (**Figure D-5**).

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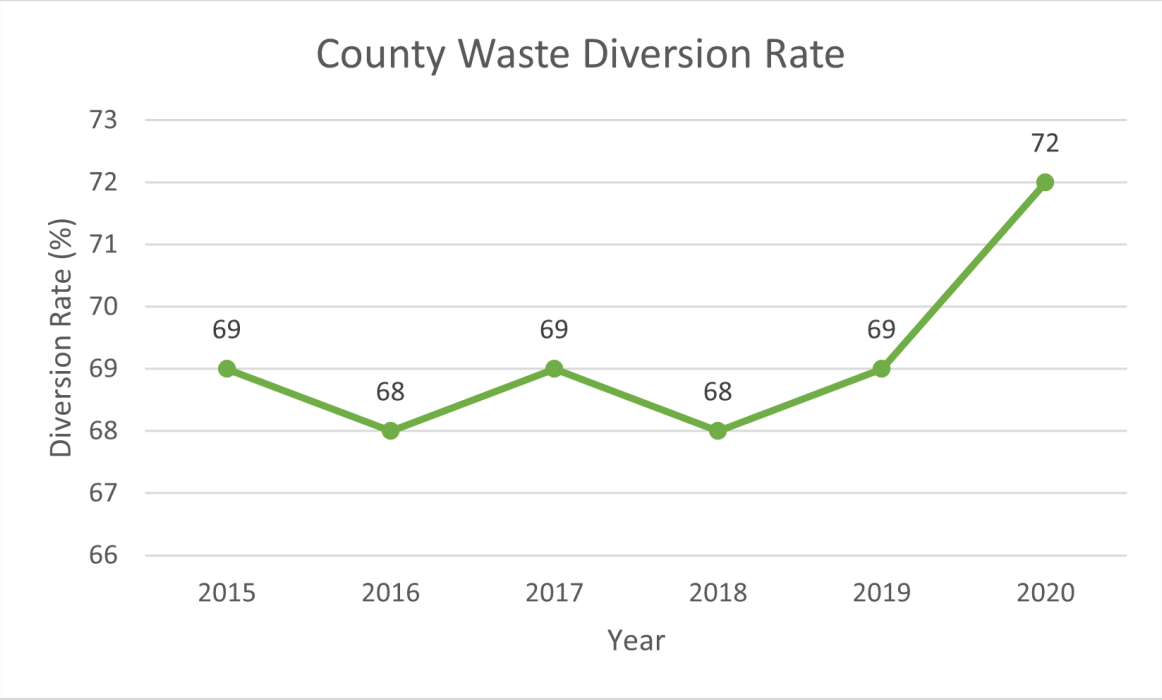
FIGURE D-5: COUNTY WASTE DIVERSION RATE



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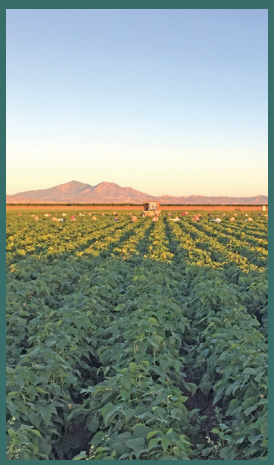
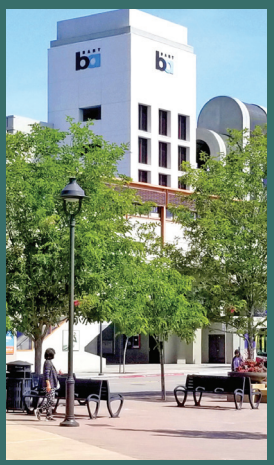
ENVISION
CONTRA COSTA 2040







APPENDIX B:
REVISIONS TO SECTION 5.3, AIR QUALITY, OF THE DEIR

5.3 AIR QUALITY

This section describes the potential impacts to air quality due to adoption and implementation of the proposed project. This section describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential air quality impacts, and identifies proposed General Plan policies and feasible mitigation measures that could minimize any potentially significant impacts.

This evaluation is based on the methodology recommended by the Bay Air Quality Management District (BAAQMD) for plan-level analyses. The analysis focuses on air pollution from regional emissions and localized pollutant concentrations. Criteria air pollutant emissions modeling is included in Appendix 5.3-1, *Air Quality and Greenhouse Gas Emissions Data*, of this Draft Environmental Impact Report (EIR). Transportation-sector impacts are based on trip generation and vehicle miles traveled (VMT) provided by Fehr and Peers. Note that this quantitative analysis was conducted based on the horizon-year projection for the proposed General Plan, which is summarized in Chapter 3, *Project Description*, of this Draft EIR. Cumulative impacts related to air quality are based on the regional boundaries of the San Francisco Bay Area Air Basin (SFBAAB).

5.3.1 Environmental Setting

5.3.1.1 TERMINOLOGY

- **AAQS.** Ambient Air Quality Standards
- **CES.** CalEnviroScreen. CES is a mapping tool that helps identify the California communities most affected by sources of pollution and where people are often especially vulnerable to pollution's effects.
- **Concentrations.** Refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm), parts per billion (ppb), or micrograms per cubic meter ($\mu g/m^3$).
- **Criteria Air Pollutants.** Those air pollutants specifically identified for control under the Federal Clean Air Act (currently seven—carbon monoxide, nitrogen oxides, lead, sulfur oxides, ozone, and coarse and fine particulates).
- **DPM.** Diesel particulate matter.
- **Emissions.** Refers to the actual quantity of pollutant, measured in pounds per day or tons per year.
- **Impacted Community**. Unincorporated communities in Contra Costa County that are disproportionately burdened by pollution as defined by the County in the proposed General Plan using CES data.
- **Overburdened Community**. As defined by BAAQMD, an area in a census tract identified by CES, Version 4, having an overall CES score at or above the 70th percentile, or within 1,000 feet of any such census tract.
- **ppm.** Parts per million.
- **Sensitive receptor.** Land uses that are considered more sensitive to air pollution than others due to the types of population groups or activities involved. These land uses include residential, retirement facilities, hospitals, and schools.
- **TAC.** Toxic air contaminant.
- **$\mu g/m^3$.** Micrograms per cubic meter.
- **VMT.** Vehicle miles traveled.

5.3.1.2 AIR POLLUTANTS OF CONCERN

Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are categorized as primary and/or secondary pollutants. Primary air pollutants are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that AAQS have been established for them. VOC and NO_X are criteria pollutant precursors that form secondary criteria air pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Table 5.3-1, *Criteria Air Pollutant Health Effects Summary*, summarizes the potential health effects associated with the criteria air pollutants.

Table 5.3-1 Criteria Air Pollutant Health Effects Summary

Pollutant	Health Effects	Examples of Sources
Carbon Monoxide (CO)	Chest pain in heart patients Headaches, nausea Reduced mental alertness Death at very high levels	Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Ozone (O_3)	Cough, chest tightness Difficulty taking a deep breath Worsened asthma symptoms Lung inflammation	Atmospheric reaction of organic gases with nitrogen oxides in sunlight
Nitrogen Dioxide (NO_2)	Increased response to allergens Aggravation of respiratory illness	Same as carbon monoxide sources
Particulate Matter (PM_{10} and $PM_{2.5}$)	Hospitalizations for worsened heart diseases Emergency room visits for asthma Premature death	Cars and trucks (particularly diesels) Fireplaces and woodstoves Windblown dust from overlays, agriculture, and construction
Sulfur Dioxide (SO_2)	Aggravation of respiratory disease (e.g., asthma and emphysema) Reduced lung function	Combustion of sulfur-containing fossil fuels, smelting of sulfur-bearing metal ores, and industrial processes
Lead (Pb)	Behavioral and learning disabilities in children Nervous system impairment	Contaminated soil

Source: CARB 2023b; South Coast AQMD 2005.

A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

- **Carbon Monoxide (CO)** is a colorless, odorless gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces its oxygen-carrying capacity. This results in reduced oxygen reaching

the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death (BAAQMD 2017a).

- **Nitrogen Oxides (NO_x)** are a by-product of fuel combustion and contribute to the formation of ground-level O_3, PM_{10}, and $PM_{2.5}$. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. The principal form of NO_x produced by combustion is NO, but NO reacts quickly with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. NO_2 is an acute irritant and more injurious than NO in equal concentrations. At atmospheric concentrations, however, NO_2 is only potentially irritating. NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure (BAAQMD 2017a). NO_2 acts as an acute irritant and in equal concentrations is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million (ppm) (BAAQMD 2017a).
- **Sulfur Dioxide (SO_2)** is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and chemical processes at plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2. When sulfur dioxide forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_x). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. Current scientific evidence links short-term exposures to SO_2, ranging from 5 minutes to 24 hours, with an array of adverse respiratory effects, including bronchoconstriction and increased asthma symptoms. These effects are particularly adverse for asthmatics at elevated ventilation rates (e.g., while exercising or playing) at lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. (BAAQMD 2017a).
- **Suspended Particulate Matter (PM_{10})** consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. In the SFBAAB, most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Inhalable coarse particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less.

  Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM_{10} bypasses the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. These health effects include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Motor vehicles are currently responsible for about half of particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates (BAAQMD 2017a).

- **Suspended Particulate Matter ($PM_{2.5}$)** is another form of fine particulate matter that has an aerodynamic diameter of 2.5 microns or less (i.e., 2.5 millionths of a meter or 0.0001 inch). Fine particulate matter originates from a variety of sources, including fossil fuel combustion, residential wood burning and cooking, and natural sources, such as wildfires and dust. As mentioned above, extended exposure to particulate matter can cause negative effects on the respiratory system, such as triggering asthma attacks, aggravating bronchitis, and diminishing lung function. $PM_{2.5}$ studies have also found harm to the cardiovascular system and impacts on the brain, such as reduced cognitive function.

  Local jurisdictions have the option of developing community risk reduction plans (CRRPs) to cumulatively reduce community wide $PM_{2.5}$ concentrations by following a comprehensive plan. Stationary source screening maps contain all the facilities in the Bay Area where a permit has been issued and that emit one or more TACs. These stationary source screening maps can be used as a basis for community baseline conditions and to evaluate screening-level health risk impacts using the cavity effects equation. An alternative screening methodology is to use the California Air Resources Board's (CARB) gas station screening tool to estimate cancer risk and chronic/acute hazards from gas station emissions (BAAQMD 2017a).

- **Ozone (O_3)** is a key ingredient of "smog" and is a gas that is formed when ROGs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for its formation. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing O_3 can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma; reduce lung function; and inflame the linings of the lungs. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. O3 can also damage plants and trees and materials such as rubber and fabrics (BAAQMD 2017a).
- **Reactive Organic Gases (ROGs)/Volatile Organic Compounds (VOCs)** are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of ROGs. Other sources of ROGs include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROGs, but rather by reactions of ROGs to form secondary pollutants such as O_3. There are no AAQS established for ROGs. However, because they contribute to the formation of O_3, the BAAQMD has established a significance threshold for this pollutant (BAAQMD 2017a).
- **Lead (Pb)** is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phasing out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Because emissions of lead are found only in projects that are permitted by the BAAQMD, lead is not an air quality of concern for the proposed project (BAAQMD 2017a).

Toxic Air Contaminants

People exposed to TACs at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and other health problems (USEPA 2020). By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs (CARB 1999). Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. There are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most relevant to the proposed project being particulate matter from diesel-fueled engines.

Diesel Particulate Matter

In 1998, CARB identified DPM as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particles are 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs. Long-term (chronic) inhalation of DPM is likely a lung cancer risk. Short-term (i.e., acute) exposure can cause irritation and inflammatory symptoms and may exacerbate existing allergies and asthma symptoms (USEPA 2002).

Placement of New Sensitive Receptors

Because placement of sensitive land uses falls outside CARB's jurisdiction, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) to address the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources.

CARB's recommendations on the siting of new sensitive land uses identified in Table 5.3-2, *CARB Recommendations for Siting New Sensitive Land Uses*, were based on a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources.

Table 5.3-2 CARB Recommendations for Siting New Sensitive Land Uses

Source/Category	Advisory Recommendations
Freeways and High-Traffic Roads	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day.
Distribution Centers	Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units [TRUs] per day, or where TRU unit operations exceed 300 hours per week).
Rail Yards	Take into account the configuration of existing distribution centers and avoid locating residences and other sensitive land uses near entry and exit points.
Ports	Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Refineries	Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or CARB on the status of pending analyses of health risks.
Chrome Platers	Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Dry Cleaners Using Perchloroethylene	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Gasoline Dispensing Facilities	Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district. Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.

Source: CARB 2005.

The key observation in these studies is that proximity to air pollution sources substantially increases both exposure and the potential for adverse health effects. There are three carcinogenic TACs that constitute the majority of the known health risks from motor vehicle traffic: DPM from trucks and benzene and 1,3-butadiene from passenger vehicles.

In 2017, CARB provided a supplemental technical advisory to the handbook for near-roadway air pollution exposure, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways*. Strategies include practices and technologies that reduce traffic emissions, increase dispersion of traffic pollution (or the dilution of pollution in the air), or remove pollution from the air (CARB 2017).

5.3.1.3 REGULATORY BACKGROUND

AAQS have been adopted at the State and federal levels for criteria air pollutants. In addition, both the State and federal government regulate the release of TACs. Land uses in Contra Costa County are subject to the rules and regulations imposed by BAAQMD, the California AAQS adopted by CARB, and National AAQS adopted by the US Environmental Protection Agency (EPA). Federal, State, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized in this section.

Federal and State

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 CAA amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or include other pollutants. The California CAA, signed in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS.

The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants, which are shown in Table 5.3-3, *Ambient Air Quality Standards for Criteria Pollutants*. These pollutants are ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

Table 5.3-3 Ambient Air Quality Standards for Criteria Air Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Ozone (O_3)[3]	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m^3	150 µg/m^3	

5. Environmental Analysis
AIR QUALITY

Table 5.3-3 Ambient Air Quality Standards for Criteria Air Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Respirable Fine Particulate Matter ($PM_{2.5}$)[4]	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m^3	
Lead (Pb)	30-Day Average	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 µg/m^3	
	Rolling 3-Month Average	*	0.15 µg/m^3	
Sulfates (SO_4)[5]	24 hours	25 µg/m^3	No Federal Standard	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hours	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Source: CARB 2016.
Notes: ppm: parts per million; µg/m^3: micrograms per cubic meter
* Standard has not been established for this pollutant/duration by this entity.
1 California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles) are values that are not to be exceeded. All others are not to be equaled or exceeded. California AAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2 National standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
4 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
5 On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

California has also adopted a host of other regulations that reduce criteria pollutant emissions.

- **AB 1493: Pavley Fuel Efficiency Standards**. Pavley I is a clean-car standard that reduced emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016. In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025.
- **Heavy-Duty (Tractor-Trailer) Greenhouse Gas (GHG) Regulation**. The tractors and trailers subject to this regulation must either use US EPA SmartWay certified tractors and trailers or retrofit their existing fleet with SmartWay-verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low-rolling-resistance tires. Sleeper-cab tractors model year 2011 and later must be SmartWay certified. All other tractors must use SmartWay-verified low-rolling-resistance tires. This rule has criteria air pollutant co-benefits.
- **SB 1078 and SB 107: Renewables Portfolio Standards**. A major component of California's Renewable Energy Program is the renewables portfolio standard established under Senate Bills (SB) 1078 (Sher) and 107 (Simitian). Under this standard, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010.
- **California Code of Regulations (CCR) Title 20: Appliance Energy Efficiency Standards**. The 2006 Appliance Efficiency Regulations (20 CCR secs. 1601–1608) were adopted by the California Energy Commission on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. This Code reduces natural gas use from appliances.
- **24 CCR, Part 6: Building and Energy Efficiency Standards**. Energy conservation standards for new residential and nonresidential buildings adopted by the California Energy Resources Conservation and Development Commission (now the California Energy Commission) in June 1977. This Code reduces natural gas use from buildings.
- **24 CCR, Part 11: Green Building Standards Code**. Establishes planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. This Code reduces natural gas use from buildings.

Tanner Air Toxics Act and Air Toxics Hot Spot Information and Assessment Act

Public exposure to TACs is a significant environmental health issue in California. In 1983, the California legislature enacted a program to identify the health effects of TACs and reduce exposure to them. The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health" (17 CCR sec. 93000). A substance that is listed as a hazardous air pollutant pursuant to Section 112(b) of the federal CAA (42 US Code sec. 7412[b]) is a TAC. Under State law, the California EPA, acting through CARB, is

authorized to identify a substance as a TAC if it is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act set up a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit that TAC. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate "toxics best available control technology" to minimize emissions. To date, CARB has established formal control measures for 11 TACs that are identified as having no safe threshold.

Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High-priority facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public through notices and public meetings.

CARB has promulgated the following specific rules to limit TAC emissions:

- **13 CCR Chapter 10 Section 2485: Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling**. Generally restricts on-road diesel-powered commercial motor vehicles with a gross vehicle weight rating of greater than 10,000 pounds from idling more than five minutes.
- **13 CCR Chapter 10 Section 2480: Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools**. Generally restricts a school bus or transit bus from idling for more than five minutes when within 100 feet of a school.
- **13 CCR Section 2477 and Article 8: Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate**. Regulations established to control emissions associated with diesel-powered TRUs.

Regional

Bay Area Air Quality Management District

BAAQMD is the agency responsible for ensuring that the National and California AAQS are attained and maintained in the SFBAAB. Air quality conditions in the SFBAAB have improved significantly since the BAAQMD was created in 1955. BAAQMD prepares air quality management plans (AQMP) to attain AAQS in the SFBAAB. BAAQMD prepares ozone attainment plans for the National O_3 standard and clean air plans for the California O_3 standard. BAAQMDs prepares these AQMPs in coordination with Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) to ensure consistent assumptions about regional growth.

Bay Area Air Quality Management District 2017 Clean Air Plan

BAAQMD adopted the 2017 "Clean Air Plan: Spare the Air, Cool the Climate" (2017 Clean Air Plan) on April 19, 2017, making it the most recently adopted comprehensive plan. The 2017 Clean Air Plan incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2017 Clean Air Plan serves as an update to the adopted Bay Area 2010 Clean Air Plan and continues to provide the framework for SFBAAB to achieve attainment of the California and National AAQS. The 2017 Clean Air Plan updates the Bay Area's ozone plan, which is based on the "all feasible measures" approach to meet the requirements of the California CAA. It sets a goal of reducing health risk impacts to local communities by 20 percent between 2015 and 2020 and lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.

A comprehensive multipollutant control strategy was developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, TACs, and GHG from a full range of emission sources. These control measures cover the following sectors: (1) stationary (industrial) sources, (2) transportation, (3) energy, (4) agriculture, (5) natural and working lands, (6) waste management, (7) water, (8) super-GHG pollutants, and (9) buildings.

- The proposed control strategy is based on the following key priorities:
- Reduce emissions of criteria air pollutants and TACs from all key sources.
- Reduce emissions of "super-GHGs" such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
  - Increase efficiency of the energy and transportation systems.
  - Reduce demand for vehicle travel, and high-carbon goods and services.
- Decarbonize the energy system.
  - Make the electricity supply carbon-free.
  - Electrify the transportation and building sectors (BAAQMD 2017c).

Community Air Risk Evaluation Program

BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor TACs in the Bay Area, primarily DPM. The last update to this program was in 2014. Based on findings of the latest report, DPM was found to account for approximately 85

percent of the cancer risk from airborne toxins. Carcinogenic compounds from gasoline-powered cars and light duty trucks were also identified as significant contributors: 1,3-butadiene contributed 4 percent of the cancer risk-weighted emissions, and benzene contributed 3 percent. Collectively, five compounds—DPM, 1,3-butadiene, benzene, formaldehyde, and acetaldehyde—were found to be responsible for more than 90 percent of the cancer risk attributed to emissions. All of these compounds are associated with emissions from internal combustion engines. The most important sources of cancer risk-weighted emissions were combustion-related sources of DPM, including on-road mobile sources (31 percent), construction equipment (29 percent), and ships and harbor craft (13 percent). Overall, cancer risk from TAC dropped by more than 50 percent between 2005 and 2015, when emissions inputs accounted for State diesel regulations and other reductions.

The major contributor to acute and chronic non-cancer health effects in the BAAQMD is acrolein (C_3H_4O). Major sources of acrolein are on-road mobile sources and aircraft near freeways and commercial and military airports. Currently CARB does not have certified emission factors or an analytical test method for acrolein. Since the appropriate tools needed to implement and enforce acrolein emission limits are not available, BAAQMD does not conduct health risk screening analysis for acrolein emissions.

Assembly Bill 617 Community Action Plans

AB 617 (C. Garcia, Chapter 136, Statues of 2017) was signed into law in July 2017 to develop a new community-focused program to reduce exposure more effectively to air pollution and preserve public health in environmental justice communities. AB 617 directs CARB and all local air districts to take measures to protect communities disproportionally impacted by air pollution through monitoring and implementing air pollution control strategies.

On September 27, 2018, CARB approved BAAQMD's recommended communities for monitoring and emission reduction planning. The State approved communities for year 1 of the program as well as communities that would move forward over the next five years. Bay Area recommendations included all the CARE areas, areas with large sources of air pollution (e.g., refineries, seaports, and airports), areas identified via statewide screening tools as having pollution and/or health burden vulnerability, and areas with low life expectancy (BAAQMD 2019a).

- Year 1 Communities:
  - *West Oakland*. The West Oakland community was selected for BAAQMD's first Community Action Plan. In 2017, cancer risk from sources in West Oakland (local sources) was 204 in a million. The primary sources of air pollution in West Oakland include heavy trucks and cars, port and rail sources, large industries, and to a lesser extent other sources such as residential sources (i.e., wood burning). The majority (over 90 percent) of cancer risk is from DPM (BAAQMD 2019b).
  - *Richmond*. Richmond was selected for a community monitoring plan in year 1 of the AB 617 program. In December 2023, BAAQMD released the draft Path to Clean Air Community Emissions Reduction Plan (PTCA Plan) for Richmond, North Richmond, and San Pablo communities. It also includes the following unincorporated areas in Contra Costa County: Bay View, East Richmond Heights, Rollingwood, Tara Hills, Montalvin Manor, North Richmond, and El Sobrante. The PTCA Plan

includes measures and strategies to be implemented over the next ten years by state, regional, and local agencies to reduce pollution exposure and emissions in the community (BAAQMD 2023a).

- Year 2 to 5 Communities: East Oakland/San Leandro, Eastern San Francisco, the Pittsburg-Bay Point area, San Jose, Tri-Valley, and Vallejo are slated for action in years 2 to 5 of the AB 617 program (BAAQMD 2019a).

BAAQMD Rules and Regulations

Regulation 7, Odorous Substances

Sources of objectionable odors may occur within the unincorporated county. BAAQMD's Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under BAAQMD Regulation 1, Rule 1-301, *Public Nuisance*, which states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property." Under BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30-day period can be declared a public nuisance.

Other BAAQMD Regulations

In addition to the plans and programs described above, BAAQMD administers a number of specific regulations on various sources of pollutant emissions that would apply to the proposed project:

- Regulation 2, Rule 2, Permits, New Source Review
- Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants
- Regulation 2, Rule 6, Permits, Major Facility Review
- Regulation 6, Rule 1, General Requirements
- Regulation 6, Rule 2, Commercial Cooking Equipment
- Regulation 8, Rule 3, Architectural Coatings
- Regulation 8, Rule 4, General Solvent and Surface Coatings Operations
- Regulation 11, Rule 2, Asbestos, Demolition, Renovation and Manufacturing

Plan Bay Area 2050

MTC and ABAG adopted Plan Bay Area 2050 on October 21, 2021 (ABAG/MTC 2021). Plan Bay Area provides transportation and environmental strategies to continue to meet the regional transportation-related GHG reduction goals of SB 375, which is described further in Section 5.8, *Greenhouse Gas Emissions*, of this Draft EIR. Strategies to reduce GHG emissions include focusing housing and commercial construction in walkable, transit-accessible places; investing in transit and active transportation; and shifting the location of jobs to encourage shorter commutes. To achieve MTC's/ABAG's sustainable vision for the Bay Area, the Plan Bay Area land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities. An overarching goal of the regional plan is to concentrate

development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle, VMT, and associated GHG emissions reductions.

Local

Contra Costa Transportation Authority Congestion Management Plan

The Contra Costa Transportation Authority (CCTA) prepares and adopts a Congestion Management Program (CMP) for Contra Costa County every two years. The 2021 CMP is the 15th biennial update of the CMP (CCTA 2021). The CMP provides a roadmap to reduce congestion, improve mobility, and increase overall sustainability of the transportation system in the county. The 2021 update also documents changes in the use of level of service (LOS) as a finding of significant impact in the California Environmental Quality Act (CEQA) under SB 743, which is described further in Section 5.16, *Transportation*, of this Draft EIR. Consistent with State law and the MTC's Regional Transportation Plan, the CMP contains the following components: traffic LOS standards, a performance element to evaluate current and future multi-modal system performances, a seven-year capital improvement program (CIP), a program to analyze the impacts of land use decisions, and a travel demand element to promote more transportation alternatives.

Contra Costa County Ordinance Code

The Contra Costa County Ordinance Code includes various directives to minimize adverse impacts to air quality in Contra Costa County.

Most provisions related to air quality impacts are included in Title 7, *Building Regulations*, and Title 8, *Zoning*, as follows:

- Chapter 74-2, *Adoption*, in Title 7, *Building Regulations*, incorporates the CCR Title 24, Part 11, CALGreen.
- Chapter 84-52, *R-B Retail Business District,* in Title 8, *Zoning*, establishes that no odors created by an industrial or processing operation shall be perceptible at the property site boundaries.
- Ordinance No. 2022-02, *All-Electric Ordinance (New Construction)*, recently amended Title 7, *Building Regulations*, to require the following building types to be all-electric:
  - Residential (including single-family and multi-family buildings)
  - Detached Accessory Dwelling Units
  - Hotel
  - Office
  - Retail
- Ordinance No. 450-8, *Industrial Safety Ordinance*, expands on the California Accidental Release Prevention Program (CalARP) in the county, which addresses accidental releases of air toxins. Four facilities in the unincorporated county are currently subject to the County's Industrial Safety Ordinance (ISO): Phillips 66 Rodeo Refinery, Air Liquide-Rodeo Hydrogen Plant, PBF Energy - Martinez Refining Company (MRC) [formerly Shell Oil Martinez Refinery], and Air Products (within the MRC).

Climate Action Plan

The existing 2015 Climate Action Plan (CAP) identifies how the County will achieve the AB 32 GHG emissions reduction target of 15 percent below baseline levels by the year 2020, in addition to supporting other public health, energy efficiency, water conservation, and air quality goals identified in the County's existing General Plan and other existing policy documents.

5.3.1.4 EXISTING CONDITIONS

San Francisco Bay Area Air Basin Conditions

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is divided into 15 air basins. Contra Costa County is in the SFBAAB. The discussion below identifies the natural factors in the Air Basin that affect air pollution. Air pollutants of concern are criteria air pollutants and TACs. Federal, State, and local air districts have adopted laws and regulations intended to control and improve air quality.

BAAQMD is the regional air quality agency for the SFBAAB, which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the southern portion of Sonoma County; and the southwestern portion of Solano County. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions (BAAQMD 2017a).

Meteorology

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range[1] splits in the Bay Area, creating a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait, which allows air to flow in and out of the Bay Area and the Central Valley. The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold-water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast. In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

[1] The Coast Range traverses California's west coast from Humboldt County to Santa Barbara County.

Wind Patterns

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais in Marin County, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San José when it meets the East Bay hills. Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno gap.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon and the sea breeze deepens and increases in velocity while spreading inland. Under normal atmospheric conditions, the air in the lower atmosphere is warmer than the air above it. In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes (i.e., conditions where there is little mixing, which occurs when there is a lack of or little wind) are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB.

Temperature

Summertime temperatures in the Air Basin are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold water from the ocean bottom along the coast. On summer afternoons, the temperatures at the coast can be 35 degrees Fahrenheit (°F) cooler than temperatures 15 to 20 miles inland; at night, this contrast usually decreases to less than 10°F. In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

Precipitation

The Air Basin is characterized by moderately wet winters and dry summers. Winter rains (November through March) account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the Air Basin to another, even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing (an upward and downward movement of air) are usually high, and thus pollution levels tend to be low (i.e., air pollutants are dispersed more readily into the atmosphere rather than accumulate under stagnant

conditions). However, during the winter, frequent dry periods do occur, where mixing and ventilation are low and pollutant levels build up.

Wind Circulation

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commuter traffic (early morning) and wood-burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants up-valley during the day, and cold air drainage flows move the air mass down-valley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.

Inversions

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). There are two types of inversions that occur regularly in the SFBAAB. Elevation inversions[2] are more common in the summer and fall, and radiation inversions[3] are more common during the winter. The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

Attainment Status of the SFBAAB

The AQMP provides the framework for air quality basins to achieve attainment of the State and federal AAQS through the State Implementation Plan. Areas that meet AAQS are classified as attainment areas, and areas that do not meet these standards are classified as nonattainment areas. Severity classifications for O_3 range from marginal, moderate, and serious to severe and extreme.

- **Unclassified:** A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
- **Attainment:** A pollutant is in attainment if the AAQS for that pollutant was not violated at any site in the area during a three-year period.
- **Nonattainment:** A pollutant is in nonattainment if there was at least one violation of an AAQS for that pollutant in the area.
- **Nonattainment/Transitional:** A subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

[2] When the air blows over elevated areas, it is heated as it is compressed into the side of the hill/mountain. When that warm air comes over the top, it is warmer than the cooler air of the valley.

[3] During the night, the ground cools off, radiating the heat to the sky.

The attainment status for the SFBAAB is shown in Table 5.3-4, *Attainment Status of Criteria Pollutants in the San Francisco Bay Area Air Basin*. The SFBAAB is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS.

Table 5.3-4 Attainment Status of Criteria Air Pollutants in the San Francisco Bay Area Air Basin

Pollutant	State	Federal
Ozone – 1-hour	Nonattainment	Classification revoked (2005)
Ozone – 8-hour	Nonattainment (serious)	Nonattainment (marginal)[1]
PM_{10}	Nonattainment	Unclassified/Attainment[2]
$PM_{2.5}$	Nonattainment	Unclassified/Attainment
CO	Attainment	Attainment
NO_2	Attainment	Unclassified
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	Unclassified/Attainment
All others	Unclassified/Attainment	Unclassified/Attainment

Source: CARB 2023a.
[1] Severity classification current as of February 13, 2017.
[2] In December 2014, US EPA issued final area designations for the 2012 primary annual $PM_{2.5}$ National AAQS. Areas designated "unclassifiable/attainment" must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the county are best documented by measurements taken by BAAQMD. BAAQMD has 24 permanent monitoring stations around the Bay Area. The nearest station is the Concord-2975 Treat Blvd Monitoring Station, which monitors O_3, NO_2, and $PM_{2.5}$. Data from this monitoring station is summarized in Table 5.3-5, *Ambient Air Quality Monitoring Summary*. The data show that the area regularly exceeds the State and federal one-hour, eight-hour O_3 standards and federal $PM_{2.5}$, and occasionally exceeds the State and federal PM_{10} in the last five recorded years.

Table 5.3-5 Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Thresholds Were Exceeded and Maximum Levels				
	2017	2018	2019	2020	2021
Ozone (O_3)					
State 1-Hour ≥ 0.09 ppm (days exceed threshold)	0	0	0	2	1
State & Federal 8-hour ≥ 0.070 ppm (days exceed threshold)	0	0	2	3	1
Max. 1-Hour Conc. (ppm)	0.082	0.077	0.092	0.108	0.096
Max. 8-Hour Conc. (ppm)	0.070	0.061	0.074	0.083	0.077
Nitrogen Dioxide (NO_2)					
State 1-Hour ≥ 0.18 ppm (days exceed threshold)	0	0	0	0	0
Federal 1-Hour ≥ 0.100 ppm (days exceed threshold)	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.0406	0.0383	0.0406	0.0339	0.0290
Coarse Particulates (PM_{10})					
State 24-Hour > 50 µg/m^3 (days exceed threshold)	0	1	0	1	0
Federal 24-Hour > 150 µg/m^3 (days exceed threshold)	0	0	0	1	0
Max. 24-Hour Conc. (µg/m^3)	41.2	99.3	34.8	165.4	25.0
Fine Particulates ($PM_{2.5}$)					
Federal 24-Hour > 35 µg/m^3 (days exceed threshold)	6	14	0	16	2
Max. 24-Hour Conc. (µg/m^3)	89.4	180.0	28.2	119.8	43.7

Source: CARB 2023c.
ppm = parts per million; parts per billion, µg/m^3 = micrograms per cubic meter
Data for O_3, NO_2, PM_{10} and $PM_{2.5}$ obtained from the Concord-2975 Treat Blvd Monitoring Station.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. BAAQMD defines sensitive receptors as "Facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples include schools, hospitals and residential areas" (BAAQMD 2023b).

Residential areas are also considered sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

Environmental Justice Communities

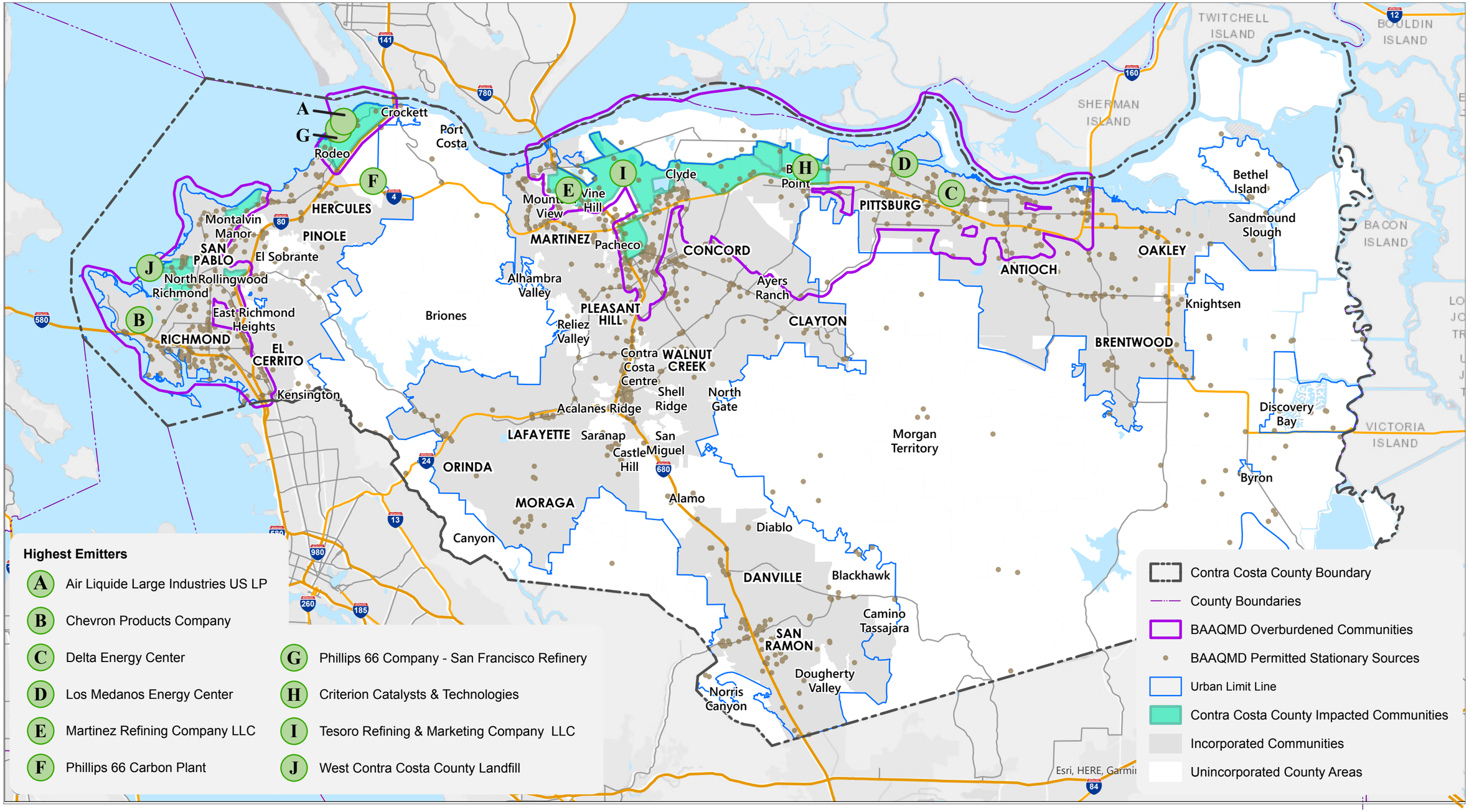
Disadvantaged communities identified by CES (i.e., environmental justice communities) may be disproportionately affected by and vulnerable to poor air quality.[4, 5] The CES cumulative score is a cumulative measure of overall environmental justice burden based on 24 indicators, including pollution, social, and health indicators, four of which specifically relate to air quality or air pollution. Within Contra Costa County, there are the following identified sensitive community types, which are areas that are disproportionately burdened by pollution:

- Contra Costa County Impacted Communities
- BAAQMD's Overburdened Communities
- BAAQMD's AB 617 Community – Richmond

Figure 5.3-1, *Overburdened and Impacted Communities and Community Emitters*, shows these sensitive community types, the location of the top ten highest emitters, and BAAQMD permitted stationary sources. Both BAAQMD's Overburdened Communities and Contra Costa County's Impacted Communities were mapped using CES Version 4. CES measures pollution and population characteristics using 21 indicators, such as air quality, hazardous waste sites, asthma rates, and poverty. It applies a formula to each census tract in the state to generate a score that ranks the level of cumulative impacts in each area relative to the rest of the census tracts in the state. Contra Costa County's Impacted Communities designation is applied to unincorporated areas that score at or above the 72nd percentile, whereas BAAQMD's Overburdened Communities designation is applied to census tracts that score at or above the 70th percentile, plus areas within 1,000 feet of any such census tract. As a result, BAAQMD's Overburdened Community designation is more encompassing of sensitive populations, and is therefore used in the impact analysis.

[4] Under SB 535, disadvantaged communities are defined as the top 25 percent scoring areas from CES along with other areas with high amounts of pollution and low populations.

[5] CES 4.0. Indicator maps can be found at: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40



Source: BAAQMD, 2013; OEHHA CalEnvironScreen 4.0, 2021; Contra Costa County, 2022.

0 3.5
Scale (Miles)

Figure 5.3-1
Overburdened and Impacted Communities and Community Emitters

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AB 617 Community – Richmond Area

Figure 5.3-1 also identifies the AB 617 community. The Richmond Area includes most of Richmond and San Pablo and adjacent communities such as North Richmond, Montalvin Manor, parts of Tara Hills, El Sobrante, and the Richmond Annex. Residents in the Richmond Area are exposed to a substantial and complex mix of air pollutants. Industrial sources of air pollution include a petroleum refinery, a chemical plant, a coal and petroleum coke terminal, organic liquid storage and distribution facilities, wastewater treatment plants, a landfill, organic waste metal facilities, and industrial and manufacturing plants of various sizes. Also, numerous smaller sources of air pollution are within residential areas, including auto body shops, paint shops, restaurants, and gas stations.

Mobile sources contribute air pollution, including DPM, to the area as well, including traffic on high volume freeways and roadways, such as Interstate (I) 80, I-580, the Richmond Parkway, and San Pablo Avenue; truck operations related to large distribution facilities; seaport operations; railways; and railyards. In total, there are more than 200 permitted emissions sources distributed throughout the Richmond Area (BAAQMD 2020). The community air monitoring program for the Richmond Area identified several areas with higher levels of different VOCs, likely due to specific nearby facilities and operations or a prevalence of combustion-related sources of VOCs like high-traffic corridors and restaurants (BAAQMD 2022).

CalEnviroScreen Air Quality Indicators

CES is a mapping tool that helps identify the California communities most affected by many sources of pollution and where people are especially vulnerable to pollution's effects. People in environmental justice areas identified by CES 4.0 may be disproportionately affected by and vulnerable to poor air quality. CES's "pollution burden" map identifies communities that are exposed to pollution from human activities, such as air pollution (ozone, $PM_{2.5}$, DPM), water pollution (drinking water contaminants), and hazardous materials (pesticide use, children's lead exposure, toxic releases), and traffic density. Figure 5.3-2, *CalEnviroScreen 4.0 – Pollution Burden Percentile*, shows the pollution burden in the county relative to the rest of the state. In CES, the pollution burden score considers the disproportionate effect of pollution on environmental justice communities, because the score weighs socioeconomic factors (e.g., educational attainment and poverty) and sensitivity of the population (e.g., asthma rates and cardiovascular disease).

Although the causes of asthma are poorly understood, it is well established that exposure to traffic and outdoor air pollutants can trigger asthma attacks. Children, the elderly, and low-income Californians suffer disproportionately from asthma (CalEPA 2017). Figure 5.3-3, *CalEnviroScreen 4.0 – Asthma Percentile*, maps the percentile of spatially modeled, age-adjusted rate of emergency department visits for asthma per 10,000 (averaged over 2015-2017) relative to the rest of the state (OEHHA 2023).

Figure 5.3-4, *CalEnviroScreen 4.0 – Diesel Particulate Matter Percentile*, and Figure 5.3-5, *CalEnviroScreen 4.0 – $PM_{2.5}$ Percentile*) provides an estimate of the percentile of DPM and $PM_{2.5}$ in the county relative to the rest of the state. The $PM_{2.5}$ percentile displays the annual mean concentration of $PM_{2.5}$ (weighted average of measured monitor concentrations and satellite observations, $\mu g/m^3$) over three years (2015 to 2017). DPM percentile is based on spatial distribution of gridded DPM emissions from on-road and non-road sources in 2016 (tons/year). Exposure to DPM has been shown to have numerous adverse health effects including irritation to

the eyes, throat, and nose; cardiovascular and pulmonary disease; and lung cancer. California regulations enacted since 1990 have led to a steady decline in diesel emissions. Particulate matter pollution, and fine particle ($PM_{2.5}$) pollution in particular, has been shown to cause numerous adverse health effects, including heart and lung disease (OEHHA 2021).

Other indicators identified by CES can be found in the proposed General Plan Stronger Communities Element, including:

- Figure SC-3, Cardiovascular Disease Rankings Relative to the State
- Figure SC-4, Low Birth Weight Rankings Relative to the State
- Figure SC-5, Children's Lead Risk from Housing Ranking Relative to the State
- Figure SC-6, Poverty Rankings Relative to the State
- Figure SC-7, Adults Without a High School Degree Rankings Relative to the State

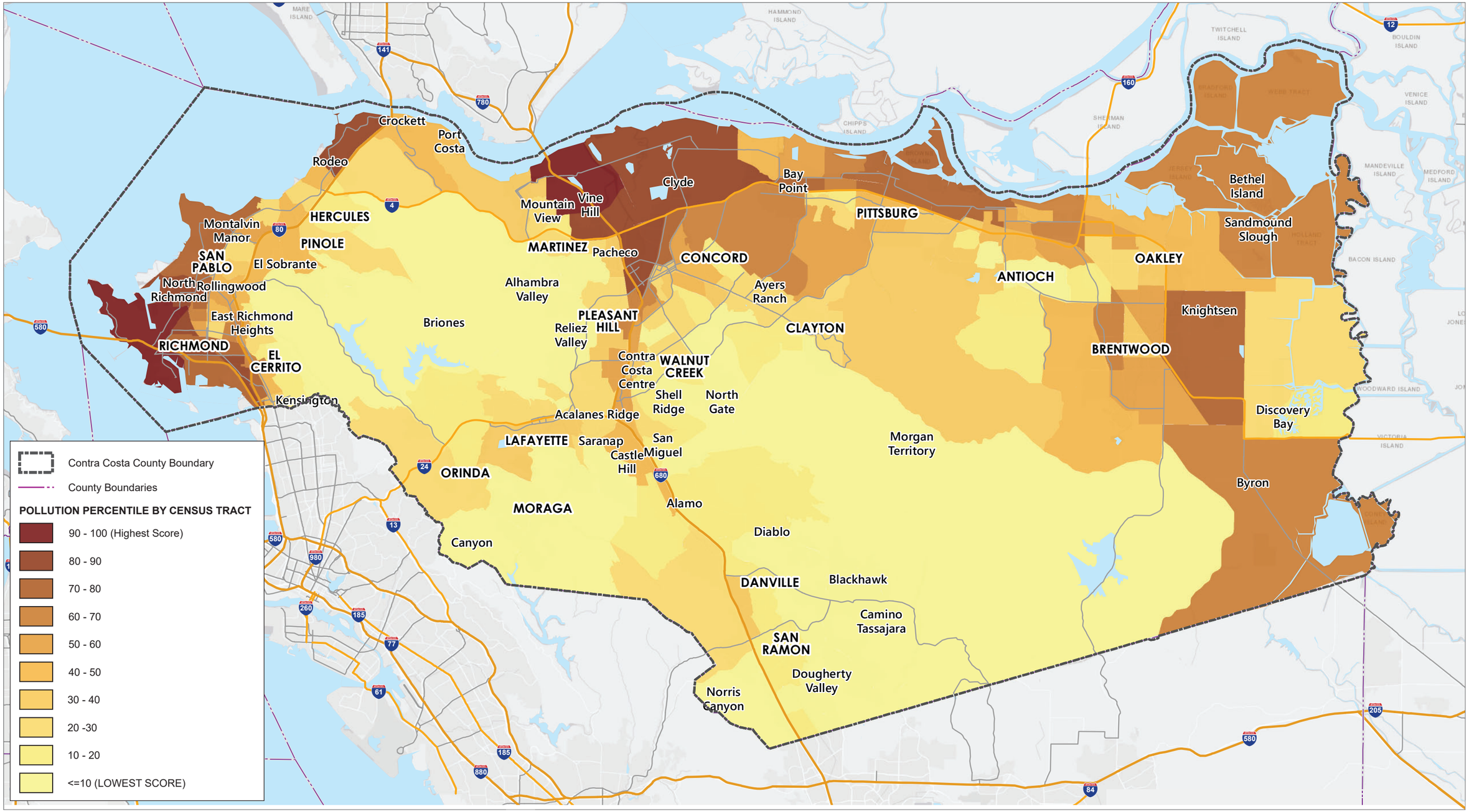
Existing Emissions

Table 5.3-6, *Contra Costa County Criteria Air Pollutant Emissions Inventory*, identifies the existing criteria air pollutant emissions inventory using emission rates for year 2019 (baseline). The inventories are based on existing land uses in the county. The Year 2019 inventory represents the projected emissions currently generated by existing land uses using the baseline year 2019 emission factors for on-road vehicles and emissions from off-road construction equipment.

Table 5.3-6 Contra Costa County Criteria Air Pollutant Emissions Inventory

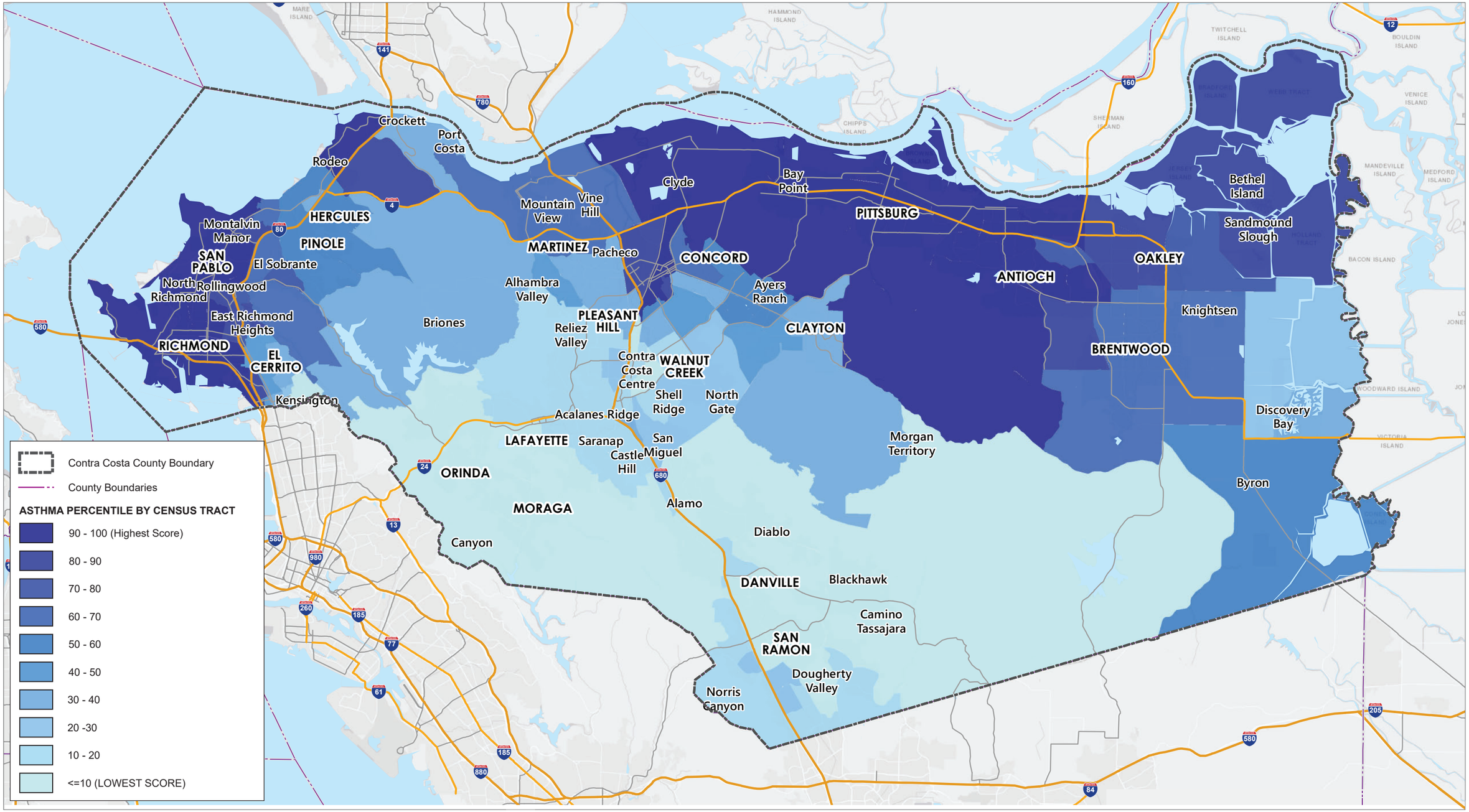
Sector	Existing Criteria Air Pollutant Emissions (tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	41	207	26	10
Energy[2]	11	206	15	15
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	3	3	0	0
Consumer Products[4]	444			
Total	**1,256**	**431**	**156**	**140**
Sector	**Existing Criteria Air Pollutant Emissions (lbs per day)**			
	VOC	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Transportation[1]	234	1,193	151	57
Energy[2]	60	1,129	84	84
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629
Area –Off-Road Equipment[3]	17	16	1	1
Area – Consumer Products[4]	2,432			
Total	**6,895**	**2,422**	**865**	**771**

Notes:
1 EMFAC2021 V.1.0.2. Based on daily VMT provided by Fehr & Peers (see Appendix 5.3-1).
2 Based on natural gas use provided by PG&E and residential fuels identified for the ~~CAP Update~~ CAAP.
3 OFFROAD2021 V.1.02.
4 Based on CalEEMod User's Guide methodology to calculate VOC emissions from use of household consumer cleaning products.



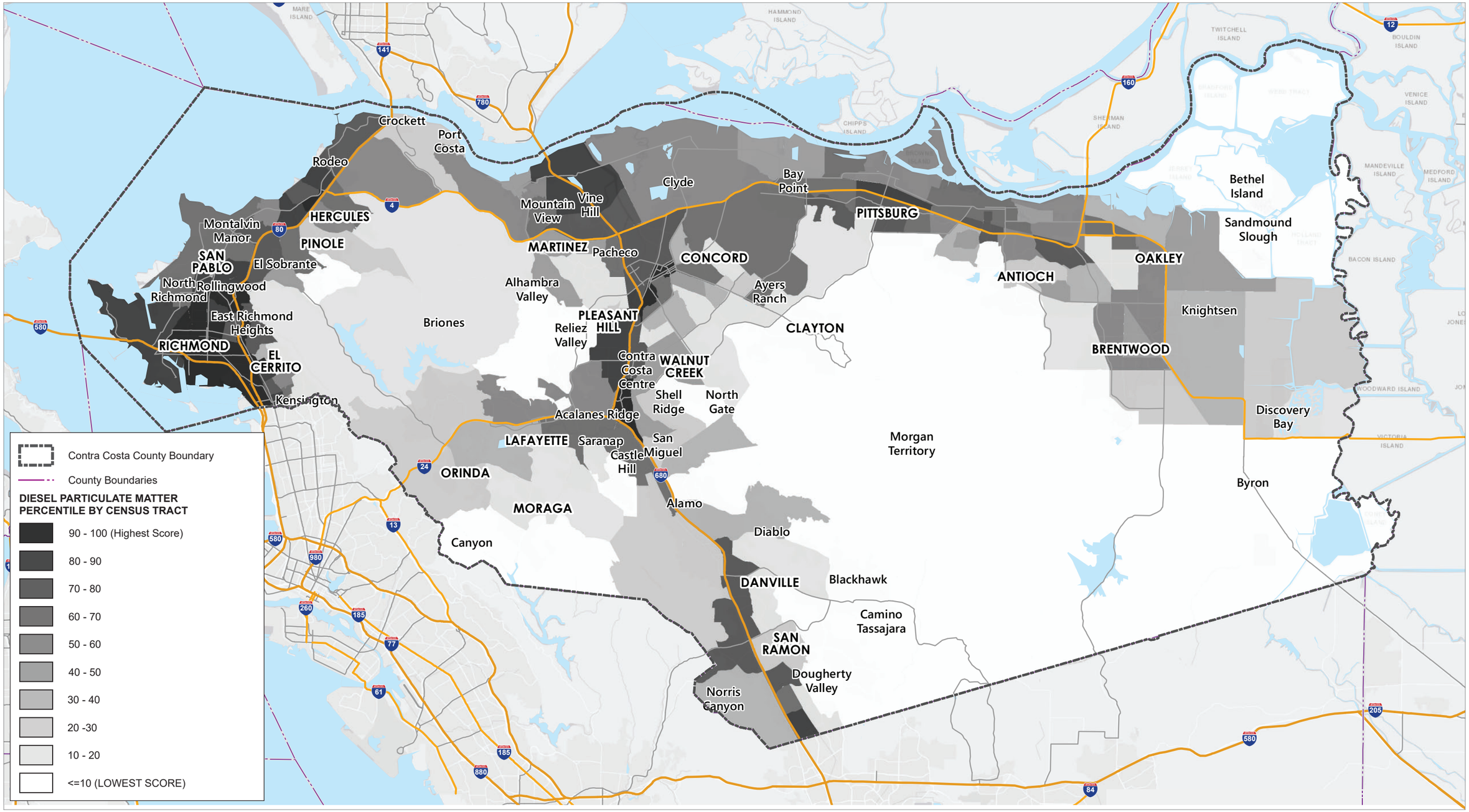
Source: OEHHA CalEnvironScreen 4.0, 2021.

Figure 5.3-2
CalEnvironScreen 4.0 – Pollution Burden Percentile



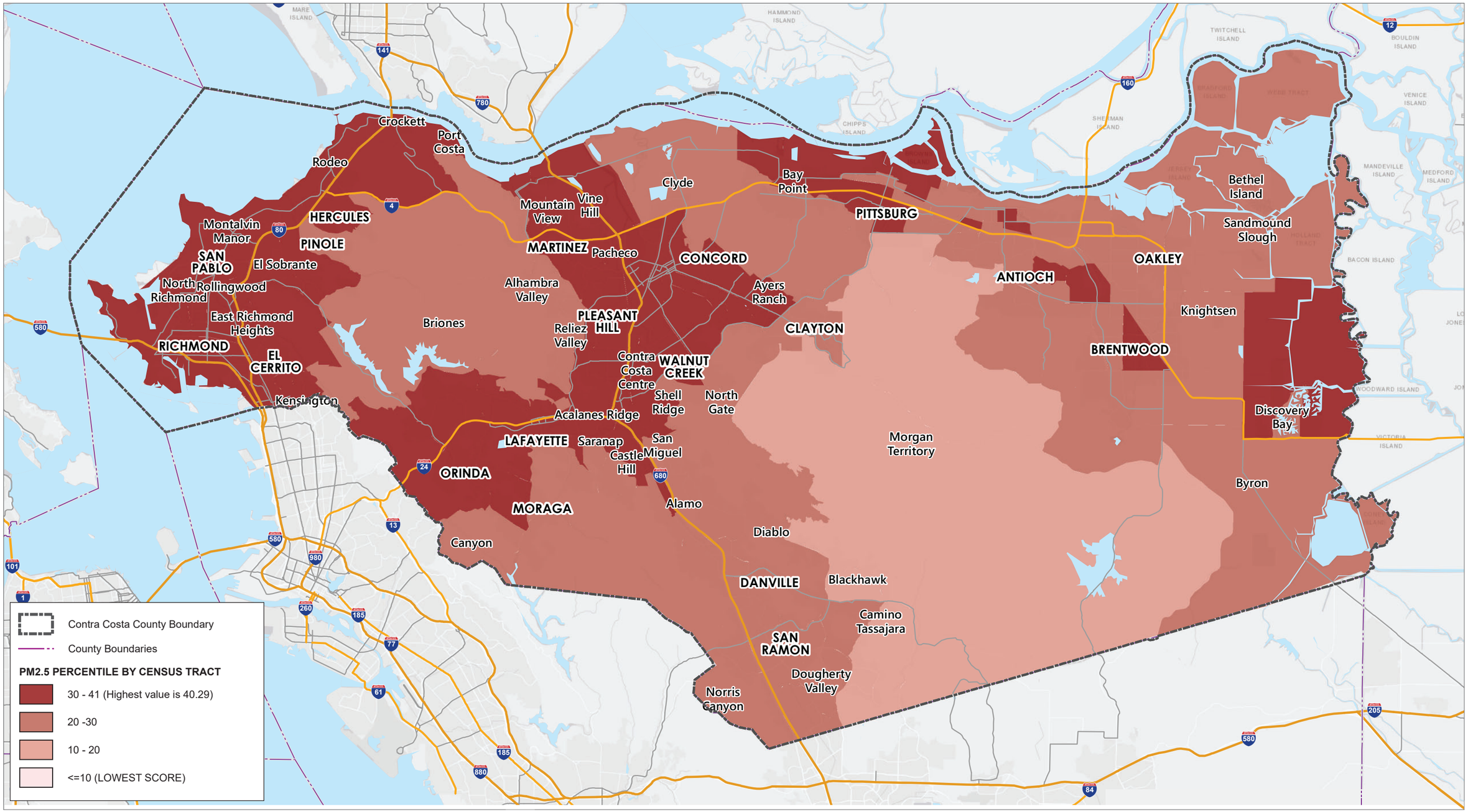
Source: OEHHA CalEnvironScreen 4.0, 2021.

Figure 5.3-3
CalEnvironScreen 4.0 – Asthma Percentile



Source: OEHHA CalEnvironScreen 4.0, 2021.

Figure 5.3-4
CalEnvironScreen 4.0 – Diesel Particulate Matter Percentile



Source: OEHHA CalEnvironScreen 4.0, 2021.

0 3.5
Scale (Miles)

Figure 5.3-5
CalEnvironScreen 4.0 – PM2.5 Percentile

5.3.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

AQ-1 Conflict with or obstruct implementation of the applicable air quality plan.

AQ-2 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State AAQS.

AQ-3 Expose sensitive receptors to substantial pollutant concentrations.

AQ-4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

5.3.2.1 BAY AREA AIR QUALITY MANAGEMENT DISTRICT THRESHOLDS

The BAAQMD *CEQA Air Quality Guidelines* were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxins, odors, GHG emissions, and environmental justice.

In June 2010, BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. These thresholds are designed to establish the level at which the BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. BAAQMD published a new version of the Guidelines in April 2023. This latest version of the BAAQMD CEQA Guidelines was used to prepare the analysis in this EIR.

Criteria Air Pollutant Emissions and Precursors

Regional Significance Criteria

BAAQMD's regional significance criteria for projects that exceed the screening thresholds are shown in Table 5.3-7, *BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds*. Criteria for both the construction and operational phases of the project are shown.

Table 5.3-7 BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (Tons/year)
Project-Level			
ROG	54	54	10
NO_X	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
PM_{10} and $PM_{2.5}$ Fugitive Dust	Best Management Practices	None	None
Plan-Level			
All Criteria Air Pollutants	No Net Increase		

Source: BAAQMD 2023b.

The proposed project is a regional plan; regional plans would have a less-than-significant impact related to air quality if they demonstrate 'no net increase' in criteria air pollutants and risks and hazards. To demonstrate no net increase, BAAQMD's Guidelines require two comparative analyses for the projected future emissions:

- **Scenario 1: Project to Existing Conditions (base-to-future-year comparison).** Compare the existing (base year) emissions with projected future year emissions plus the regional plan's emissions (base year/regional plan comparison).
- **Scenario 2: Project to Future No Project Conditions (future baseline comparison)** Compare projected future year emissions with projected future year emissions plus the regional plan's emissions (no regional plan/regional plan comparison). This scenario isolates changes in emissions due solely to the project since both the scenarios consider emissions reductions from federal and State regulations.

If both comparative analyses demonstrate no net increase in emissions, the air quality and GHG impacts of the regional plan would be less than significant.

Health Effects of Criteria Air Pollutants

If projects exceed the emissions in Table 5.3-7, their emissions would cumulatively contribute to the nonattainment status and would contribute in elevating health effects associated to these criteria air pollutants. Known health effects related to ozone include worsening of bronchitis, asthma, and emphysema and a decrease in lung function. Health effects associated with particulate matter include premature death of people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, decreased lung function, and increased respiratory symptoms. Reducing emissions would further contribute to reducing possible health effects related to criteria air pollutants.

However, for projects that exceed the emissions in Table 5.3-7, it is speculative to determine how exceeding the regional thresholds would affect the number of days the region is in nonattainment since mass emissions are not correlated with concentrations of emissions or how many additional individuals in the air basin would be affected by the health effects cited above. BAAQMD is the primary agency responsible for ensuring the health and welfare of sensitive individuals to elevated concentrations of air quality in the Air Basin, and at the present

time, it has not provided methodology to assess the specific correlation between mass emissions generated and the effect on health in order to address the issue raised in *Sierra Club v. County of Fresno (Friant Ranch, L.P.) (2018) 6 Cal.5th 502, Case No. S21978* (Friant Ranch).

Ozone concentrations depend on a variety of complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Because of the complexities of predicting ground-level ozone concentrations in relation to the National and California AAQS, it is not possible to link health risks to the magnitude of emissions exceeding the significance thresholds. To achieve the health-based standards established by the EPA, the air districts prepare AQMPs that detail regional programs to attain the AAQS. However, if a project within the Plan Area exceeds the regional significance thresholds, the project could contribute to an increase in health effects in the basin until such time the attainment standards are met in the Air Basin.

CO Hotspots

Congested intersections have the potential to create elevated concentrations of CO, referred to as CO hotspots. The significance criteria for CO hotspots are based on the California AAQS for CO, which are 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology, the SFBAAB is in attainment of the California and National AAQS, and CO concentrations in the SFBAAB have steadily declined. Because CO concentrations have improved, the BAAQMD does not require a CO hotspot analysis if the following criteria are met (BAAQMD 2023b):

- The project is consistent with an applicable congestion management program established by the County Congestion Management Agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans.
- The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersection to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, and below-grade roadway).

Community Risk and Hazards

BAAQMD's significance thresholds for local community risk and hazard impacts apply to both the siting of a new source and to the siting of a new receptor. Local community risk and hazard impacts are associated with TACs and $PM_{2.5}$ because emissions of these pollutants can have significant health impacts at the local level. The proposed project would generate TACs and $PM_{2.5}$ during construction activities that could elevate concentrations of air pollutants at the nearby sensitive receptors. The thresholds for construction-related local community risk and hazard impacts are the same as for project operations. BAAQMD has adopted screening tables for air toxics evaluation during construction (BAAQMD 2010b). Construction-related TAC and $PM_{2.5}$ impacts should be addressed on a case-by-case basis, taking into consideration the specific construction-related characteristics of each project and proximity to off-site and on-site receptors, as applicable (BAAQMD 2010b and BAAQMD 2017a).

Community Risk and Hazards: Project

Project-level emissions of TACs or $PM_{2.5}$ from individual sources that exceed any of the thresholds listed below are considered a potentially significant community health risk in the absence of a qualified community risk reduction plan:

- An excess (i.e., increased) cancer risk level of more than 10 in one million[6]
- Noncancer (i.e., chronic or acute) hazard index greater than 1.0
- An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) annual average $PM_{2.5}$ (BAAQMD 2023b)

Community Risk and Hazards: Cumulative

Cumulative sources represent the combined total risk values of each of the individual sources within the 1,000-foot evaluation zone. A project would have a cumulatively considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source or location of a receptor, plus the contribution from the project, exceeds any of the following in the absence of a qualified community risk reduction plan:

- An excess cancer risk level of more than 100 in one million (from all sources)
- Chronic noncancer hazard index (from all local sources) greater than 10.0
- 0.8 $\mu g/m^3$ annual average $PM_{2.5}$ (from all local sources) (BAAQMD 2023b)

In February 2015, the Office of Environmental Health Hazard Assessment (OEHHA) adopted new health risk assessment guidance that includes several efforts to be more protective of children's health. These updated procedures include the use of age sensitivity factors to account for the higher sensitivity of infants and young children to cancer causing chemicals, and age-specific breathing rate (OEHHA 2015).

Odors

BAAQMD's thresholds for odors are qualitative based on BAAQMD's Regulation 7, *Odorous Substances*. This rule places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under BAAQMD Regulation 1, Rule 1-301, *Public Nuisance*, which states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which endangers the comfort, repose, health, or safety of any such persons or the public, or which cause, or has a natural tendency to cause, injury, or damage to business or property. Under BAAQMD's Rule 1-301. BAAQMD has established odor screening distance thresholds for land uses that have the potential to generate substantial odor complaints, including wastewater treatment plants, landfills or transfer stations, composting facilities, confined animal facilities, food manufacturing, and chemical plants (BAAQMD 2023b, Table 5-4, *Odor Screening Distances*).

[6] The CEQA thresholds of significance do not reflect recent amendments adopted in 2021 to BAAQMD Regulation 2-5 that lower the cancer risk threshold to 6 cases in a million in overburdened communities.

For a plan-level analysis, BAAQMD requires:

- Identification of potential existing and planned location of odors sources.
- Policies to reduce potential odor impacts in the plan area.

5.3.2.2 CONTRA COSTA COUNTY THRESHOLDS

Community Risk and Hazard

In addition to the BAAQMD thresholds identified above, the County has proposed the following policy in the General Plan that sets the incremental cancer risk threshold to 6.0 per million in Impacted Communities (compared to 10 in a million) in the unincorporated area:

- **HS-P2.1.** When evaluating health risk impacts of projects in Impacted Communities, use an excess cancer risk of 6.0 per million and a non-cancer (acute and chronic) hazard index greater than 1.0 as thresholds for finding that the project could cause a cumulatively considerable contribution and a significant impact.

5.3.3 Programs, Plans, and Policies

5.3.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to air quality. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Stronger Communities Element

- **Policy SC-P1.1:** In partnership with residents of Impacted Communities, affected workers, business/industry, environmental and environmental justice advocates, community colleges, workforce development and training entities, local government, and other involved agencies, support transition from ~~petroleum refining and other~~ highly polluting industries to a net-zero emission economy based on renewable and sustainable industries that provide living-wage jobs.
- **Policy SC-P1.3:** Support ~~development~~ creation of walkable districts by facilitating development of ~~that provide~~ a range of neighborhood-serving retail and service uses, public amenities, ~~and~~ essential related infrastructure (such as lighting) ~~to~~ for residents of Impacted Communities within walking distance of their homes.
- **Policy SC-P2.3:** Within established communities, complete construction of sidewalks and crosswalks and encourage neighborhood design and development that supports safe walking, biking, and other micro-mobility options, convenient access to services and transit, and opportunities for local shopping.

Land Use Element

- **Policy LU-P3.3:** Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.

- **Action LU-A4.1:** Amend the County Ordinance Code to include requirements for Low-Impact Development, use of low-carbon concrete, water and energy conservation, reclaimed water, renewable energy use, green building, and other measures that reduce the environmental impacts of development, based on the best available science.
- **Policy LU-P8.4:** Support rehabilitation of commercial centers, encouraging improvements that enhance appearance, sustainability, and non-motorized (pedestrian, bicycle, etc.) access and safety.

Transportation Element

- **Policy TR-P1.2:** Prioritize expansion of bicycle, micrombility, and pedestrian infrastructure (e.g., Class IV separated bikeways) to address the significant latent demand for these active transportation modes.
- **Policy TR-P1.3:** Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.
- **Policy TR-P1.4:** Reduce single-occupant vehicle usage and VMT by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, TDM Ordinance, and other best practices), and support for public. transit~~, at a minimum using strategies defined in the TDM Ordinance.~~
- **Policy TR-P1.11:** Support transitioning all on-road vehicles, including personal vehicles and business, government, and public transit fleets, to electric power from renewable sources or other ~~zero-~~emission-free fuels.
- **Policy TR-P1.12:** Continue to improve ZEV ~~(including electric bicycle)~~ charging/ fueling infrastructure within new development and public rights-of-way, incorporating new technologies whenever possible.
- ***Policy TR-P1.13:*** *Require designs for new parking facilities to incorporate ZEV charging/fueling infrastructure and maximize opportunities for adaptive reuse.*
- **Action TR-A1.11:** Coordinate with CCTA and other local and regional agencies to implement the Contra Costa Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements.
- **Action TR-A1.12:** Update the County Ordinance Code as necessary to support advances in ZEV charging/fueling infrastructure~~, including for medium- and heavy-duty vehicles~~.
- **Policy TR-P3.2:** Coordinate planning, construction, and maintenance of streets, transit infrastructure, non-motorized rights-of-way and associated facilities, the countywide bicycle network, and Pedestrian Priority Areas with neighboring jurisdictions and CCTA.
- **Policy TR-P4.1:** Plan, design, and maintain improvement projects involving County roadways in accordance with the County's adopted Complete Streets Policy, other applicable policies (e.g., Vision Zero and other safety initiatives), planning documents such as the County ATP and CCTA Countywide Bicycle and Pedestrian Plan, and best practices (e.g., Caltrans, American Association of State and Highway Transportation Officials, and National Association of City Transportation Officials guidance).

- ***Policy TR-P4.2:*** *Require transportation infrastructure serving new development to be designed using best practices, contemplating existing and planned land uses, roadways, bicycle and pedestrian facilities, transit facilities, and connections to adjoining areas.*
- **Policy TR-P5.5:** Maintain pedestrian and active transportation facilities to the same standard as roads and other transportation infrastructure, including repair and cleanup of all bikeway types and shared-use pathways.
- **Policy TR-P5.7:** Encourage walking, bicycling, and micromobility as the travel modes of choice for short to medium-length trips, such as trips to schools, parks, transit stops, local shopping areas, and neighborhood services.
- **Policy TR-P5.8:** Partner with neighboring jurisdictions, transit agencies, community members, and business organizations to plan and construct sustainable streets in business and commercial areas. Consider forming community facilities districts or business improvement districts to help fund and maintain improvements.
- **Policy TR-P5.9:** Support micromobility options such as bike-, e-bike-, and e-scooter-share.
- **Action TR-A5.1:** Partner with CCTA and neighboring jurisdictions to build out the countywide bicycle and pedestrian network, prioritizing completion of the Low-Stress Countywide Bicycle Network and pedestrian safety improvement projects in the County's Pedestrian Priority Areas, as described in the Countywide Bicycle and Pedestrian Plan
- **Action TR-A5.2:** Construct innovative bicycle and pedestrian facilities, including Class IV separated and protected bikeways, bicycle superhighways, and other low-stress facility types, as described in the Countywide Bicycle and Pedestrian Plan and in contemporary, best-practice transportation planning and engineering guidance. Use contextually appropriate green infrastructure and landscaping to separate vehicular lanes from bicycle and pedestrian facilities whenever feasible.

Conservation and Open Space Element

- **Policy COS-P2.2:** Preserve and protect productive agricultural land from conversion to urban uses, especially land designated as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland on the Important Farmland Map prepared by the California Department of Conservation; land containing Class 1 or Class 2 soils; and land designated Agricultural Core.
- **Policy COS-P2.4:** Require new projects adjacent to agriculture to establish buffers on their properties as necessary to minimize conflicts and protect agriculture. Determine appropriate buffers in consultation with the County Agricultural Commissioner.
- **Policy COS-P2.8:** Support public infrastructure projects and programs that will increase, enhance, and protect agricultural land and its production capabilities.
- **Policy COS-P2.11:** Support efforts to protect, maintain, and improve soil health as a carbon sequestration tool.
- **Policy COS-P2.13:** Encourage IPM practices that reduce the use of agricultural pesticides and minimize pesticide drift, and discourage farming practices that may expose residents, water resources, and the environment to fine particulates and harmful chemicals.

- **Action COS-A2.4:** Amend County Ordinance Code Title 8 – Zoning to include development standards, and possibly adopt accompanying design guidelines, for urban land uses that interface with agricultural uses, addressing, at minimum:

  a) Setbacks on urban properties to provide a buffer for agricultural uses.

  b) Location and arrangement of buildings, structures, and uses on urban properties.

  c) Lighting, fencing, screening, and appropriate landscaping/vegetation.

- **Policy COS-P5.1:** Support protection, restoration, and enhancement of ~~creeks,~~ wetlands, marshes, sloughs, ~~and~~ tidelands, natural watercourses, and riparian corridors, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
- **Action COS-A5.1:** Inventory wetlands, floodplains, marshlands, natural watercourses, riparian corridors, and adjacent lands that could potentially support climate adaptation (~~e.g.,~~ through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration).
- **Policy COS-P6.2:** Encourage planting and propagation of California native trees and habitat-supporting native shrubs, forbs, and grasses throughout the county to enhance the natural landscape, provide shade (especially in riparian areas), sustain wildlife, absorb stormwater, and sequester carbon.
- **Policy COS-P7.1:** Require new development to reduce water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water, where available.
- **Policy COS-P7.2:** Partner with water and wastewater service providers, GSAs, irrigation districts, and private well owners to increase participation in water conservation programs countywide.
- **Policy COS-P7.7:** Require landscaping for new development to filter and retain runoff and support flood management and groundwater recharge.
- **Policy COS-P7.8:** Promote installation of drought-tolerant green infrastructure, including street trees, in landscaped public areas.
- **Policy COS-P7.9:** Support wastewater reclamation and reuse programs that maximize use of treated recycled water.
- ***Policy COS-P14.1:*** *Implement Climate Action and Adaptation Plan strategies to improve energy efficiency and conservation, promote carbon-free energy sources, and reduce energy-related GHG emissions.*
- **Policy COS-P14.2:** Partner with State and regional agencies (e.g., California Public Utilities Commission, California Energy Commission, and ABAG/MTC) to support energy efficiency and renewable energy planning efforts.
- **Policy COS-P14.3:** Support distributed electricity generation, including development of microgrids, renewable energy sources, storage capacity, and associated technologies. Encourage these throughout urban areas, and in nonurban areas when significant environmental impacts can be avoided or successfully mitigated.
- **Policy COS-P14.6:** Support efforts to convert existing buildings to be low-carbon or carbon neutral.

- **Action COS-A14.4:** Adopt new or modified reach codes that exceed the California Building Standards Code, as the State updates the Building Code every three years, to require use of low-carbon intensive energy sources, achieve higher levels of energy performance, and achieve lower levels of GHG emissions.

- **Action COS-A14.6:** Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy.

- **Action COS-A14.7:** Create a detailed County roadmap to convert existing homes and businesses to use low-carbon or carbon-free appliances. The roadmap should include steps to support converting buildings to rely on low-carbon or carbon-free energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants.

Public Facilities and Services Element

- **Policy PFS-P7.12:** Require that new and expanded landfill operations significantly reduce GHG emissions to meet or exceed State targets to the extent feasible, and work toward carbon-neutral landfills.

Health and Safety Element

- **Policy HS-P1.1:** Coordinate air quality planning efforts with State and regional agencies, such as CARB, BAAQMD, and ABAG/MTC.
- **Policy HS-P1.2:** ~~Participate~~ Prioritize participation in emission and exposure reduction, public education, engagement, outreach, and other programs that promote improved air quality, focusing on Impacted Communities.
- ***Policy HS-P1.3:*** *Require new development to adhere to BAAQMD's Planning Healthy Places guidance when local conditions warrant.*
- ***Policy HS-P1.4:*** *Require new industrial development to locate significant pollution sources at the maximum distance possible ~~as far away~~ from sensitive receptors as possible.*
- ***Policy HS-P1.5:*** *Require new sources of air pollution that will generate significant new air quality impacts or expose sensitive receptors to substantial increases in harmful emissions of TAC to prepare a Health Risk Assessment that identifies appropriate mitigation consistent with BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines, based on the findings of the Health Risk Assessment.*
- ***Policy HS-P1.6:*** *Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to ~~local~~ residents in neighboring communities most impacted. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible or from sources that would improve air quality in an Impacted Community. If the project site is within or adjacent to an Impacted Community, require offsets/mitigation within that community unless determined infeasible by the County.*
- ***Policy HS-P1.7:*** *Require construction activities that involve large grading operations to implement additional construction measures identified in BAAQMD's CEQA Guidelines to reduce air pollutant emissions.*

- ***Policy HS-P1.8:*** *Require new or expanded commercial and industrial projects ~~exceeding~~ resulting in 25,000 square feet or more of gross habitable floor area, such as warehouses and other large enclosed buildings, to be near zero-emissions ~~(NZE)~~ operations, including the facilities themselves and the associated fleets. Require all necessary measures, such as the following, to achieve ~~NZE~~ near-zero emissions:*
    a) *Reduce on-site energy consumption and increase on-site energy generation and energy storage.*
    b) *Provide adequate on-site ~~ZE~~ zero-emission-vehicle-capable parking for all anticipated truck traffic to prevent idling and off-site queuing.*
    c) *Provide electrified loading docks with receptacles allowing plug-in of refrigerated trailers.*
    d) *Use heavy-duty trucks that are model year 2014 or later and expedite a transition to ~~ZE~~ zero-emission trucks by establishing a clear timeline for electrification of trucks as they become commercially available. Ensure contracts with motor carriers include air quality incentives or requirements, such as providing incentives to fleets that meet United States Environmental Protection Agency (EPA) SmartWay standards or requiring use of ~~ZE~~ zero-emission or ~~NZE~~ near-zero-emission trucks.*
    e) *Use a "clean fleet" of delivery vehicles as they become commercially available, but no later than 2025.*
    f) *Use ~~ZE~~ zero-emission yard equipment, such as forklifts, pallet trucks and jacks, and stackers.*
    g) *Implement practices to control and remove fugitive dust and other contaminants from paved areas.*

  Uses with fewer than five vehicles domiciled on-site are exempt from this policy.
- ***Policy HS-P1.9:*** *Prohibit nonessential diesel engine idling countywide and nonessential idling of all vehicles within 100 feet of sensitive receptors.*
- **Policy HS-P1.10:** Support efforts to provide HVAC upgrades and portable clean air filters to persons who live in Impacted Communities and other areas burdened by disproportionate exposure to poor air quality.
- **Action HS-A1.1**. Consult with BAAQMD and community stakeholders and prepare an Air Quality Community Risk Reduction Plan that applies to areas with high levels of cancer risk, providing a comprehensive strategy to protect community members from the negative health effects of air pollution.
- **Action HS-A1.2**. Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to create an Air Pollution Exposure Overlay Zone around freeways that requires new construction in these areas to install enhanced ventilation systems and other strategies to protect people from respiratory, heart, and other health effects associated with breathing polluted air.
- **Action HS-A1.3**. Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to include an Industrial-Sensitive Receptor Interface Overlay Zone applied to areas where residential land uses and other sensitive receptors interface or directly abut heavy industrial land uses. In the overlay zone, require industrial uses to reduce pollution and employ strategies to mitigate air quality, noise, vibration, odor, light, visual, and safety impacts on nearby sensitive receptors. In addition, require new sensitive receptors to install enhanced ventilation systems and implement other strategies, paid for by neighboring sources of pollution to the extent possible, to protect residents from health and quality of life impacts.
- **Action HS-A1.4:** Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 7 – Building Regulations to include a clean construction ordinance that requires projects to

implement extra measures to reduce emissions at construction sites in or near places that are already overburdened by air pollution, such as Impacted Communities.

- **Action HS-A1.5:** Adopt an ordinance at least as stringent as the State's maximum idling law, and coordinate with CARB and law enforcement to achieve compliance.
- **Action HS-A1.6:** Develop a plan to provide convenient and accessible clean air refuges during times when outdoor air quality is deemed unhealthy.
- ***Policy HS-P2.1:*** *When evaluating health risk impacts of projects in Impacted Communities, use an excess cancer risk of 6.0 per million and a non-cancer (acute and chronic) hazard index greater than 1.0 as thresholds for finding that the project could cause a cumulatively considerable contribution and a significant impact.*
- **Action HS-A2.1:** Partner with community members and regulatory agencies such as BAAQMD to conduct data collection and monitoring of pollution exposure, prepare community-scale plans for reducing and mitigating air pollutant emissions and industrial hazards, such as pipeline risks, accidents, potential water or soil contamination, and impacts to sensitive ecological resources, for each Impacted Community, or group of Impacted Communities, as appropriate. Require future projects to demonstrate consistency with those plans.
- **Action HS-A2.4.** Coordinate with BAAQMD to determine where to focus a targeted permit inspection program in Impacted Communities to help ensure enforcement of air quality permits.
- **Policy HS-P3.2.** Facilitate carbon-neutral development projects and communities that support a circular economy, zero-emission modes of transportation, reliable and renewable energy resources, energy-efficient buildings, zero waste, water efficiency and conservation, green infrastructure, soil conservation, and a system of natural and working lands that support natural carbon sequestration and climate resilience.

5.3.3.2 PROPOSED CLIMATE ACTION AND ADAPTATION PLAN STRATEGIES AND ACTIONS

The following proposed Climate Action and Adaptation Plan (CAAP) strategies and actions pertain to air quality:

Clean and Efficient Built Environment (BE)

Strategy BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

Strategy BE-1 Actions:

- ~~Consider~~ Continue adopting new or modified reach codes and consider future updates that exceed the California Building Standards Code as the State updates the Building Code every three years, to require the use of lower-carbon intensive energy sources, to achieve higher ~~feasible~~ levels of energy ~~conservation and efficiency~~ performance, and to achieve lower ~~feasible~~ levels of GHG emissions.
- ~~Maintain, update, publicize,~~ Publicize County ordinances and programs ~~and enforce the County Ordinance Code Title 7 – Building Regulations amendment~~ requiring new residential buildings, hotels,

offices, and retail to be ~~all-electric~~ more energy efficient, with lower levels of GHG emissions. Evaluate the feasibility of including other building types as appropriate.

- Design and construct new County facilities to be zero net energy to the extent feasible.
- Study the feasibility of establishing a low-carbon concrete requirement for all new construction and retrofit activities and consider additional strategies to reduce embedded carbon in construction materials. The intent is to determine what the County can and should do to support or exceed State requirements for net-zero emissions for cement use by 2045.

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated County, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-~~neutral~~ free fuels.

Strategy BE-2 Actions:

- Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy.
- ~~Require replacement and new water heaters and space heating and cooling systems to be electric if the building electric panel has sufficient capacity in accordance with BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6.~~
- Create a detailed County roadmap to convert existing homes and businesses to use low-carbon or ~~zero-~~carbon-free appliances. The roadmap should include steps to support converting buildings to rely on low-carbon or ~~zero-~~carbon-free energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants.
- Work to continue to obtain funding with partners such as BayREN and MCE to implement a program or programs to provide reduced-cost or free energy-efficiency and zero-carbon retrofits to local small businesses and households earning less than the area median income, in support of the Contra Costa County Asthma Initiative, Contra Costa County Weatherization Program, similar County programs, other nonprofit partners, and other health equity efforts for Impacted Communities. Support the use of low-emitting materials, including paints and carpeting, in retrofits to improve indoor air quality.
- In partnership with MCE and BayREN, continue to support voluntary home and business energy efficiency retrofits, including all-electric measures.
- Continue to conduct energy and water tracking activities, audits, and upgrades of County facilities, including conversion of feasible County facilities to all-electric space and water heating.
- Implement requirements for cool roofs and light-colored, nonreflective permeable paving materials as part of retrofit, repair, and replacement activities, using recycled materials or other materials with low embedded carbon as feasible and as established by the Building Standards Code.

Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

Strategy BE-3 Actions:

- Require new commercial parking lots with 50 or more spaces to mitigate heat gain through installation of shade trees, solar arrays, or other emerging cooling technologies. Prioritize the use of solar arrays where feasible and appropriate.

- Work with MCE to increase enrollment, especially in the Deep Green tier.
- Continue to enroll all eligible, non-solar-equipped County facility electricity accounts in MCE territory in the Deep Green tier.
- Encourage installation of battery storage systems in new and existing buildings, especially buildings with solar energy systems and buildings that provide essential community services.
- Pursue implementation of recommendations of the 2018 Renewable Resource Potential Study.
- Evaluate the least-conflict feasible locations for stand-alone battery storage systems and modify land use regulations to enable such use in these locations.

No Waste Contra Costa (NW)

Strategy NW-4: Reduce emissions from landfill gas.

Strategy NW-4 Actions:

- Encourage efforts at Acme, Keller Canyon, and West Contra Costa landfills to install or enhance existing methane capture technology and associated monitoring systems with a goal of increasing the methane capture rate to the greatest extent feasible.
- Explore opportunities for partnering with agricultural and industrial operations to generate energy from methane gas generated by their ongoing activities.
- Support landfill operators in efforts to transition away from landfill gas flaring.

Clean Transportation Network (TR)

Strategy TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit to travel within, to, and from the county.

Strategy TR-1 Actions:

- Prioritize expansion of bicycle, micromobility, and pedestrian infrastructure (e.g., Class IV separated bikeways) to address the significant latent demand for these active transportation modes.
- Develop and promote mobility alternatives to single-occupancy vehicles, including but not limited to public transit, micromobility, carbon-free rideshare strategies, and nonmotorized modes.
- Implement programs to encourage transit use, bicycling, walking, telecommuting, and use of alternative vehicle fuels by County employees.
- Reduce single-occupant vehicle usage and VMT, by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, and other best practices), and support for public transit.
- Plan, design, construct, and maintain facilities for walking, bicycling, and rolling to serve people of all ages, abilities, and income levels, including children, seniors, families, and people with limited mobility.
- Partner with CCTA and neighboring jurisdictions to build out the countywide bicycle and pedestrian network, prioritizing completion of the Low-Stress Countywide Bicycle Network and pedestrian safety

improvement projects in the County's Pedestrian Priority Areas, as described in the Countywide Bicycle and Pedestrian Plan.

- Require transportation infrastructure serving new development to be designed using best practices, contemplating existing and planned land uses, roadways, bicycle and pedestrian facilities, transit facilities, and connections to adjoining areas.
- Create connections between unincorporated communities and neighborhoods in unincorporated areas and adjacent jurisdictions to improve multimodal access to local destinations, such as schools, parks, shopping, health services, and workplaces.
- Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report and Action Plan; Active Transportation Plan; and equity-focused plans, programs, and policies.
- Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities.
- ~~Work with CCTA to fill gaps in the countywide Low Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bicycle facilities~~. Coordinate with Caltrans, CCTA, the Regional Transportation Planning Committees, and neighboring jurisdictions to plan, design, and implement Complete Streets concepts on Routes of Regional Significance.
- In collaboration with key partners, support efforts to establish or join a shared mobility program that provides access to conventional bicycles, e-bikes, and other micromobility modes~~.~~, prioritizing access for low-income residents who do not have bicycles. Support efforts to establish and/or maintain bike repair programs.
- Support efforts to expand the service area and frequency of regional transit agencies, and reduced fares for students, seniors, and low-income residents on systems, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT. Encourage programs that support "last mile" transportation connection and options.
- Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance.
- Maintain in place and enforce a Transportation Demand Management (TDM) Ordinance that reflects best practices, and, at a minimum, conforms to Contra Costa Transportation Authority's adopted model TDM ordinance or resolution.
- Improve county-wide safety for bicyclists by advocating for the passage of Vulnerable Road User Laws.
- Secure additional funding for the maintenance and expansion of bicycle and pedestrian infrastructure improvements. Support efforts to obtain additional funding to maintain and expand public transit operations and infrastructure improvements.
- Support CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions.

- Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.
- Encourage and support increased regional integration of transit systems to promote more equitable fare structures, fare integration, easier transfers, including coordinated transfers between different transit systems and reduced wait times, improved information sharing, and generally a more seamless and modern system.
- Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.

Strategy TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

Strategy TR-2 Actions:

- Require new County vehicles to be zero emission to the extent a viable vehicle is available on the market, that charging or zero-emission fueling equipment is conveniently located where the vehicle will be stored, and as required by the Advanced Clean Fleet regulations, with the goal that all County vehicles will be zero-emission by 2035.
- Continue adopting new or modified reach codes and consider future updates that exceed the California Building Standards Code as the State updates the Building Code, including the Green Building Code, to require zero-emission charging infrastructure in new multifamily and nonresidential buildings. Explore expanding it to include new single-family homes.
- Install electric vehicle charging equipment and other infrastructure needed to support the transition to a zero-emission County fleet at County facilities. Consider the appropriate locations, number, and capacity of infrastructure to facilitate the transition of the County fleet to zero-emission vehicles.
- Provide incentives for zero-emission vehicles in partnership with MCE, BAAQMD, and other agencies.
- Work with property owners and other potential partners to pursue installation of zero-emission vehicle charging stations in and near multi-family dwelling units.
- Update off-street parking ordinance to include a requirement for zero-emission vehicle charging infrastructure. Consider including incentives for developers to exceed minimum requirements (i.e., density bonus).
- Increase installation of electric vehicle charging stations for all vehicle types, including bicycles and scooters, at public facilities, emphasizing increased installation in Impacted Communities.
- In partnership with regional agencies, explore providing subsidies for households making less than the area median income to purchase or lease zero-emission vehicles and associated infrastructure.
- Pursue fees and regulatory efforts to convert transportation network company (TNC), taxi, and similar car-hire services to zero-emission vehicles.
- Explore opportunities for implementing electric vehicle sharing programs.
- Work with BAAQMD and other regional agencies to convert off-road equipment to zero-emission clean fuels.

- Work with contractors, fleet operations, logistics companies, and other operators of heavy-duty vehicles to accelerate the transition to zero-emission heavy-duty vehicles.
- In cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available, ~~W~~ work with Public Works to pursue the use of renewable natural gas (sourced from recovered organic waste) for transportation fuel, electricity, or heating applications ~~in cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available~~.
- Encourage efforts to maximize EV charging during solar peak hours.
- ~~Support~~ Coordinate with CCTA and other local and regional agencies to implement~~ation of~~ the Contra Costa County Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements.

Resilient Communities and Natural Infrastructure (NI)

Strategy NI-4: Sequester carbon on natural and working lands in Contra Costa County

Strategy NI-4 Actions:

- Pursue implementation of recommendations from carbon sequestration feasibility study, Healthy Lands, Healthy People.
- Continue to support and work with key partners to maintain existing and establish new pilot programs for carbon sequestration on agricultural land.
- Promote ~~restorative~~ regenerative agricultural and landscaping techniques that incorporate cover crops, mulching, compost application, field borders, alley cropping, conservation crop rotation, prescribed grazing, and reduced tillage to promote healthy soil and soil conservation.
- Support soil conservation and restoration programs. Encourage agricultural landowners to work with agencies such as the USDA's NRCS and Contra Costa RCD to reduce erosion and soil loss.
- Coordinate with farming groups, ranchers, the Contra Costa Resource Conservation District, and the University of California Cooperative Extension to identify and promote varieties of feedstock, livestock, and crops that are resilient to rising temperatures and changing precipitation patterns and that increase carbon sequestration.
- Explore ways to increase carbon sequestration on County-owned ~~facilities~~ properties.
- Partner with regional landowners and agencies to establish carbon sequestration programs and incentives.
- Consider the development of carbon offset protocols and guidance ~~for use by carbon sequestration program~~ to provide technical support to applicants and County permitting staff to promote appropriate natural sequestration on natural and developed lands.
- Ensure that any local or regional carbon sequestration program that the County establishes, promotes, supports, or joins must provide benefits to unincorporated communities that face environmental justice issues.
- Explore the potential for the public to support tree planting and maintenance of existing trees.

- Establish a mechanism to support expanded tree planting and maintenance activities, particularly in areas with few trees.
- Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
- Inventory wetlands, floodplains, marshlands, natural watercourses, riparian corridors, and adjacent lands that could potentially support climate adaptation (e.g., through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration).
- Explore ~~the~~ new funding and financing opportunities for climate adaptation and resilience projects, including the creation of a Climate Resilience District~~.~~, issuance of bonds—including bonds that can be marketed as "green bonds"— as a potential financing mechanism, and similar opportunities.
- Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to ~~local~~ residents in unincorporated communities. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible or from sources that would improve air quality in an Impacted Community. If the project site is within or adjacent to an Impacted Community, require offsets or mitigation within that community unless determined infeasible by the County.

5.3.4 Environmental Impacts

5.3.4.1 METHODOLOGY

Emissions Sectors

The air quality analysis was prepared in accordance with the requirements of CEQA to determine if significant air quality impacts are likely to occur in conjunction with future development that would be accommodated by the proposed project. BAAQMD has published the CEQA Air Quality Guidelines that provides local governments with guidance for analyzing and mitigating air quality impacts and was used in this analysis. The County's criteria air pollutant emissions inventory includes the following sectors:

- **Transportation.** Transportation emissions forecasts were modeled using CARB's EMFAC2021, version 1.0.1, web database. Model runs were based on Origin Destination (OD) Method using VMT data provided by Fehr & Peers and calendar year 2019 (existing) and 2045 emission rates. VMT that have an origin or destination in the county use a transportation origin-destination methodology. Accounting of VMT is based on the recommendations of CARB's Regional Targets Advisory Committee (RTAC) created under SB 375. For accounting purposes, there are three types of trips:
  - **Internal-Internal.** Vehicle trips that originated and terminated within the county (Internal-Internal, I-I). Using the accounting rules established by RTAC, 100 percent of the length of these trips and their emissions are attributed to the county.
  - **Internal-External/External-Internal.** Vehicle trips that either originated or terminated (but not both) in the county (Internal-External or External-Internal, I-X and X-I). Using the accounting rules established by RTAC, 50 percent of the trip length for these trips is attributed to the county.

- **External-External.** Vehicle trips that neither originated nor terminated in the county. These trips are commonly called pass-through trips (External-External, X-X). Using the accounting rules established by RTAC, these trips are not counted toward the county's VMT or emissions.

- **Energy:** Emissions associated with natural gas use for residential land uses in the county were modeled based on energy use gathered as part of the proposed CAAP (see Appendix 5.3-1 and Appendix 5.8-1). Forecasts were adjusted for increases in population in the county and based on the State actions energy forecast conducted for the CAAP (see Appendix 5.3-1 and Appendix 5.8-1).
- **Off-Road Equipment:** Emission rates from CARB's OFFROAD2021, version 1.0.2, web database were used to estimate criteria air pollutant emissions from lawn and garden equipment. OFFROAD is a database of equipment use and associated emissions for each county compiled by CARB. Annual emissions for each of the sectors were compiled using OFFROAD for Contra Costa County for year 2019 and forecasted based on the increase in population.
- **Area Sources:** Area sources are based on the emission factors from the CalEEMod Users Guide for emissions generated from use of consumer products and cleaning supplies.

5.3.4.2 IMPACTS OF THE ENVIRONMENT ON A PROJECT

BAAQMD's CEQA Guidelines include methodology for jurisdictions wanting to evaluate the potential impacts from placing sensitive receptors proximate to major air pollutant sources. For assessing community risk and hazards for siting a new receptor, sources within a 1,000-foot radius of a project site are typically considered. Sources are defined as freeways, high volume roadways (at least 10,000 vehicles/day), major rail or truck yards, ports, rail lines, ferry terminal, large commercial distribution centers, and permitted stationary pollutant sources (BAAQMD 2023b).

Development under the proposed project could result in siting sensitive uses (e.g., residential) near sources of emissions (e.g., freeways and industrial uses). Developing new sensitive land uses near sources of emissions could expose persons that inhabit these sensitive land uses to potential air quality-related impacts. However, the purpose of this environmental evaluation is to identify the significant effects of the proposed project on the environment, not the significant effects of the environment on the proposed project. *California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th* 369 (Case No. S213478). Thus, CEQA does not require analysis of the potential environmental effects from siting sensitive receptors near existing sources, and this type of analysis is not provided below in the Impact Analysis section.

While it is generally not within the purview of CEQA to analyze impacts of the environment on a project, the proposed project includes policies that would ensure priority of the health of Contra Costa County residents through enforcement of County Codes and incorporation of design features to minimize air quality impacts and to achieve appropriate health standards. The following proposed policies and actions would serve to protect air quality in the unincorporated county:

- **Policy HS-P1.3.** Require new development to adhere to BAAQMD's Planning Healthy Places guidance when local conditions warrant.
- **Action HS-A1.1.** Consult with BAAQMD and community stakeholders and prepare an Air Quality Community Risk Reduction Plan that applies to areas with high levels of cancer risk, providing a

comprehensive strategy to protect community members from the negative health effects of air pollution.

- **Action HS-A1.2.** Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to create an Air Pollution Exposure Overlay Zone around freeways that requires new construction in these areas to install enhanced ventilation systems and other strategies to protect people from respiratory, heart, and other health effects associated with breathing polluted air.
- **Action HS-A1.3**. Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to include an Industrial-Sensitive Receptor Interface Overlay Zone applied to areas where residential land uses and other sensitive receptors interface or directly abut heavy industrial land uses. In the overlay zone, require industrial uses to reduce pollution and employ strategies to mitigate air quality, noise, vibration, odor, light, visual, and safety impacts on nearby sensitive receptors. In addition, require new sensitive receptors to install enhanced ventilation systems and implement other strategies, paid for by neighboring sources of pollution to the extent possible, to protect residents from health and quality of life impacts.

Impact 5.3-1: Implementation of the proposed project would not conflict with or obstruct implementation of the BAAQMD Clean Air Plan. [Threshold AQ-1]

The following describes potential air quality impacts of consistency with the AQMP from the implementation of the proposed project.

Proposed General Plan

Bay Area 2017 Clean Air Plan – Criteria Air Pollutants and Precursors

The proposed General Plan plays an important role in local agency project review by linking local planning and individual projects to the *2017 Clean Air Plan*. It fulfills the CEQA goal of informing decision-makers of the environmental efforts of the project under consideration at an early enough stage to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to clean air goals in the Bay Area.

BAAQMD requires a consistency evaluation of a plan with its current AQMP. To have a less than significant impact related to criteria air pollutant and precursor impacts, the long-range plan must satisfy following BAAQMD requirements.

1) Consistency evaluation of the long-range plan with its current air quality plan (AQP) control measures as follows:

- Does the project support the primary goals of the AQP?
- Does the project include applicable control measures from the AQP?
- Does the project disrupt or hinder implementation of any AQP control measures?

2) Long-range plans must demonstrate consistency with the projected growth rate of vehicle activity in VMT or vehicle trips under the plan, as follows:

- Is the project VMT or vehicle trip increase less than or equal to the projected population increase?

Bay Area Air Quality Management District 2017 Clean Air Plan Goals

The primary goals of the 2017 Clean Air Plan are to attain the State and federal AAQS, reduce population exposure and protect public health in the Bay Area, reduce GHG emissions, and protect the climate. Furthermore, the 2017 Clean Air Plan lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal.

Attain Air Quality Standards

BAAQMD's 2017 Clean Air Plan strategy is based on regional population and employment projections in the Bay Area compiled by ABAG, which are based in part on County's General Plan land use designations. These demographic projections are incorporated into Plan Bay Area. Demographic trends incorporated into Plan Bay Area determine VMT in the Bay Area, which BAAQMD uses to forecast future air quality trends. The SFBAAB is currently designated a nonattainment area for O_3, $PM_{2.5}$, and PM_{10} (State AAQS only).

As discussed in Section 5.14, *Population and Housing*, implementation of the proposed General Plan would exceed current regional projections for housing by 26 percent and population by 18 percent. However, the Land Use Element includes goals, policies, and actions aimed to focus the development in areas where current buildings are aging, vacant, or not maintained and approved/pending projects. Therefore, implementation of the proposed General Plan itself would not introduce a substantial amount of unplanned population in the EIR Study Area and is instead the overriding policy document that plans for such growth.

Thus, the population projections of the proposed General Plan would be consistent with regional projections. The emissions resulting from potential future development associated with the proposed General Plan are included in BAAQMD projections, and future development accommodated under the proposed General Plan would not hinder BAAQMD's ability to attain the California or National AAQS. Accordingly, impacts would be less than significant.

Reduce Population Exposure and Protect Public Health

Development under the proposed General Plan could result in new sources of TACs and $PM_{2.5}$. Stationary sources, including smaller stationary sources (e.g., emergency generators and boilers) are subject to review by BAAQMD as part of the permitting process. Adherence to BAAQMD permitting regulations would ensure that new stationary sources of TACs do not expose populations to significant health risk. Mobile sources of air toxins (e.g., truck idling) are not regulated directly by BAAQMD. Development associated with the proposed General Plan may generate truck traffic; however, CARB regulates limits on diesel truck and bus idling to 5 minutes. Furthermore, individual development projects would be required to achieve the incremental risk thresholds established by BAAQMD. Thus, implementation of the proposed General Plan would not result in introducing new sources of TACs that on a cumulative basis, could expose sensitive populations to significant health risk. Therefore, impacts would be less than significant.

Reduce GHG Emissions and Protect the Climate

Consistency of the proposed General Plan with State, regional, and local plans adopted for the purpose of reducing GHG emissions are discussed under Impact 5.8-2 in Section 5.8, *Greenhouse Gas Emissions*, of this Draft EIR. Future development allowed by the proposed General Plan would be required to adhere to statewide measures that have been adopted to achieve the GHG reduction targets of AB 32 and SB 32, and a trajectory consistent with the carbon neutrality targets of AB 1279. The proposed General Plan is consistent with regional strategies for infill development identified in *Plan Bay Area 2050* and the existing Contra Costa County CAP. While Impact GHG 5.8-1 identifies that the proposed General Plan would generate a substantial increase in emissions, Impact GHG 5.8-2 identifies that the proposed General Plan is consistent with State, regional, and local plans to reduce GHG emissions. Therefore, the proposed General Plan is consistent with the goal of the 2017 *Clean Air Plan* to reduce GHG emissions and protect the climate, and the impact would be less than significant.

2017 Clean Air Plan Control Measures

Table 5.3-8, *Control Measures from the BAAQMD 2017 Clean Air Plan*, identifies the control measures included in the 2017 *Clean Air Plan* that are required by BAAQMD to reduce emissions for a wide range of both stationary and mobile sources. As shown in Table 5.3-8, the proposed General Plan would not conflict with the 2017 *Clean Air Plan* and would not hinder BAAQMD from implementing the control measures in the 2017 *Clean Air Plan*. Accordingly, impacts would be less than significant.

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Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
Stationary Source Control Measures	• SS 1 – Fluid Catalytic Cracking in Refineries • SS 2 – Equipment Leaks • SS 3 – Cooling Towers • SS 4 – Refinery Flares • SS 5 – Sulfur Recovery Units • SS 6 – Refinery Fuel Gas • SS 7 – Sulfuric Acid Plants • SS 8 – Sulfur Dioxide from Coke Calcining • SS 9 – Enhanced NSR Enforcement for Changes in Crude Slate • SS 10 – Petroleum Refining Emissions Tracking • SS 11 – Petroleum Refining Facility-Wide Emission Limits • SS 12 – Petroleum Refining Climate Impacts Limit • SS 13 – Oil and Gas Production, Processing and Storage • SS 14 – Methane from Capped Wells • SS 15 – Natural Gas Processing and Distribution • SS 16 – Basin-Wide Methane Strategy • SS 17 – GHG BACT Threshold • SS 18 – Basin-Wide Combustion Strategy • SS 19 – Portland Cement • SS 20 – Air Toxics Risk Cap and Reduction from Existing Facilities • SS 21 – New Source Review for Toxics • SS 22 – Stationary Gas Turbines • SS 23 – Biogas Flares • SS 24 – Sulfur Content Limits of Liquid Fuels • SS 25 – Coatings, Solvents, Lubricants, Sealants and Adhesives • SS 26 – Surface Prep and Cleaning Solvent • SS 27 – Digital Printing • SS 28 – LPG, Propane, Butane • SS 29 – Asphaltic Concrete • SS 30 – Residential Fan Type Furnaces • SS 31 – General Particulate Matter Emission Limitation • SS 32 – Emergency Backup Generators • SS 33 – Commercial Cooking Equipment • SS 34 – Wood Smoke • SS 35 – PM from Bulk Material Storage, Handling and Transport, Including Coke and Coal • SS 36 – PM from Trackout • SS 37 – PM from Asphalt Operations • SS 38 – Fugitive Dust • SS 39 – Enhanced Air Quality Monitoring • SS 40 – Odors	Stationary and area sources are regulated directly by BAAQMD; therefore, as the implementing agency, new stationary and area sources within the county would be required to comply with BAAQMD's regulations. BAAQMD routinely adopts/revises rules or regulations to implement the stationary source (SS) control measures to reduce SS emissions. Major stationary source are more commonly associated with industrial manufacturing or warehousing. However, BAAQMD and the County have existing regulations in place to ensure any potential future development under the proposed General Plan would not conflict with the applicable SS control measures. Other non-residential land uses may generate small quantities of stationary source emissions during project operation (e.g., emergency generators, dry cleaners, and gasoline dispensing facilities); however, these small-quantity generators would require review by BAAQMD for permitted sources of air toxics, which would ensure consistency with the 2017 Clean Air Plan.

Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
Transportation Control Measures	• TR 1 – Clean Air Teleworking Initiative • TR 2 – Trip Reduction Programs • TR 3 – Local and Regional Bus Service • TR 4 – Local and Regional Rail Service • TR 5 – Transit Efficiency and Use • TR 6 – Freeway and Arterial Operations • TR 7 – Safe Routes to Schools and Safe Routes to Transit • TR 8 – Ridesharing, Last-Mile Connection • TR 9 – Bicycle and Pedestrian Access and Facilities • TR 10 – Land Use Strategies • TR 11 – Value Pricing • TR 12 – Smart Driving • TR 13 – Parking Policies • TR 14 – Cars and Light Trucks • TR 15 – Public Outreach and Education • TR 16 – Indirect Source Review • TR 17 – Planes • TR 18 – Goods Movement • TR 19 – Medium and Heavy Duty Trucks • TR 20 – Ocean Going Vessels • TR 21 – Commercial Harbor Craft • TR 22 – Construction, Freight and Farming Equipment • TR 23 – Lawn and Garden Equipment	Transportation (TR) control measures are strategies to reduce vehicle trips, vehicle use, VMT, vehicle idling, and traffic congestion for the purpose of reducing motor vehicle emissions. Although most of the TR control measures are implemented at the regional level—that is, by MTC or Caltrans—the 2017 Clean Air Plan relies on local communities to assist with implementation of some measures. The development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Transportation Element contains the following policies and actions to expand the pedestrian and bicycle network: Policies TR-P1.2, TR-P1.4, TR-P1.12, TR-P3.2, TR-P4.1 ~~through~~, TR-P4.2, ~~and~~ TR-P5.5, TR-P5.7, TR-P5.9 ~~through TR-P5.11~~, and Actions TR-A5.1 through TR-A5.2.
Energy and Climate Control Measures	• EN 1 – Decarbonize Electricity Production • EN 2 – Renewable Energy Decrease Electricity Demand	The energy and climate (EN) control measures are intended to reduce energy use as a means of reducing adverse air quality emissions. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Health and Safety Element, Conservation, Open Space, and Working Lands Element, and Public Facilities and Services Element contain the following policies that align with the County's goals to meet the State's carbon neutrality initiatives: Policies HS-P3.2, COS-P14.1 through COS-P14.3, COS-P14.6, Actions COS-A14.6 through COS-A14.7, and PFS-P7.1~~1~~2. Furthermore, new development accommodated under the proposed General Plan would be built to comply with the latest Building Energy Efficiency Standards and CALGreen standards. On January 18, 2022, the County also adopted an All-Electric Ordinance requirement for new construction to amend the 2019 California Energy Code and requires residential (including single-family and multi-family buildings) to be all-electric. Therefore, implementation of the proposed General Plan would not conflict with these EN control measures.

Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
Buildings Control Measures	• BL 1 – Green Buildings • BL 2 – Decarbonize Buildings • BL 3 – Market-Based Solutions • BL 4 – Urban Heat Island Mitigation	The buildings (BL) control measures focus on working with local governments to facilitate adoption of best GHG emissions control practices and policies. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Conservation, Open Space, and Working Lands Element, Health and Safety Element, and Land Use Element contain the following policies and actions to promote energy efficiency and sustainability: Policies ~~COS-P7.8,~~ COS-P14.1, COS-P14.2, COS-P14.6, Action COS-A14.4, Action COS-A14.6 and HS-P3.2, and Action LU-A4.1. In addition, as stated, new development under the proposed General Plan would be built to comply with the latest Building Energy Efficiency Standards and CALGreen standards. On January 18, 2022, the County also adopted an All-Electric Ordinance requirement for new construction to amend the 2019 California Energy Code and requires residential (including single-family and multi-family buildings) to be all-electric. Thus, the proposed General Plan would not conflict with these BL control measures.
Agriculture Control Measures	• AG 1 – Agricultural Guidance and Leadership • AG 2 – Dairy Digesters • AG 3 – Enteric Fermentation • AG 4 – Livestock Waste	Agricultural practices in the Bay Area account for a small portion, roughly 1.5 percent, of the Bay Area GHG emissions inventory. The GHGs from agriculture include methane and nitrous oxide, in addition to carbon dioxide. Section 3.6.1.3, *Land Use Designations and Map*, describes the various agricultural land uses allowed under the proposed General Plan Agriculture Core and Agricultural Lands designations. The Agriculture (AG) control measures target larger scale farming practices, such as the prime agricultural land within the region. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Conservation, Open Space, and Working Lands Element contains the following policies and actions that align with the County's goals to support agricultural land conservation and reduce potential impacts to adjacent sensitive receptors: Policies COS-P2.2 and COS-P2.4, COS-P2.8, COS-P2.11, ~~through~~ COS-P2.13, and Action COS-A2.4. The County also promotes the use of integrated pest management (IPM) strategies to support healthy crops while reducing the use of harmful chemicals on the environment, as well as the Right-to-Farm Ordinance, which protects farms

Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
		from nuisance complaints. Therefore, implementation of the proposed General Plan would not conflict with these AG control measures.
Natural and Working Lands Control Measures	• NW 1 -- Carbon Sequestration in Rangelands • NW 2 – Urban Tree Planting • NW 3 – Carbon Sequestration in Wetlands	The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Conservation, Open Space, and Working Lands Element contains the following policies and actions to promote carbon sequestration: Policies COS-P2.11, COS-P6.2, and COS-P7.8, and Action COS-A5.1.
Water Control Measures	• WR 1 – Limit GHGs from publicly owned treatment works (POTWs) • WR 2 – Support Water Conservation	The 2017 Clean Air Plan includes measures to reduce water use. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Conservation, Open Space, and Working Lands Element contains the following policies to increase plumbing water efficiency and reduce landscape water use: Policies COS-P7.1, COS-P7.2, COS-P7.7, and COS-P7.9.
Super-GHG Control Measures	• SL 1 – Short-Lived Climate Pollutants • SL 2 – Guidance for Local Planners • SL 3 – GHG Monitoring and Emissions Measurements Network	Super-GHGs include methane, black carbon, and fluorinated gases. The compounds are sometimes referred to as short-lived climate pollutants because their lifetime in the atmosphere is generally fairly short. Measures to reduce super GHGs are addressed on a sector-by-sector basis in the 2017 Clean Air Plan. Through ongoing implementation of the County's CAAP, the County will continue to reduce local GHG emissions and meet State, regional, and local reduction targets, which would ensure implementation of the proposed General Plan would not conflict with these SL control measures. Development under the proposed General Plan would be reviewed for consistency with proposed General Plan policies. The Health and Safety Element and Conservation, Open Space, and Working Lands Element contain the following policies for encouraging use of renewable energy: Policies HS-P3.2 and COS-P14.1 through COS-P14.3.
Further Study Control Measures	• FSM SS 1 – Internal Combustion Engines • FSM SS 2 – Boilers, Steam Generator and Process Heaters • FSM SS 3 – GHG Reductions from Non Cap-and Trade Sources	The majority of the further study control measures apply to sources regulated directly by BAAQMD. Because BAAQMD is the implementing agency, new and existing sources of stationary and area sources in the project area would be required to

Table 5.3-8 Control Measures from the BAAQMD 2017 Clean Air Plan

Type	Measure Number / Title	Consistency
	• FSM SS 4 – Methane Exemptions from Wastewater Regulation • FSM SS 5 – Controlling start-up, shutdown, maintenance, and malfunction (SSMM) Emissions • FSM SS 6 – Carbon Pollution Fee • FSM SS 7 – Vanishing Oils and Rust Inhibitors • FSM SS 8 – Dryers, Ovens and Kilns • FSM SS 9 – Omnibus Rulemaking to Achieve Continuous Improvement • FSM BL 1 – Space Heating • FSM AG 1 – Wineries	comply with these additional further study control measures in the 2017 Clean Air Plan.

Source: BAAQMD 2017c.

Regional Growth Projections for VMT and Population

Future potential development allowed by the proposed General Plan would result in additional sources of criteria air pollutants. Growth accommodated by the proposed General Plan could occur throughout the 2045 planning horizon. BAAQMD's approach to evaluating impacts from criteria air pollutants generated by a plan's long-term growth is done by comparing population estimates to the VMT estimates. This is because BAAQMD's AQMP plans for growth in the SFBAAB are based on regional growth projections identified by ABAG and growth in VMT identified by CCTA. Changes in regional, community-wide emissions in the project area could affect the ability of BAAQMD to achieve the air quality goals in the AQMP. Therefore, air quality impacts for a plan-level analysis are based on consistency with the regional growth projections. Table 5.3-9, *Comparison of the Change in Population and VMT in Contra Costa County*, compares the proposed General Plan growth forecast with the projected increase in total VMT.

Table 5.3-9 Comparison of the Change in Population and VMT in Contra Costa County

			Change from Existing	
Category	Existing	2045 With Project	Change	%
Population	~~174,145~~ 174,150	~~239,718~~ 239,720	~~65,573~~ 65,570	38%
Employment	~~38,757~~ 38,760	~~48,153~~ 48,150	~~9,396~~ 9,390	24%
Service Population	~~212,902~~ 212,910	~~287,871~~ 287,870	~~74,969~~ 74,960	35%
Daily VMT[1]	3,530,197	4,272,206	742,009	21%
VMT/person[2]	20.3	17.8	-2.4	-12%
VMT/SP	16.6	14.8	-1.7	-10%

Notes:
[1] Modeling of VMT is provided by Fehr and Peers is based on CCTA's Contra Costa Transportation Analysis Guidelines. VMT is from passenger vehicles and trucks that have an origin or destination in the county using a transportation origin-destination methodology. Accounting of VMT is based on the recommendations of CARB's RTAC created under SB 375.
[2] VMT per person includes VMT from all trip types, including employment and other service-based trips. This methodology differs from that in Section 5.17, *Transportation,* which is used to evaluate SB 743 transportation impacts.

BAAQMD's AQMP requires that the VMT increase by less than or equal to the projected population increase from the proposed General Plan (i.e., generate the same or less VMT per population). However, because the proposed General Plan accommodates both residential and nonresidential growth, a better indicator of how efficiently the county is growing can be made by comparing the increase in VMT to the increase in service population (e.g., generate the same or less VMT per service population). This approach is similar to the efficiency metrics for GHG emissions, which consider the total service population when calculating project efficiency.

VMT estimates based on data provided by Fehr & Peers were calculated for Contra Costa County. As shown in Table 5.3-9, implementation of the proposed General Plan would result in an increase of daily VMT by 742,009 vehicle miles per day in the unincorporated county (about a 21-percent increase), but lead to a lower VMT per capita than under existing conditions (approximately a 12-percent decrease) and lower VMT per service population than existing conditions (approximately a 10-percent decrease). Thus, the proposed General Plan would be consistent with the goals of the 2017 *Clean Air Plan* and impacts would be less than significant.

Environmental Justice

BAAQMD's CEQA Air Quality Guidelines also require an analysis of consistency of the proposed General Plan with applicable Community Emission Reduction Plans (CERPs) and local Environmental Justice policies. Environmentally overburdened, underserved, and economically distressed communities may be subject to a higher risk of pollutant-related health effects than the general population because they may be exposed to higher pollutant concentrations; they may experience a larger health impact at a given pollutant concentration; or they may be adversely affected by lower pollutant concentrations than the general population. The most critical air pollutant affecting health in the Bay Area is $PM_{2.5}$, which includes DPM. The burden of breathing unhealthy air is often disproportionately borne by low-income communities and communities of color, many of which are situated closer to busy highways, ports, factories, and other pollution sources (BAAQMD 2023b).

Community Emissions Reduction Plans in Unincorporated Contra Costa County

The Richmond-North Richmond-San Pablo AB 617 community (Richmond Area) is partially within the EIR Study Area. The Draft PTCA Plan (Community Emissions Reduction Plan) for the Richmond Area was released for public review in December 2023 (BAAQMD 2023a). The PTCA Plan includes various strategies and actions to address the needs of people who have been disproportionately harmed by environmental injustice. Implementation of Mobile Strategy 6, *Public Transit, Bike, and Pedestrian Infrastructure*, would help to expand access to shared modes of travel and benefit the people who have been historically burdened with lack of viable transportation alternatives. Land Use Strategy 1, *Land Use*, provides recommended strategies to protect sensitive receptors and residential areas from existing and potential future pollution sources and exposure, with an intended outcome of improving community health for all, especially disproportionately impacted communities. Marine & Rail Strategy 1, *Reduce Cancer and Chronic Health Risk from Rail Operations and Facilities*, would directly benefit overburdened communities living adjacent to rail lines and/or operations, such as the Iron Triangle neighborhood in the City of Richmond. Requirements for cleaner rail equipment would improve the health of those most acutely impacted, as well as for the greater community.

Thus, the PTCA Plan considers measures to reduce emissions and improve community health within Overburdened and AB 617 Communities consistent with BAAQMD's environmental justice goals. The proposed General Plan integrates goals, policies, and actions that seek to lessen the environmental burden on disadvantaged populations. Thus, the proposed project would be consistent with the draft PTCA Plan and BAAQMD's environmental justice goals; and impacts would be less than significant.

Contra Costa County Environmental Justice Policies

The proposed General Plan integrates goals, policies, and actions that seek to lessen the environmental burden on disadvantaged populations. The process to develop environmental justice policy guidance involved extensive discussions and many meetings with community members and other stakeholders who live in, work in, or engage with communities that are most impacted by environmental justice issues to ensure the Plan directly responds to the specific needs of Impacted Communities. Engagement included two collaboration meetings with environmental justice stakeholders to identify Impacted Communities and key environmental justice issues, three to four meetings with community members from each Impacted Community in the county, about 15 meetings with community-based organizations who work with Impacted Communities, a three-part meeting series with environmental justice stakeholders to review and refine draft policy guidance, and several meetings with the Board of Supervisors Sustainability Committee and the County's Sustainability Commission and Hazardous Materials Commission to discuss draft policy guidance. The County also conducted a hard copy and online survey to solicit feedback on draft environmental justice policy guidance, working with community partners to distribute hard copies at strategic locations to reach people during the COVID-19 pandemic, including at schools, libraries, farmers markets, food banks, and soup kitchens.

Contra Costa County is home to a high concentration of refineries and other large industrial facilities. To improve the health and safety impacts of these industrial facilities, the County adopted an Industrial Safety Ordinance. This Ordinance requires additional safety measures that go beyond State requirements that protect public health and safety.

In 2022, the County established the Office of Racial Equity and Social Justice to address local racial inequality and social injustice issues. The Office of Racial Equity and Social Justice is envisioned to enact and sustain principles, policies, practices, and investments that are racially just and equitable across all the County's departments and divisions.

State law, enacted through SB 1000, requires that general plans address environmental justice and respond to this inequity by both alleviating pollution and health impacts and compelling cities and counties to include the voices of previously marginalized residents in planning decisions. Therefore, the proposed General Plan contains certain goals, policies, and actions that help aim to promote environmental justice, especially within Impacted Communities.

Proposed policies within the Stronger Communities and Health and Safety Element would reduce and/or avoid environmental effects on vulnerable populations, include:

- Stronger Communities Element Policies SC-P1.1 through SC-P1.6 and Actions SC-A1.1 through SC-A1.8, which ensure an equitable distribution of resources so that Impacted Communities are not disproportionately burdened by environmental pollution and other hazards.
- Health and Safety Element Policies HS-P1.1 through HS-P1.10 and Actions HS-A1.1 through HS-A1.6, that support community and environmental health.
- Health and Safety Element Policies HS-P2.1 through HS-P2.3 and Actions HS-A2.1 through HS-A2.5 that aim to reduce the disproportionate burden of environmental hazards and health risks in the county.

Thus, the proposed General Plan considers measures to reduce emissions and improve community health within Overburdened and AB 617 Communities consistent with BAAQMD's environmental justice goals. Thus, the proposed General Plan would be consistent with BAAQMD's environmental justice goals and impacts would be less than significant.

Proposed CAAP

The proposed CAAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions. The proposed CAAP includes the "Clean Transportation Network" group of strategies, including Strategy TR-1, which provides actions for reducing VMT and associated transportation related emissions. As discussed under Impact 5.16-1, this strategy supports the County's existing plans to ensure accessibility and safety for alternative transportation options. Thus, implementation of the proposed CAAP would result in beneficial impacts to air quality. Because the proposed CAAP does not involve any land uses changes that would result in indirect growth or change in building density and intensity, implementation of the proposed CAAP would not conflict with or obstruct implementation of the 2017 *Clean Air Plan* and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.3-1 would be less than significant.

Impact 5.3-2: Short-term construction activities associated with the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State ambient air quality standards. [Threshold AQ-2]

This section analyzes potential impacts related to air quality that could occur from development under the proposed project in combination with the regional growth in the SFBAAB. The SFBAAB is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS. At a plan level, air quality impacts are measured by the potential for a project to exceed BAAQMD's significance criteria and contribute to the State and federal nonattainment designations in the SFBAAB. Any project that produces a significant regional air quality impact in an area that is in nonattainment

adds to the cumulative impact. As described in Impact 5.3-1, the proposed project would be consistent with the 2017 Clean Air Plan. However, the proposed project could generate a substantial increase in criteria air pollutant emissions from construction activities that could exceed the BAAQMD regional significance thresholds.

Proposed General Plan

Construction

Construction activities would temporarily increase criteria air pollutant emissions within the SFBAAB. The primary source of NOx emissions is the operation of construction equipment. The primary sources of particulate matter (PM_{10} and $PM_{2.5}$) emissions are activities that disturb the soil, such as grading and excavation, road construction, and building demolition and construction. The primary sources of VOC emissions are the application of architectural coating and off-gas emissions associated with asphalt paving. A discussion of health impacts associated with air pollutant emissions generated by construction activities is included under "Air Pollutants of Concern" in Section 5.3.1.2 of this section.

Construction activities associated with the proposed General Plan would occur over the forecast year, causing short-term emissions of criteria air pollutants. Information regarding specific development projects, soil types, and the locations of receptors would be needed in order to quantify the level of impact associated with construction activity. Due to the scale of development activity associated with the proposed General Plan, emissions would likely exceed the BAAQMD regional significance thresholds. In accordance with the BAAQMD methodology, emissions that exceed the regional significance thresholds would cumulatively contribute to the nonattainment designations of the SFBAAB. Emissions of VOC and NO_X are precursors to the formation of O_3. In addition, NO_X is a precursor to the formation of particulate matter (PM_{10} and $PM_{2.5}$). Therefore, the proposed General Plan would cumulatively contribute to the nonattainment designations of the SFBAAB for O_3 and particulate matter (PM_{10} and $PM_{2.5}$).

Future development under the proposed General Plan would be subject to separate environmental review pursuant to CEQA in order to identify and mitigate potential air quality impacts. Subsequent environmental review of development projects would be required to assess potential impacts under BAAQMD's project-level thresholds based on site-specific construction phasing and buildout characteristics. For the proposed General Plan, which is a broad-based policy plan, it is not possible to determine whether the scale and phasing of individual projects would exceed the BAAQMD's short-term regional or localized construction emissions thresholds. As a result, construction activities associated with implementation of the proposed General Plan could potentially violate an air quality standard or contribute substantially to an existing or projected air quality violation.

Existing federal, State, and local regulations and the policies and programs of the proposed General Plan described throughout this section protect local and regional air quality. Continued compliance with these regulations would reduce construction-related impacts and proposed policies would help to reduce construction emissions even further. The following proposed General Plan policies and actions would serve to minimize potential adverse impacts related to particulate matter air pollution:

- **Policy HS-P1.5:** Require new sources of air pollution that will generate significant new air quality impacts or expose sensitive receptors to substantial increases in harmful emissions of TACs to prepare a Health Risk Assessment that identifies appropriate mitigation consistent with BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines, based on the findings of the Health Risk Assessment.
- **Policy HS-P1.7:** Require construction activities that involve large grading operations to implement additional construction measures identified in BAAQMD's CEQA Guidelines to reduce air pollutant emissions.
- **Policy HS-P1.9:** Prohibit nonessential diesel engine idling countywide and nonessential idling of all vehicles within 100 feet of sensitive receptors.
- **Action HS-A1.4:** Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 7 – Building Regulations to include a clean construction ordinance that requires projects to implement extra measures to reduce emissions at construction sites in or near places that are already overburdened by air pollution, such as Impacted Communities.

- **Policy HS-P2.1:** When evaluating health risk impacts of projects in Impacted Communities, use an excess cancer risk of 6.0 per million and a non-cancer (acute and chronic) hazard index greater than 1.0 as thresholds for finding that the project could cause a cumulatively considerable contribution and a significant impact.

While these existing and proposed regulations, policies, and programs have the potential to reduce emissions, potential future development projects accommodated under the proposed General Plan (individually or cumulatively) could still exceed the BAAQMD significance thresholds for construction. Therefore, implementation of the proposed General Plan could result in potentially significant construction-related regional air impacts.

Proposed CAAP

The proposed CAAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions. Since implementation of the proposed CAAP would not involve any land use changes that would result in indirect growth or change in building density or intensity, its implementation would not directly result in the generation of construction-related criteria air pollutant emissions. Furthermore, the proposed CAAP would be subject to the same County standards that apply to development under the proposed General Plan, such as the 2017 *Clean Air Plan*. The 2017 *Clean Air Plan* includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and TACs. It also includes control measures to reduce emissions of methane and other GHGs that are potent climate pollutants in the near-term and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

Therefore, the proposed CAAP would contribute to reducing construction-phase criteria air pollutant emissions and result in beneficial air quality impacts. Implementation of the proposed CAAP would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is in

nonattainment under applicable federal or State ambient air quality standard, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-2 would be potentially significant.

Mitigation Measures

AQ-1 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more shall prepare and submit a technical assessment evaluating potential project construction-related air quality impacts to the County Department of Conservation and Development for review and approval. The evaluation shall be prepared in conformance with the Bay Area Air Quality Management District (BAAQMD) methodology for assessing air quality impacts identified in their *CEQA Air Quality Guidelines*. If construction-related criteria air pollutants are determined to have the potential to exceed the BAAQMD–adopted construction screening criteria and thresholds of significance, the Department of Conservation and Development shall require feasible mitigation measures to reduce air quality emissions. Potential measures may include:

- Require implementation of the BAAQMD Best Management Practices for fugitive dust control, such as:
  - All exposed surfaces (e.g., parking areas, staging areas, soil piles, grading areas, and unpaved access roads) shall be watered two times per day.
  - All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
  - All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
  - All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
  - All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
  - All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
  - All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
  - Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

- Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

Measures shall be incorporated into appropriate construction documents (e.g., construction management plans) submitted to the County and shall be verified by the Department of Conservation and Development.

Level of Significance After Mitigation: Impact 5.3-2 would remain significant and unavoidable.

Impact 5.3-3: Development under the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State AAQS. [Thresholds AQ-2]

This section analyzes potential impacts related to air quality that could occur from development associated with the proposed project in combination with the regional growth in the SFBAAB. The SFBAAB is currently designated a nonattainment area for California and National O_3, California and National $PM_{2.5}$, and California PM_{10} AAQS. At a plan level, air quality impacts are measured by the potential for a project to exceed BAAQMD's significance criteria and contribute to the State and federal nonattainment designations in the SFBAAB. Any project that produces a significant regional air quality impact in an area that is in nonattainment adds to the cumulative impact. As described in Impact 5.3-1, the proposed project would be consistent with the 2017 Clean Air Plan. However, the proposed project could generate a substantial increase in criteria air pollutant emissions from operational activities that could exceed the BAAQMD regional significance thresholds.

Proposed General Plan

Operation

BAAQMD has identified thresholds of significance for criteria pollutant emissions and criteria air pollutant precursors, including VOC, NO, PM_{10} and $PM_{2.5}$. Development projects below the significance thresholds are not expected to generate sufficient criteria pollutant emissions to violate any air quality standard or contribute substantially to an existing or projected air quality violation. According to BAAQMD's CEQA Guidelines, long-range plans, such as the proposed General Plan, present unique challenges for assessing impacts. Due to the SFBAAB's nonattainment status for ozone and PM and the cumulative impacts of growth on air quality, these plans almost always have significant, unavoidable adverse air quality impacts.

Implementation and adoption of the proposed General Plan would result in an increase in development intensity in the county. Development under the proposed General Plan would result in direct and indirect criteria air pollutant emissions from transportation, energy (e.g., natural gas use), and area sources (e.g., aerosols and landscaping equipment). Mobile-source criteria air pollutant emissions are based on the traffic analysis conducted by Fehr and Peers (see Appendix 5.16-1, *Transportation Data*, of this Draft EIR). The emissions forecast for the county under the proposed General Plan compared to existing conditions is shown in Table

5.3-10, *Scenario 1: Criteria Air Pollutant Emissions Forecast Compared to Existing Conditions*, and Table 5.3-11, *Scenario 2: Criteria Air Pollutant Emissions Forecast Compared to the Future No Project Conditions*. As shown in these tables, implementation of the proposed General Plan would result in an increase in criteria air pollutant emissions from existing conditions and the future no project conditions, respectively. As stated previously, Scenario 2 isolates the effects of the proposed General Plan because both the future no project and future with project conditions include emissions reductions from federal and State regulations.

As shown in these tables, development under the proposed General Plan would generate an increase in criteria air pollutant emission from both existing conditions (Scenario 1) as well as the future no project conditions (Scenario 2). Compliance with applicable policies and programs would contribute towards minimizing long-term emissions. However, implementation of the proposed General Plan would still exceed the BAAQMD significance threshold (no net increase) for operation. Therefore, implementation of the proposed General Plan could result in potentially significant long-term regional air quality impacts.

Table 5.3-10 Scenario 1. Criteria Air Pollutant Emissions Forecast Compared to Existing Conditions

Sectors	Criteria Air Pollutant Emissions (Tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Existing Land Uses (Year 2019)				
Transportation[1]	41	207	26	10
Energy[2]	11	206	15	15
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	3	3	0	0
Consumer Products[4]	444	—	—	—
Total Average (Tons/year)	**~~1,254~~ 1,256**	**431**	**156**	**140**
Proposed General Plan Land Uses (Year 2045)				
Transportation[1]	10	43	28	9
Energy[2]	13	239	18	18
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	4	3	0	0
Consumer Products[4]	681	—	—	—
Total Average (Tons/year)	**1,465**	**300**	**161**	**142**
Change from Existing Land Uses	**~~211~~ 209**	**-131**	**5**	**2**
Increase?	**Yes**	No	**Yes**	**Yes**
Sectors	**Criteria Air Pollutant Emissions (lbs per day)**			
	VOC	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Existing Land Uses (Year 2019)				
Transportation[1]	234	1,193	151	57
Energy[2]	60	1,129	84	84
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629
Off-Road Equipment[3]	17	16	1	1
Consumer Products[4]	2,432	—	—	—

Table 5.3-10 Scenario 1. Criteria Air Pollutant Emissions Forecast Compared to Existing Conditions

Sectors	Criteria Air Pollutant Emissions (Tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Total Average (Tons/year)	**6,895**	**2,422**	**865**	**771**
Proposed General Plan Land Uses (Year 2045)				
Transportation[1]	57	247	164	53
Energy[2]	70	1,307	98	98
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629
Off-Road Equipment[3]	23	17	1	1
Consumer Products[4]	3,730	—	—	—
Total Average (lbs/day)	**8,032**	**1,656**	**891**	**780**
Change from Existing Land Uses	**1,137**	**-766**	**26**	**9**
Increase?	**Yes**	No	**Yes**	**Yes**

Notes: Emissions may not total to 100 percent due to rounding.
[1] EMFAC2021 V.1.0.2. Based on daily VMT provided by Fehr & Peers (see Appendix 5.16-1).
[2] Based on natural gas use provided by PG&E and residential & nonresidential fuels identified for the proposed CAAP.
[3] OFFROAD2021 V.1.02.
[4] Based on CalEEMod User's Guide methodology to calculate VOC emissions from use of household consumer cleaning products.

Table 5.3-11 Scenario 2. Criteria Air Pollutant Emissions Forecast Compared to the Future No Project Conditions

Sectors	Criteria Air Pollutant Emissions (Tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Existing Land Uses (Year 2045)				
Transportation[1]	8	35	24	8
Energy[2]	11	206	15	15
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	3	3	0	0
Consumer Products[4]	444	—	—	—
Total Average (Tons/year)	**1,224**	**259**	**154**	**138**
Proposed General Plan Land Uses (Year 2045)				
Transportation[1]	10	43	28	9
Energy[2]	13	239	18	18
Residential Fuels (wood, kerosene, propane)[2]	758	15	115	115
Off-Road Equipment[3]	4	3	0	0
Consumer Products[4]	681	—	—	—
Total Average (Tons/year)	**1,465**	**300**	**161**	**142**
Change from Existing Land Uses	**241**	**41**	**7**	**4**
Increase?	**Yes**	**Yes**	**Yes**	**Yes**
Sectors	**Criteria Air Pollutant Emissions (lbs per day)**			
	VOC	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
Existing Land Uses (Year 2045)				
Transportation[1]	47	201	136	44
Energy[2]	60	1,129	84	84

Table 5.3-11 Scenario 2. Criteria Air Pollutant Emissions Forecast Compared to the Future No Project Conditions

Sectors	Criteria Air Pollutant Emissions (Tons per year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629
Off-Road Equipment[3]	17	16	1	1
Consumer Products[4]	2,432	—	—	—
Total Average (Tons/year)	**~~6,708~~ 6,709**	**1,430**	**850**	**758**
Proposed General Plan Land Uses (Year 2045)				
Transportation[1]	57	247	164	53
Energy[2]	70	1,307	98	98
Residential Fuels (wood, kerosene, propane)[2]	4,152	84	629	629
Off-Road Equipment[3]	23	17	1	1
Consumer Products[4]	3,730	—	—	—
Total Average (lbs/year)	**8,032**	**1,656**	**891**	**780**
Change from Existing Land Uses	**~~1,324~~ 1,323**	**~~226~~ 225**	**~~41~~ 42**	**~~22~~ 23**
Increase?	**Yes**	**Yes**	**Yes**	**Yes**

Notes: Emissions may not total to 100 percent due to rounding.
1 EMFAC2021 V.1.0.2. Based on daily VMT provided by Fehr & Peers (see Appendix 5.16-1).
2 Based on natural gas use provided by PG&E and residential fuels identified for the proposed CAAP.
3 OFFROAD2021 V.1.02.
4 Based on CalEEMod User's Guide methodology to calculate VOC emissions from use of household consumer cleaning products.

Proposed CAAP

As discussed under Impact 5.3-2, implementation of the proposed CAAP would not involve any land use changes that would result in indirect growth or change in building density or intensity; therefore, its implementation would not directly result in the generation of operation-related criteria air pollutant emissions. Furthermore, as discussed under Impact 5.3-2, the proposed CAAP would be subject to the same County standards that apply to development under the proposed General Plan, including the 2017 *Clean Air Plan,* which includes a wide range of control measures designed to decrease emissions of air pollutants, potent climate pollutants, and carbon dioxide by reducing fossil fuel combustion.

Additionally, the proposed CAAP would have co-benefits with regard to operation-related criteria air pollutant emissions. Building energy efficiency improvements (e.g., proposed CAAP Strategies BE-1 through BE-3) would promote sustainable building practices and would result in a decrease in natural gas use and associated criteria air pollutants (i.e., VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$). Likewise, transportation strategies that reduce VMT (e.g., Strategy TR-1) would result in a reduction in criteria air pollutants from the transportation sector.

Therefore, the proposed CAAP would contribute to reducing operation-phase criteria air pollutant emissions and result in beneficial air quality impacts. Implementation of the proposed CAAP would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is in nonattainment under applicable federal or State ambient air quality standard, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-3 would be potentially significant.

Mitigation Measures

AQ-2 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future project applicants shall prepare and submit a technical assessment evaluating potential project operation-phase-related air quality impacts to the Department of Conservation and Development for review and approval. The evaluation shall be prepared in conformance with Bay Area Air Quality Management District (BAAQMD) methodology in assessing air quality impacts identified in their *CEQA Air Quality Guidelines*. If operation-related air pollutants are determined to have the potential to exceed the BAAQMD–adopted operational screening criteria and thresholds of significance, the Department of Conservation and Development shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce long-term emissions could include, but are not limited to the following:

- Implementing commute trip reduction programs.
- Unbundling residential parking costs from property costs.
- Expanding bikeway networks.
- Expanding transit network coverage or hours.
- Using cleaner-fueled vehicles.
- Exceeding the current Title 24 Building Envelope Energy Efficiency Standards.
- Establishing on-site renewable energy generation systems.
- Requiring all-electric buildings.
- Replacing gas-powered landscaping equipment with zero-emission alternatives.
- Expanding urban tree planting.

Level of Significance After Mitigation: Impact 5.3-3 would remain significant and unavoidable.

Impact 5.3-4: Construction activities associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations. [Threshold AQ-3]

Implementation of the proposed project would cause or contribute significantly to elevated pollutant concentration levels such that it would expose sensitive receptors to elevated pollutant concentrations. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

Proposed General Plan

Construction Community Risk and Hazards

Future construction under the proposed General Plan would temporarily elevate concentrations of TACs and DPM in the vicinity of sensitive land uses during construction activities. Since the details regarding future construction activities are not known at this time due to this analysis being conducted at a program level—including phasing of future individual projects, construction duration and phasing, and preliminary construction equipment—construction emissions are evaluated qualitatively in accordance with BAAQMD's plan-level guidance. Subsequent environmental review of future development projects would be required to assess potential impacts under BAAQMD's project-level thresholds. However, construction emissions associated with the proposed General Plan could exceed BAAQMD's project level and cumulative significance thresholds for community risk and hazards. Therefore, construction-related health risk impacts associated with the proposed General Plan are considered potentially significant.

Proposed CAAP

As discussed under Impact 5.3-2, implementation of the proposed CAAP would not involve any land use changes that would result in indirect growth or change in building density or intensity; therefore, its implementation would not directly result in the generation of TAC and DPM emissions. In addition, as stated under Impact 5.3-3, implementation of the CAAP could result in beneficial long-term air quality impacts from the increase in energy efficiency, usage of clean energy, and reduction in VMT. Therefore, implementation of the proposed CAAP would not expose sensitive receptors to substantial pollutant concentrations of TACs, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-4 would be potentially significant.

Mitigation Measures

AQ-3 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more and within 1,000 feet of residential and other sensitive land uses (e.g., hospitals, nursing homes, schools, and day care centers) in the unincorporated county[7], shall submit a health risk assessment (HRA) to the County Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds the respective threshold established by the BAAQMD—project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000 feet of a BAAQMD

[7] As measured from the property line of the project site to the property line of the source/edge of the nearest travel lane.

Overburdened Community; ten in a million in all other areas; $PM_{2.5}$ emissions that exceed 0.3 μg/m^3; or the appropriate noncancer hazard index exceeds 1.0—the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks below the respective threshold, including appropriate enforcement mechanisms. Measures to reduce risk may include, but are not limited to:

- Use of construction equipment rated as US EPA Tier 4 Interim or higher for equipment of 50 horsepower or more.
- Use of construction equipment fitted with Level 3 Diesel Particulate Filters for all equipment of 50 horsepower or more.

Measures identified in the HRA shall be included in the environmental document and/or incorporated into the site development plan as a component of the proposed project. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the Department of Conservation and Development clearly show incorporation of all applicable mitigation measures.

Level of Significance After Mitigation: Impact 5.3-4 would be less than significant. Mitigation Measure AQ-3 would ensure that discretionary development projects with construction proximate to sensitive receptors would reduce potential off-site health risks to less than BAAQMD significance criteria of six in one million (6E-06) cancer risk in Impacted Communities and ten in one million (10E-06) in all other areas, $PM_{2.5}$ concentrations of 0.3 μg/m^3, or the noncancer hazard index of 1.0. Mitigation Measure AQ-3 would require the use of newer, lower emitting construction equipment, and therefore, the proposed project would not expose sensitive receptors to substantial pollutant concentrations.

Impact 5.3-5: Operational-phase emissions associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations. [Threshold AQ-3]

Implementation of the proposed project would cause or contribute significantly to elevated pollutant concentration levels such that it would expose sensitive receptors to elevated pollutant concentrations. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects. Types of land uses that typically generate substantial quantities of TACs and $PM_{2.5}$ include industrial and manufacturing (stationary sources) and warehousing land uses that have the potential to generate DPM from onsite equipment and mobile sources (trucks). Additionally, operation of new land uses consistent with the proposed project could generate new sources of criteria air pollutants and TACs in the county associated with CO hotspots. The following describes potential localized operational air quality impacts from implementation of the proposed project.

Proposed General Plan

CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO, called hotspots. These pockets have the potential to exceed the State 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. Since CO is produced in the greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds.

The CCTA CMP must be consistent with the ABAG/MTC's Plan Bay Area, which is updated periodically. An overarching goal of the Plan Bay Area 2050 is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth in outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle VMT and associated GHG emissions reductions.

The proposed General Plan would be consistent with the overall goals of the Plan Bay Area 2050. Additionally, the proposed General Plan would not hinder the capital improvements outlined in the CMP. Thus, the proposed General Plan would not conflict with the CCTA CMP. Furthermore, under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection to more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact (BAAQMD 2023b). The proposed General Plan would not increase traffic volumes at affected intersections to more than BAAQMD screening criteria of 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (ArcGIS 2023). Therefore, overall, the proposed General Plan would not have the potential to substantially increase CO hotspots at intersections in the county and vicinity. Overall, these components of the proposed General Plan would contribute to reducing congestion and associated emissions. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

Stationary (Permitted) Sources

Various industrial and commercial processes (e.g., manufacturing and dry cleaning) allowed under the proposed General Plan would be expected to release TACs. TAC emissions generated by stationary and point sources of emissions within the Air Basin are regulated and controlled by BAAQMD. Land uses that would require a permit from BAAQMD for emissions of TACs include chemical processing facilities, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. Emissions of TACs from stationary sources would be controlled by BAAQMD through permitting and would be subject to further study and health risk assessment prior to the issuance of any necessary air quality permits under Regulation 2, *New Source Review*, as well as Regulation 11, Rule 18, *Reduction of Risk from Air Toxic Emissions at Existing Facilities*.

Review under New Source Review ensures that stationary source emissions (permitted sources) would be reduced or mitigated below BAAQMD community risk and hazards thresholds. Though these sources would incrementally contribute to emissions in the unincorporated county individually, they would be mitigated to BAAQMD standards.

The following proposed General Plan policies and actions would serve to minimize potential adverse impacts on air quality by increasing standards and promoting cooperation with outside agencies:

- **Policy HS-P1.4.** Require new industrial development to locate significant pollution sources at maximum distance possible ~~as far away~~ from sensitive receptors ~~as possible~~.
- **Action HS-A1.3**. Consult with BAAQMD and community stakeholders and amend County Ordinance Code Title 8 – Zoning to include an Industrial-Sensitive Receptor Interface Overlay Zone applied to areas where residential land uses and other sensitive receptors interface or directly abut heavy industrial land uses. In the overlay zone, require industrial uses to reduce pollution and employ strategies to mitigate air quality, noise, vibration, odor, light, visual, and safety impacts on nearby sensitive receptors. In addition, require new sensitive receptors to install enhanced ventilation systems and implement other strategies, paid for by neighboring sources of pollution to the extent possible, to protect residents from health and quality of life impacts.
- **Action HS-A2.4.** Coordinate with BAAQMD to determine where to focus a targeted permit inspection program in Impacted Communities to help ensure enforcement of air quality permits.

The policies and actions listed above would minimize potential health risk impacts to sensitive receptors. Though the proposed General Plan includes policies to reduce exposure of sensitive receptors to pollution, and BAAQMD would ensure that on a project-by-project basis emission achieve their permit thresholds, emissions cannot be determined or modeled until specific development projects are proposed. Therefore, implementation of the proposed General Plan may result in projects that emit TACs and $PM_{2.5}$ throughout the unincorporated county and result in potentially significant localized air quality impacts.

Nonpermitted Sources

TACs and $PM_{2.5}$ from mobile sources when operating at a property (e.g., truck idling) are regulated by statewide rules and regulations, not by BAAQMD, and have the potential to generate substantial concentrations of air pollutants. The primary mobile source of TACs within the unincorporated county includes truck idling and use of off-road equipment.

New warehousing operations could generate substantial DPM and $PM_{2.5}$ emissions from off-road cargo-handling equipment use and truck idling. In addition, some warehousing and industrial facilities may include use of TRUs for cold storage. New land uses in the unincorporated county that would be permitted under the proposed General Plan that use trucks, including trucks with TRUs, could generate an increase in DPM that would contribute to cancer and noncancer health risk in the Air Basin. Additionally, these types of facilities could also generate particulate matter (PM_{10} and $PM_{2.5}$) that may cause an exceedance or contribute to the continuing exceedance of the federal and State AAQS. These new land uses could be near existing sensitive

receptors. In addition, trucks would travel on regional transportation routes through the Bay Area, contributing to near-roadway DPM concentrations.

The proposed General Plan would potentially result in an increase of 5 million square feet of industrial land uses. The areas intended for industrial uses would be primarily associated with existing planned and/or permitted industrial development. Additionally, existing residences are close to existing and planned Industrial designations, and overlap with many of the Overburdened and Impacted Communities. As identified in the Figure 3-3, *Proposed General Plan Land Use Map*, industrial areas are proximate to residential areas in several areas of the unincorporated county, including:

- North Richmond
- Bay Point
- Byron
- Discovery Bay
- Pacheco
- Clyde
- Vine Hill
- Crockett
- Rodeo

These areas are proximate to sensitive receptors. Until specific future development projects are proposed, the associated emissions and concentrations cannot be determined or modeled.

The County will require project applicants to prepare project-specific analyses of qualifying projects and incorporate project-specific mitigation measures to reduce TACs, per the following policies:

- **Policy HS-P1.5.** Require new sources of air pollution that will generate significant new air quality impacts or expose sensitive receptors to substantial increases in harmful emissions of TACs to prepare a Health Risk Assessment that identifies appropriate mitigation consistent with BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines, based on the findings of the Health Risk Assessment.
- **Policy HS-P2.1.** When evaluating health risk impacts of projects in Impacted Communities, use an excess cancer risk of 6.0 per million and a non-cancer (acute and chronic) hazard index greater than 1.0 as thresholds for finding that the project could cause a cumulatively considerable contribution and a significant impact.

If the results show that the incremental cancer risk exceeds ten in one million (or the risk thresholds in effect at the time a project is considered) or six in one million in Impacted Communities, the appropriate noncancer hazard index exceeds 1.0, or 0.3 μ/m^3 of $PM_{2.5}$, or the thresholds as determined by the BAAQMD at the time a project is considered, the applicant is required to mitigate the potential cancer and noncancer risks to an acceptable level.

Th following policy in the proposed General Plan would reduce the exposure of sensitive receptors in Impacted Communities and Overburdened Communities to TACs and $PM_{2.5}$:

- **Policy HS-P1.8.** Require new or expanded commercial and industrial projects ~~exceeding~~ resulting in 25,000 square feet or more of gross habitable floor area, such as warehouses and other large enclosed

buildings, to be near zero-emissions ~~(NZE)~~ operations, including the facilities themselves and the associated fleets. Require all necessary measures, such as the following, to achieve ~~NZE~~ near zero emissions:

(a) Reduce on-site energy consumption and increase on-site energy generation and energy storage.

(b) Provide adequate on-site zero-emission ~~ZE~~ -vehicle~~-capable~~ parking for all anticipated truck traffic to prevent idling and off-site queuing.

(c) Provide electrified loading docks with receptacles allowing plug-in of refrigerated trailers.

(d) Use heavy-duty trucks that are model year 2014 or later and expedite a transition to ~~ZE~~ zero-emission trucks by establishing a clear timeline for electrification of trucks as they become commercially available. Ensure contracts with motor carriers include air quality incentives or requirements, such as providing incentives to fleets that meet United States Environmental Protection Agency (EPA) SmartWay standards or requiring use of ~~ZE~~ zero-emission or near-zero-emission ~~NZE~~ trucks.

(e) Use a "clean fleet" of delivery vehicles as they become commercially available, but no later than 2025.

(f) Use ~~ZE~~ zero-emission yard equipment, such as forklifts, pallet trucks and jacks, and stackers.

(g) Implement practices to control and remove fugitive dust and other contaminants from paved areas.

Uses with fewer than five vehicles domiciled on-site are exempt from this policy.

The policies listed above aim to reduce pollution from industrial development to nearby sensitive receptors and would require more project-specific mitigation measures to reduce TACs, especially in Impacted Communities. Policy HS-P1.8 also pushes to reduce truck idling, promotes the replacement of older heavy-duty trucks, and supports near zero emissions operations.

Though the proposed General Plan includes policies and actions to reduce air pollutant emissions exposure within Impacted Communities, the proposed General Plan could result in specific development projects that could emit TACs and $PM_{2.5}$. The emissions associated with these facilities cannot be determined or modeled until specific development projects are proposed. Therefore, implementation of the proposed General Plan may result in projects that emit TACs and $PM_{2.5}$ in the vicinity of Impacted Communities and sensitive receptors and result in potentially significant localized air quality impacts.

Therefore, without project-specific analysis health risk impacts from nonpermitted sources associated with development of industrial and commercial land uses are considered potentially significant.

Proposed CAAP

As discussed under Impact 5.3-2, implementation of the proposed CAAP would not involve any land use changes that would result in indirect growth or change in building density or intensity; therefore, its implementation would not directly result in the generation of operation-related criteria air pollutants, TAC and $PM_{2.5}$ emissions, or generation of vehicle trips to produce CO hotspots. In addition, as stated under Impact

5.3-3, implementation of the CAAP could result in beneficial long-term air quality impacts from the increase in energy efficiency, usage of clean energy, and reduction in VMT. A reduction in vehicle trips would contribute to further minimizing the potential creation of CO hotpots. Therefore, implementation of the proposed CAAP would not expose sensitive receptors to substantial pollutant concentrations of TACs, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-5 would be potentially significant.

Mitigation Measures

AQ-4 Prior to discretionary approval by the County, project applicants for new industrial or warehousing development projects that 1) have the potential to generate 100 or more diesel truck trips per day or have 40 or more trucks with operating diesel-powered transport refrigeration units, and 2) are within 1,000 feet of a sensitive land use (e.g., residential, schools, hospitals, nursing homes) or Impacted Community, as measured from the property line of the project to the property line of the nearest sensitive use, shall submit a health risk assessment (HRA) to the Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the cumulative and project-level incremental cancer risk, noncancer hazard index, and/or $PM_{2.5}$ exceeds the respective threshold, as established by BAAQMD (all areas of the unincorporated county) and project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000 feet of a BAAQMD Overburdened Community; ten in a million in all other areas; $PM_{2.5}$ emissions that exceed 0.3 $\mu g/m^3$; or the appropriate noncancer hazard index exceeds 1.0, the project applicant will be required to identify best available control technologies for toxics (T-BACTs) and appropriate enforcement mechanisms, and demonstrate that they are capable of reducing potential cancer, noncancer risks, and $PM_{2.5}$ to an acceptable level. T-BACTs may include but are not limited to:

- Restricting idling on-site beyond Air Toxic Control Measures idling restrictions
- Electrifying warehousing docks
- Requiring use of newer equipment
- Requiring near-zero or zero-emission trucks for a portion of the vehicle fleet based on opening year
- Truck Electric Vehicle (EV) Capable trailer spaces
- Restricting off-site truck travel through the creation of truck routes

T-BACTs identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site plan.

Level of Significance After Mitigation: Impact 5.3-5 would remain significant and unavoidable. Development allowed by the proposed project could result in new sources of TACs or $PM_{2.5}$ near existing or planned sensitive receptors. Review of development projects by BAAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities) in addition to proposed General Plan policies and actions would ensure that health risks are minimized. Additionally, Mitigation Measure AIR-4 would ensure mobile sources of TACs not covered under BAAQMD permits are considered during subsequent project-level review by the County. Individual development projects would be required to achieve the incremental risk thresholds established by BAAQMD, and TAC and $PM_{2.5}$ project-level impacts would be less than significant. However, these projects could contribute to significant cumulative risk in the Bay Area that could affect sensitive populations and Overburdened and Impacted Communities. As a result, the proposed project's contribution to cumulative health risk is considered significant and unavoidable.

Impact 5.3-6: The proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. [Threshold AQ-4]

Proposed General Plan

Construction-Related Odors

During construction activities of future development in the county, construction equipment exhaust and application of asphalt and architectural coatings would temporarily generate odors. Any construction-related odor emissions would be temporary and intermittent. Additionally, noxious odors would be confined to the immediate vicinity of the construction equipment. By the time such emissions reach any sensitive receptor sites, they would be diluted to well below any level of air quality concern, and impacts would be less than significant.

Operational-Related Odors

Industrial Land Uses

Industrial land uses are the primary types of land uses that have the potential to generate objectionable odors. Future environmental review could be required for industrial projects listed in BAAQMD's CEQA Guidelines Table 4 Project Screening Trigger Levels for Potential Odor Sources to ensure that sensitive land uses are not exposed to nuisance odors (BAAQMD 2023b). Consequently, review of projects using BAAQMD's odor screening distances is necessary to ensure that odor impacts are minimized. Odor impacts could be significant for new projects that have the potential to generate odors within the odor screening distances.

Residential and Other Land Uses

Residential and other nonresidential, nonindustrial land uses that would be accommodated by the proposed General Plan could result in the generation of odors such as exhaust from landscaping equipment and from cooking. Unlike industrial land uses, these are not considered potential generators of odor that could affect a substantial number of people.

Furthermore, nuisance odors are regulated under BAAQMD Regulation 7, Odorous Substances, which requires abatement of any nuisance generating an odor complaint. In addition, odors are also regulated under BAAQMD Regulation 1, Rule 1-301, *Public Nuisance*. Compliance with BAAQMD Regulation 7 would ensure that odor impacts associated with the proposed General Plan are minimized to a less than significant level.

Proposed CAAP

As discussed under Impact 5.3-2, implementation of the proposed CAAP would not involve any land use changes that would result in indirect growth or change in building density or intensity; therefore, its implementation would not directly result in the generation of odors or other emissions. Therefore, implementation of the proposed CAAP would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people, and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.3-6 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.3-6 would be less than significant.

5.3.5 Cumulative Impacts

Construction

The cumulative setting for air quality is the Air Basin. The BAAQMD is designated nonattainment for O_3, $PM_{2.5}$, and PM_{10} under the California and/or National AAQS. Construction of cumulative projects would further degrade the regional and local air quality. Air quality would be temporarily impacted during construction activities. Implementation of mitigation measures for related projects would reduce cumulative impacts. However, project-related construction emissions could still potentially exceed the BAAQMD significance thresholds on a project and cumulative basis. Consequently, the proposed project's contribution to cumulative air quality impacts would be cumulatively considerable and would therefore be significant.

Operation

For operational air quality emissions, any project that does not exceed or can be mitigated to less than the daily regional threshold values is not considered by BAAQMD to be a substantial source of air pollution and does not add significantly to a cumulative impact. Operation of the proposed project would result in emissions in excess of the BAAQMD regional emissions thresholds for long-term operation. Therefore, the proposed project's air pollutant emissions would be cumulatively considerable and therefore significant.

Health Risk (TACs and $PM_{2.5}$)

Development allowed by the proposed General Plan could result in new sources of criteria air pollutant emissions and/or TACs near existing or planned sensitive receptors as well as proximate to other existing and planned major sources of air pollution including high volume roadways, truck distribution centers, ports,

railyards and rail lines, refineries, airports, chrome plating facilities, crematoriums, dry cleaners using perchloroethylene, generators, and gasoline dispensing facilities. Review of new development projects by BAAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities), in addition to proposed General Plan policies and actions, would ensure that health risks are minimized. Additionally, Mitigation Measure AQ-4 would ensure mobile sources of TACs not covered under BAAQMD permits are considered during subsequent project-level review by the County. Individual development projects would be required to achieve the incremental risk thresholds established by BAAQMD; therefore, project-level impacts would be less than significant. However, cumulative construction plus operation of these projects in areas with high background risk could contribute to significant cumulative risk in the Bay Area that could affect sensitive populations and disadvantaged communities. As a result, the proposed General Plan's contribution to cumulative health risk is considered significant.

5.3.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, some impacts would be less than significant: Impacts 5.3-1, 5.3-5, and 5.3-6.

Without mitigation, these impacts would be **potentially significant**:

- **Impact 5.3-2:** Short-term construction activities associated with the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State ambient air quality standards.
- **Impact 5.3-3:** Development under the proposed project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in non-attainment under applicable federal or State AAQS.
- **Impact 5.3-4:** Construction activities associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations.
- **Impact 5.3-5:** Operational-phase emissions associated with the proposed project could expose sensitive receptors to substantial pollutant concentrations and cumulatively contribute to elevated health risk in the Air Basin.

5.3.7 Mitigation Measures

Impact 5.3-2

AQ-1 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more shall prepare and submit a technical assessment evaluating potential project construction-related air quality impacts to the County Department of Conservation and Development for review and approval. The evaluation shall be prepared in conformance with the Bay Area Air Quality Management District (BAAQMD) methodology for assessing air quality impacts identified in their *CEQA Air Quality Guidelines*. If construction-related criteria air pollutants are determined to have the potential to exceed

the BAAQMD–adopted construction screening criteria and thresholds of significance, the Department of Conservation and Development shall require feasible mitigation measures to reduce air quality emissions. Potential measures may include:

- Require implementation of the BAAQMD Best Management Practices for fugitive dust control, such as:
  - All exposed surfaces (e.g., parking areas, staging areas, soil piles, grading areas, and unpaved access roads) shall be watered two times per day.
  - All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
  - All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
  - All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
  - All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
  - All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
  - All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
  - Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.
  - Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

Measures shall be incorporated into appropriate construction documents (e.g., construction management plans) submitted to the County and shall be verified by the Department of Conservation and Development.

Impact 5.3-3

AQ-2 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future project applicants shall prepare and submit a technical assessment evaluating potential project operation-phase-related air quality impacts to the Department of Conservation and

Development for review and approval. The evaluation shall be prepared in conformance with Bay Area Air Quality Management District (BAAQMD) methodology in assessing air quality impacts identified in their *CEQA Air Quality Guidelines*. If operation-related air pollutants are determined to have the potential to exceed the BAAQMD–adopted operational screening criteria and thresholds of significance, the Department of Conservation and Development shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce long-term emissions could include, but are not limited to the following:

- Implementing commute trip reduction programs.
- Unbundling residential parking costs from property costs.
- Expanding bikeway networks.
- Expanding transit network coverage or hours.
- Using cleaner-fueled vehicles.
- Exceeding the current Title 24 Building Envelope Energy Efficiency Standards.
- Establishing on-site renewable energy generation systems.
- Requiring all-electric buildings.
- Replacing gas-powered landscaping equipment with zero-emission alternatives.
- Expanding urban tree planting.

Impact 5.3-4

AQ-3 Prior to discretionary approval by the County for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future development involving construction on 1 acre or more and within 1,000 feet of residential and other sensitive land uses (e.g., hospitals, nursing homes, schools, and day care centers) in the unincorporated county[8], shall submit a health risk assessment (HRA) to the County Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the Office of Environmental Health Hazard Assessment (OEHHA) and Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds the respective threshold, as established by the BAAQMD —project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000 feet of a BAAQMD Overburdened

[8] As measured from the property line of the project site to the property line of the source/edge of the nearest travel lane.

Community; ten in a million in all other areas; $PM_{2.5}$ emissions that exceed 0.3 $\mu g/m^3$; or the appropriate noncancer hazard index exceeds 1.0—the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks below the respective threshold, including appropriate enforcement mechanisms. Measures to reduce risk may include, but are not limited to:

- Use of construction equipment rated as US EPA Tier 4 Interim for equipment of 50 horsepower or more.
- Use of construction equipment fitted with Level 3 Diesel Particulate Filters for all equipment of 50 horsepower or more.

Measures identified in the HRA shall be included in the environmental document and/or incorporated into the site development plan as a component of the proposed project. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the Department of Conservation and Development clearly show incorporation of all applicable mitigation measures.

Impact 5.3-5

AQ-4 Prior to discretionary approval by the County, project applicants for new industrial or warehousing development projects that 1) have the potential to generate 100 or more diesel truck trips per day or have 40 or more trucks with operating diesel-powered transport refrigeration units, and 2) are within 1,000 feet of a sensitive land use (e.g., residential, schools, hospitals, nursing homes) or Impacted Community, as measured from the property line of the project to the property line of the nearest sensitive use, shall submit a health risk assessment (HRA) to the Department of Conservation and Development for review and approval. The HRA shall be prepared in accordance with policies and procedures of the State Office The HRA shall be prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment (OEHHA) and the Bay Area Air Quality Management District (BAAQMD). The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the cumulative and project-level incremental cancer risk, noncancer hazard index, and/or $PM_{2.5}$ exceeds the respective threshold, as established by BAAQMD (all areas of the unincorporated County) and project-level risk of six in one million in Impacted Communities, BAAQMD's Overburdened Communities, and within 1,000 feet of a BAAQMD Overburdened Community; ten in a million in all other areas; $PM_{2.5}$ emissions that exceed 0.3 $\mu g/m^3$; or the appropriate noncancer hazard index exceeds 1.0, the project applicant will be required to identify best available control technologies for toxics (T-BACTs) and appropriate enforcement mechanisms, and demonstrate that they are capable of reducing potential cancer, noncancer risks, and $PM_{2.5}$ to an acceptable level. T-BACTs may include but are not limited to:

- Restricting idling on-site beyond Air Toxic Control Measures idling restrictions

- Electrifying warehousing docks
- Requiring use of newer equipment
- Requiring near-zero or zero-emission trucks for a portion of the vehicle fleet based on opening year.
- Truck Electric Vehicle (EV) Capable trailer spaces.
- Restricting off-site truck travel through the creation of truck routes.

T-BACTs identified in the HRA shall be identified as mitigation measures in the environmental document and/or incorporated into the site plan.

5.3.8 Level of Significance After Mitigation

Impact 5.3-2

Development in accordance with the proposed project would generate short-term emissions that would exceed BAAQMD's regional significance thresholds and cumulatively contribute to the nonattainment designations of the SFBAAB. Mitigation Measure AQ-1 would reduce construction-related air pollutant emissions to the extent feasible. However, individual projects accommodated under the proposed project may exceed the BAAQMD regional significance thresholds. Therefore, Impact 5.3-2 would remain ***significant and unavoidable***.

Impact 5.3-3

Development in accordance with the proposed project would generate long-term emissions that would exceed BAAQMD's regional significance thresholds and cumulatively contribute to the nonattainment designations of the SFBAAB. Mitigation Measure AQ-2 would reduce air pollutant emissions to the extent feasible. However, Impact 5.3-3 would remain ***significant and unavoidable***.

Contributing to the nonattainment status would also contribute to elevating health effects associated to these criteria air pollutants. Known health effects related to ozone include worsening of bronchitis, asthma, and emphysema and a decrease in lung function. Health effects associated with particulate matter include premature death of people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, decreased lung function, and increased respiratory symptoms. Reducing emissions would further contribute to reducing possible health effects related to criteria air pollutants.

It is speculative for this broad-based policy plan to determine how exceeding the regional thresholds would affect the number of days the region is in nonattainment since mass emissions are not correlated with concentrations of emissions, or how many additional individuals in the air basin would be affected by the health effects cited above.

This EIR quantifies the increase in criteria air pollutants emissions in the unincorporated county. However, at a programmatic level analysis, it is not feasible to quantify the increase in TACs from stationary sources associated with the proposed project or meaningfully correlate how regional criteria air pollutant emissions above the BAAQMD significance thresholds correlate with basinwide health impacts.

To determine cancer and noncancer health risk, the location, velocity of emissions, meteorology and topography of the area, and locations of receptors are equally important as model parameters as the quantity of TAC emissions. The white paper in Appendix C "We Can Model Regional Emissions, But Are the Results Meaningful for CEQA" describe several of the challenges of quantifying local effects—particularly health risks—for large-scale, regional projects, and these are applicable to both criteria air pollutants and TACs. Similarly, the two amicus briefs filed by the air districts on the Friant Ranch case (see Appendix 5.3-1) describe two positions regarding CEQA requirements, modeling feasibility, variables, and reliability of results for determining specific health risks associated with criteria air pollutants. The discussions also include the distinction between criteria air pollutant emissions and TACs with respect to health risks. The following summarizes major points about the infeasibility of assessing health risks of criteria air pollutant emissions and TACs associated with implementation of a general plan.

To achieve and maintain air quality standards, BAAQMD has established numerical emission indicators of significance for regional and localized air quality impacts for both construction and operational phases of a local plan or project. BAAQMD has established the thresholds based on "scientific and factual data that is contained in the federal and state Clean Air Acts" and recommends "that these thresholds be used by lead agencies in making a determination of significance." The numerical emission indicators are based on the recognition that the air basin is a distinct geographic area with a critical air pollution problem for which ambient air quality standards have been promulgated to protect public health. The thresholds represent the maximum emissions from a plan or project that are expected not to cause or contribute to an exceedance of the most stringent applicable national or state ambient air quality standard. By analyzing the plan's emissions against the thresholds, an EIR assesses whether these emissions directly contribute to any regional or local exceedances of the applicable ambient air quality standards and exposure levels.

BAAQMD currently does not have methodologies that would provide the County with a consistent, reliable, and meaningful analysis to correlate specific health impacts that may result from a proposed project's mass emissions.[9] For criteria air pollutants, exceedance of the regional significance thresholds cannot be used to correlate a project to quantifiable health impacts unless emissions are sufficiently high to use a regional model. BAAQMD has not provided methodology to assess the specific correlation between mass emissions generated

[9] In April 2019, the Sacramento Metropolitan Air Quality Management District (SMAQMD) published an Interim Recommendation on implementing Sierra Club v. County of Fresno (2018) 6 Cal.5th 502 ("Friant Ranch") in the review and analysis of proposed projects under CEQA in Sacramento County. Consistent with the expert opinions submitted to the court in Friant Ranch by the San Joaquin Valley Air Pollution Control District (SJVAPCD) and South Coast AQMD, the SMAQMD guidance confirms the absence of an acceptable or reliable quantitative methodology that would correlate the expected criteria air pollutant emissions of projects to likely health consequences for people from project-generated criteria air pollutant emissions. The SMAQMD guidance explains that while it is in the process of developing a methodology to assess these impacts, lead agencies should follow the Friant Court's advice to explain in meaningful detail why this analysis is not yet feasible. Since this interim memorandum SMAQMD has provided methodology to address health impacts. However, a similar analysis is not available for projects within the Bay Area.

and their effect on health (see Appendix C: San Joaquin Valley Air Pollution Control District's amicus brief, and South Coast AQMD's amicus brief).

Ozone concentrations depend on a variety of complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Secondary formation of particulate matter (PM) and ozone can occur far from sources as a result of regional transport due to wind and topography (e.g., low-level jet stream). Photochemical modeling depends on all emission sources in the entire domain (i.e., modeling grid). Low resolution and spatial averaging produce "noise" and modeling errors that usually exceed individual source contributions. Because of the complexities of predicting ground-level ozone concentrations in relation to the National and California AAQS, it is not possible to link health risks to the magnitude of emissions exceeding the significance thresholds.

Current models used in CEQA air quality analyses are designed to estimate potential project construction and operation emissions for defined projects. The estimated emissions are compared to significance thresholds, which are keyed to reducing emissions to levels that will not interfere with the region's ability to attain the health-based standards. This serves to protect public health in the overall region, but there is currently no CEQA methodology to determine the impact of emissions (e.g., pounds per day) on future concentration levels (e.g., parts per million or micrograms per cubic meter) in specific geographic areas. CEQA thresholds, therefore, are not specifically tied to potential health outcomes in the region.

The EIR must provide an analysis that is understandable for decision making and public disclosure. Regional-scale modeling may provide a technical method for this type of analysis, but it does not necessarily provide a meaningful way to connect the magnitude of a project's criteria pollutant emissions to health effects without speculation. Additionally, this type of analysis is not feasible at a general plan level because the location of emissions sources and quantity of emissions are not known. However, because cumulative development within the county would exceed the regional significance thresholds, the proposed project could contribute to an increase in health effects in the basin until the attainment standards are met in the Air Basin.

Impact 5.3-4

Mitigation Measure AQ-3 would require preparation of a construction health risk assessment (HRA) that would identify measures that would reduce DPM and $PM_{2.5}$ emissions below the BAAQMD significance thresholds by requiring use of newer, lower emitting construction equipment, and would not expose sensitive receptors to substantial pollutant concentrations. Therefore, Impact 5.3-4 would be *less than significant* with mitigation incorporated.

Impact 5.3-5

Development allowed by the proposed General Plan could result in new sources of criteria air pollutant emissions and/or TACs near existing or planned sensitive receptors. Review of development projects by BAAQMD for permitted sources of air toxics (e.g., industrial facilities, dry cleaners, and gasoline dispensing facilities), in addition to proposed General Plan policies and actions, would ensure that health risks are minimized. Additionally, Mitigation Measure AQ-4 would ensure mobile sources of TACs not covered under BAAQMD permits are considered during subsequent project-level review by the County. Individual

development projects would be required to achieve the incremental risk thresholds established by BAAQMD; therefore, project-level impacts would be less than significant. However, cumulative construction and operation of these projects in areas with high background risk could contribute to significant cumulative risk in the Bay Area that could affect sensitive populations and disadvantaged communities. As a result, Impact 5.3-5 would remain ***significant and unavoidable***.

5.3.9 References

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5. Environmental Analysis
AIR QUALITY

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APPENDIX C:
REVISED APPENDIX 5.3-1, *AIR QUALITY AND GREENHOUSE GAS EMISSIONS DATA* OF THE DEIR

Land Use Statistics - Contra Costa County

	Existing Conditions	Buildout Estimates	Projected Growth (Proposed Project)	
	2019	2045	2019-2045	%
Housing Units	60,320	83,500	23,180	38%
Population	174,150	239,720	65,570	38%
Employment	38,760	48,150	9,390	24%
Service Population	**212,910**	**287,870**	**74,960**	35%

AQMP Consistency Analysis

Comparison of the Change in Population and VMT in Contra Costa (O-D Method)

Category	Existing	2045 Proposed	2045 Change from Existing	
			Change	Percent
Population	174,150	239,720	65,570	38%
Employment	38,760	48,150	9,390	24%
SP	212,910	287,870	74,960	35%
VMT per Day	3,530,197	4,272,206	742,009	21%
VMT/person	20.3	17.8	-2.4	-12%
VMT/SP	16.6	14.8	-1.7	-10%

Note Origin-Destination (O-D) Methodology is not the same methodology for SB 743, which considers only commute-trip VMT.

Modeling of vehicle miles traveled (VMT) is provided by Fehr and Peers is based on the Contra Costa County Transportation Authority's Contra Costa Transportation Analysis Guidelines. VMT from passenger vehicles and trucks that have an origin or destination in the County using a transportation origin-destination methodology. Accounting of VMT is based on the recommendations of CARB's Regional Targets Advisory Committee (RTAC) created under Senate Bill 375 (SB 375). For accounting purposes, there are three types of trips:

» Vehicle trips that originated and terminated within the County (Internal-Internal, I-I). Using the accounting rules established by RTAC, 100 percent of the length of these trips, and their emissions, are attributed to the County.

» Vehicle trips that either originated or terminated (but not both) within the County (Internal-External or External-Internal, I-X and X-I). Using the accounting rules established by RTAC, 50 percent of the trip length for these trips is attributed to the County.

» Vehicle trips that neither originated nor terminated within the County. These trips are commonly called pass-through trips (External-External, X-X). Using the accounting rules established by RTAC, these trips are not counted towards the County's VMT or emissions.

Contra Costa Community GHG Emissions Inventory and Forecast

Category					Business-As-Usual				Business-As-Usual			
	2005		Existing (2019)		2030		Change from Existing (2030)		2045		Change from Existing (2045)	
	TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	
On-Road Transportation	628,200	49%	464,040	47%	542,020	48%	77,980		605,080	47%	141,040	30%
Residential Energy	294,930	23%	191,780	19%	217,710	19%	25,930		259,380	20%	67,600	35%
Nonresidential Energy	118,740	9%	85,390	9%	93,590	8%	8,200		106,070	8%	20,680	24%
Solid Waste	243,940	19%	220,760	22%	229,450	20%	8,690		260,490	20%	39,730	18%
Agriculture	33,350	3%	36,130	4%	34,770	3%	-1,360		33,410	3%	-2,720	-8%
Off-road Equipment	34,160	3%	54,010	5%	69,520	6%	15,510		76,100	6%	22,090	41%
Water and Wastewater	8,080	1%	4,870	0%	5,530	0%	660		6,590	1%	1,720	35%
BART	1,040	0%	190	0%	220	0%	30		260	0%	70	37%
Land Use and Sequestration	-70,860	-5%	-70,860	-7%	-67,580	-6%	3,280		-58,890	-5%	11,970	-17%
Total Community Emissions (BAU)	**1,291,580**	100%	**986,310**	100%	**1,125,230**	100%	**138,920**		**1,288,490**	100%	**302,180**	31%
Total Community Emissions with State Actions	**NA**		**NA**		**961,860**		**-24,450**		**877,010**		**-109,300**	
Residents	154,270		174,150		199360				239,720		65,570	38%
$MTCO_2e$/capita	8.4		5.7		5.6				5.4		-0.3	-5%
Trajectory to AB 32, SB 32 and AB 1279					**658,700**	40% below 1990 levels			**164,680**	85% below 1990 levels		
Achieves Target without State Actions?					**No**				**No**			
Reductions from State Actions					-163,370				-411,480			
Reductions from existing local actions					-4,390				-2,590			
Reductions from CAP GHG Reduction Strategies					-318,010				-711,290			
Total GHG emissions with Existing and Planned Actions & CAP GHG Reduction Strategies					**639,460**				**163,130**			
$MTCO_2e$/capita					**3.21**				**0.68**			
Achieves Target with Existing and Planned Actions?					**Yes**				**Yes**			

Source: Based on the emissions inventory and forecast being conducted for the County's Climate Action and Adapation Plan.

Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC Sixth Assessment Report (AR6). BAU = Business-As-Usual.

The emissions inventory and forecast is based on activity data for Contra Costa County. This emissions inventory methodology identifies GHG emissions produced within a jurisdiction and captures direct and indirect emissions generated by land uses in a community. The activity data methodology allows a direct comparison between a community's GHG emissions and that identified by CARB in the SB 32 and AB 1279 inventory and forecast prepared for the scoping plan. Unlike a "consumption-based" GHG emissions inventory, an activity-based emissions inventory does not capture lifecycle emissions associated with consumptions of goods. While a consumption-based emissions inventory approach may document GHG emissions associated with the final demand (regardless of where the were generated), a consumption-based emissions inventory excludes emissions associated with products produced within the jurisdiction but consumed elsewhere. For these reasons, an activity-based emissions inventory was determined to be most applicable for determining significant impacts under CEQA.

Unincorporated Contra Costa County GHG emissions in 2005 were 1,291,580 MTCO2e, translating to a 1990 GHG emissions level of 1,097,840 MTCO2e

Note: Excludes GHG emissions natural gas use from Permitted Sources within the County

County of Contra Costa Community Criteria Air Pollutant Emissions Inventory and Forecast

Sources

[1] Source: Fehr and Peers 2023; EMFAC2021 Version 1.0.2 Emissions Database (County - Contra Costa)

[2] Sources: Natural Gas Use based on the Climate Action and Adaptation Plan. CalEEMod User's Guide for natural gas criteria air pollutant emission rates. Excludes criteria air pollutant emissions natural gas use from Permitted Sources within the County.

[3] Source: OFFROAD 2021.

[4] Source: CalEEMod User's Guide

EXISTING (2019)

Phase	Existing Criteria Air Pollutant Emissions (lbs/day)				Existing Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	234	1,193	151	57	41	207	26	10
Energy[2]	60	1,129	84	84	11	206	15	15
Residential Fuels (wood, kerosene, propane)	4,152	84	629	629	758	15	115	115
Offroad Equipment[3]	17	16	1	1	3	3	0	0
Consumer Products[4]	2,432				444			
Total	**6,895**	**2,422**	**865**	**771**	**1,256**	**431**	**156**	**140**

EXISTING LAND USES (2045 Emission Rates)

Phase	Existing (2045) Criteria Air Pollutant Emissions (lbs/day)				Existing (2045) Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	47	201	136	44	8	35	24	8
Energy[2]	60	1,129	84	84	11	206	15	15
Residential Fuels (wood, kerosene, propane)	4,152	84	629	629	758	15	115	115
Offroad Equipment[3]	17	16	1	1	3	3	0	0
Consumer Products[4]	2,432				444			
Total	**6,709**	**1,430**	**850**	**758**	**1,224**	**259**	**154**	**138**

Year 2045

Phase	Project (2045) Criteria Air Pollutant Emissions(lbs/day)				Project (2045) Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	57	247	164	53	10	43	28	9
Energy[2]	70	1,307	98	98	13	239	18	18
Residential Fuels (wood, kerosene, propane)	4,152	84	629	629	758	15	115	115
Offroad Equipment[3]	23	17	1	1	4	3	0	0
Consumer Products[4]	3,730				681			
Total	**8,032**	**1,656**	**891**	**780**	**1,465**	**300**	**161**	**142**

County of Contra Costa Community Criteria Air Pollutant Emissions Inventory and Forecast

Net Change (No Project)

Phase	Net Change (2040-2040 No Project) Criteria Air Pollutant Emissions (lbs/day)				Net Change (2040-2040 No Project) Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	10	46	28	9	2	8	5	2
Energy[2]	10	178	13	13	2	33	2	2
Residential Fuels (wood, kerosene, propane)	0	0	0	0	0	0	0	0
Offroad Equipment[3]	5	1	0	0	1	0	0	0
Consumer Products[4]	1,298				237			
Total	**1,323**	**225**	**42**	**23**	**241**	**41**	**7**	**4**
BAAQMD THRESHOLD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Increase from Baseline?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

NET CHANGE (from Existing)

Phase	Net Change (2045-Existing) Criteria Air Pollutant Emissions(lbs/day)				Net Change (2045-Existing) Criteria Air Pollutant Emissions (tons/year)			
	VOC	NO_X	PM_{10}	$PM_{2.5}$	VOC	NO_X	PM_{10}	$PM_{2.5}$
Transportation[1]	-176	-946	13	-4	-31	-164	2	-1
Energy[2]	10	178	13	13	2	33	2	2
Residential Fuels (wood, kerosene, propane)	0	0	0	0	0	0	0	0
Offroad Equipment[3]	5	1	0	0	1	0	0	0
Consumer Products[4]	1,298	0	0	0	237	0	0	0
Total	**1,137**	**-766**	**26**	**10**	**209**	**-131**	**5**	**2**
BAAQMD THRESHOLD	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Increase from Existing	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**

Criteria Air Pollutants from Natural Gas

Rate	lbs/MMBTU					
Natural Gas	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Residential	0.005	0.092	0.039	0.001	0.007	0.007
Non-Residential	0.005	0.098	0.082	0.001	0.007	0.007
Sources CalEEMod Version 2022.1, 2022, Appendix C. https://www.caleemod.com/documents/handbook/appendices/appendix_c.pdf						

	With State Actions	
Contra Costa	Existing	Year 2045
	Therms	
Residential	30,100,640	35,500,210
Nonresidential	13,784,410	15,356,900
Total	**43,885,050**	**50,857,110**

Natural Gas	Existing tons/year					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Residential	8	138	59	2	11	11
Nonresidential	3	68	57	1	5	5
TOTAL	**11**	**206**	**115**	**2**	**15**	**15**

Natural Gas	2045 tons/year					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Residential	9	163	69	2	12	12
Nonresidential	4	75	63	1	5	5
TOTAL	**13**	**239**	**132**	**3**	**18**	**18**

Fuel Use for Residential Homes

Emission Factors

Source: CalEEMod 2022 User's Guide and 2018 US Energy Information Administration. Residential Energy Consumption Survey.

	Unit	ROG lbs/unit	NOx lbs/unit	CO lbs/unit	SO2 lbs/unit	PM10 lbs/unit	PM2.5 lbs/unit
Propane	MMBTU	0.011	0.142	0.082	0	0.008	0.008
Wood	Tons	229	2.6	252.6	0.4	34.6	34.6

Source Kerosene: AP 42. Volume I. 1.3, Fuel Oil Combustion.

	Unit	ROG lbs/unit	NOx lbs/unit	CO lbs/unit	SO2 lbs/unit	PM10 lbs/unit	PM2.5 lbs/unit
Kerosene (Residential Furnace)	1000 gallons	NA	18	5	0.568	0.4	0.4

Assumes low-sulfur kerosene in California with a sulfur content of no more than 0.04% by weight. Assume PM2.5 is 100% of PM10

Activity Data - Residential Fuel Use

Activity Data Source: Contra Costa County Climate Action and Adaptation Plan.

Conversions Factors: California Air Resources Board. 2010, May. Local Government Operations Protocol, for the quantification and reporting of greenhouse gas emissions inventories. Version 1.1.

Wood Burning	**Existing**	**Year 2045**	**Existing**	**Year 2045**
	MMBTU		**Tons**	
Wood Burning	101,710	101710	6,613	6,613
Note: residential woodburning is decreasing in the County				

Kerosene	**Existing**	**Year 2045**	**Existing**	**Year 2045**
	Gallons		**1000 Gallons**	
Residential - Kerosene	16,320	16,320	16	16

Propane	**Existing**	**Year 2045**	**Existing**	**Year 2045**
	Gallons		**MMBTU**	
Residential - Propane	1,021,340	1,021,340	92,942	92,942

Fuel Use	**Existing tons/year**					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Woodburning	757	9	835	1	114	114
Kerosene	NA	0.147	0.041	0.005	0.003	0.003
Propane	1	7	4	0	0	0
TOTAL	**758**	**15**	**839**	**1**	**115**	**115**

Natural Gas	**2045 tons/year**					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Woodburning	757	9	835	1	114	114
Kerosene	NA	0.147	0.041	0.005	0.003	0.003
Propane	1	7	4	0	0	0
TOTAL	**758**	**15**	**839**	**1**	**115**	**115**

Area Sources - Residential Consumer Product Use[a]

Emissions = EF x Building Area

EF = 2.14E-05 lbs/sqft/day

Sources/Notes:

a. California Emissions Estimator Model, Version 2021.1, Users Guide. Appendix D3.

AVERAGE HOUSING SQFT ASSUMPTIONS

Year Structure was Built	Percent of Housing Stock [a]	Average Square Feet of New Single Family Homes[b]	Average Square Feet (Weighted)
2014 or Later	1.4%	2,617	37
2010 to 2013	1.8%	2,467	44
2000 to 2009	11.8%	2,404	284
1990 to 1999	12.4%	2,116	262
1980 to 1989	15.9%	1,819	289
1970 to 1979	18.9%	1,699	321
1960 to 1969	14.1%	1,715	242
1950 to 1959	12.8%	1,715	220
1940 to 1949	6.5%	1,715	111
1939 or earlier	4.3%	1,715	74
	100%		1,884

Sources/Notes: https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/

a. United States Census Bureau, Selected Housing Characteristics, Contra Costa County, 2019. Table DP04. American Community Survey 5-Year Estimates, Year structure built.

https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2019/

b. United States Census Bureau, Characteristics of New Housing, Characteristics of New Single-Family Houses Completed, Median and Average Square Feet by Location. https://www.census.gov/construction/chars/pdf/c25ann2016.pdf

	2019 Existing	2045
	TOTAL	TOTAL
Housing Units	60,320	83,500
Residential SQFT	113,646,640	174,300,973
lbs VOC per day	2,432	3,730
tons VOC/year	444	681

Notes:

[1] New housing units constructed post-2014 assumed to be 2,617 square feet (based on Source 2).

[2] Daily emissions converted to annual emissions by multiplying by 365 days/year.

Area Sources

Source: OFFROAD2021. https://arb.ca.gov/emfac/emissions-inventory/2f6c8fa1b8ec8bd9f8a4f23b3d84c74a77f77161

OFFROAD2021 Estimate based on:

Agricultural Equipment	Based on agricultural acreage within Contra Costa County
Construction Equipment	Based on housing permits in Contra Costa County
Light Commercial and Industrial Equipment	Based on employment in Contra Costa County
Lawn & Garden	Based on housing units in Contra Costa County

Sources

Farmland Acreage

Source: Department of Conservation and Development, Contra Costa County, 2022. 2019 Report on Agriculture. https://www.contracosta.ca.gov/DocumentCenter/View/70326/2019-Crop-Report-.

Source: Department of Conservation and Development, Contra Costa General Plan Land Use Element Map. https://www.contracosta.ca.gov/DocumentCenter/View/30949/Land-Use-Element-Map-PDF?bidId=.

Source: Buildout Land Use Map.

Existing Farmland (unincorporated)	117,306	
Farmland Acreage at Buildout at 2045	107,866	92%
Percent Reduction	-8.05%	

Construction (Housing Permits)

Source: Housing and Urban Development (HUD). 2022, Accessed June 23. SOCDS Building Permits Database. https://socds.huduser.gov/permits/

Employment

Source. U.S. Census Bureau. Longitudinal Employer-Household Dynamics. 2020 Q1. http://lehd.ces.census.gov/

Source: Fehr and Peers 2023

2019 Existing		**ROG Exhaust**	**NO_x Exhaust**	**CO Exhaust**	**SO_2 Exhaust**	**PM_{10} Exhaust**	**$PM_{2.5}$ Exhaust***
		Tons/year					
Agricultural		0.04	0.24	0.24	0.00	0.01	0.01
Construction Equipment		0.20	1.69	2.45	0.00	0.09	0.08
Lawn & Garden		2.12	0.25	20.96	0.00	0.02	0.02
Light Commercial / Industrial Equipment		0.78	0.75	31.60	0.00	0.02	0.01
TOTAL		3	3	55	0	0.14	0.12

2045		**ROG Exhaust**	**NO_x Exhaust**	**CO Exhaust**	**SO2 Exhaust**	**PM10 Exhaust**	**PM2.5 Exhaust***
	Forecast Adjusted for:	Tons/year					
Agricultural	Based on a reduction in Agricultural land in the County	0.04	0.22	0.22	0.00	0.01	0.01
Construction Equipment	Similar to historic	0.20	1.69	2.45	0.00	0.09	0.08
Lawn & Garden	Proportional to housing growth	2.93	0.35	29.01	0.00	0.03	0.03
Light Commercial / Industrial Equipment	Proportional to employment growth	0.97	0.93	39.25	0.00	0.02	0.02
TOTAL		4	3	71	0	0.16	0.13

Contra Costa County OFFROAD2021

Source: https://arb.ca.gov/emfac/emissions-inventory/2f6c8fa1b8ec8bd9f8a4f23b3d84c74a77f77161
Construction includes: Over 25 horsepower, self-propelled, diesel equipment only subjected to In-Use Regulation; AND Under 25 horsepower equipment not subject to the In-Use Regulation

Model Output: OFFROAD2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: Contra Costa
Calendar Year: 2019
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Agriculture

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption (g/yr)	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd
Contra Costa	2019	Agricultural - Agricultural Tractors	Aggregate	Aggregate	Gasoline	46.599	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Agricultural Tractors	Aggregate	Aggregate	Diesel	775,488.169	0.030	0.186	0.141	0.000	0.011	0.010
Contra Costa	2019	Agricultural - ATVs	Aggregate	Aggregate	Gasoline	20,703.139	0.006	0.003	0.060	0.000	0.000	0.000
Contra Costa	2019	Agricultural - ATVs	Aggregate	Aggregate	Diesel	10,088.287	0.000	0.002	0.002	0.000	0.000	0.000
Contra Costa	2019	Agricultural - ATVs	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Bale Wagons (Self Propelled)	Aggregate	Aggregate	Diesel	2,582.452	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Balers (Self Propelled)	Aggregate	Aggregate	Diesel	203.530	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Combine Harvesters	Aggregate	Aggregate	Diesel	37,171.700	0.001	0.008	0.005	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Construction Equipment	Aggregate	Aggregate	Diesel	19,338.362	0.001	0.005	0.003	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Cotton Pickers	Aggregate	Aggregate	Diesel	723.517	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Forage & Silage Harvesters	Aggregate	Aggregate	Diesel	7,061.408	0.000	0.002	0.001	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Forklifts	Aggregate	Aggregate	Diesel	15,732.147	0.001	0.004	0.003	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Hay Squeeze/Stack Retriever	Aggregate	Aggregate	Diesel	2,469.114	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Nut Harvester	Aggregate	Aggregate	Diesel	20,251.292	0.001	0.006	0.004	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Other Harvesters	Aggregate	Aggregate	Diesel	30,376.555	0.001	0.007	0.005	0.000	0.000	0.000
Contra Costa	2019	Agricultural - Sprayers/Spray Rigs	Aggregate	Aggregate	Diesel	41,548.475	0.002	0.012	0.008	0.000	0.001	0.001
Contra Costa	2019	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	Aggregate	Diesel	7,975.782	0.000	0.002	0.001	0.000	0.000	0.000
TOTAL AGRICULTURAL OFFROAD (tons/yr)						991,760.528	0.042	0.238	0.235	0.000	0.014	0.013
ESTIMATED Unincorporated Contra Costa County (tons/year)							0.028	0.161	0.159	0.000	0.009	0.009
ESTIMATED Unincorporated Contra Costa County (lbs/year)							56.8	321.3	317.5	0.4	18.8	17.3

AGRICULTURAL ACREAGE	**2019**
Farmland Acreage in Contra Costa County	173,924
Farmland Acreage in unincorporated Contra Costa County (excludes Grazing Land)	117,306
Percent in the unincorporated County	**67.4**%

Construction and Mining

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption (g/yr)	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd
Contra Costa	2019	Construction and Mining - Bore/Drill Rigs	Aggregate	Aggregate	Diesel	81,901.417	0.001	0.010	0.008	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Cranes	Aggregate	Aggregate	Diesel	194,908.423	0.005	0.056	0.032	0.000	0.003	0.002
Contra Costa	2019	Construction and Mining - Crawler Tractors	Aggregate	Aggregate	Diesel	481,723.300	0.012	0.129	0.068	0.000	0.006	0.006
Contra Costa	2019	Construction and Mining - Excavators	Aggregate	Aggregate	Diesel	866,786.580	0.011	0.118	0.096	0.000	0.005	0.005
Contra Costa	2019	Construction and Mining - Graders	Aggregate	Aggregate	Diesel	326,083.726	0.009	0.096	0.041	0.000	0.004	0.004
Contra Costa	2019	Construction and Mining - Misc - Asphalt Pavers	Aggregate	Aggregate	Gasoline	5,011.175	0.000	0.001	0.018	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Bore/Drill Rigs	Aggregate	Aggregate	Gasoline	3,783.827	0.000	0.000	0.005	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Bore/Drill Rigs	Aggregate	Aggregate	Diesel	29.079	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Cement And Mortar Mixers	Aggregate	Aggregate	Gasoline	7,415.464	0.004	0.002	0.117	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Cement And Mortar Mixers	Aggregate	Aggregate	Diesel	42.381	0.000	0.001	0.001	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Gasoline	16,131.027	0.003	0.003	0.111	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Diesel	1,417.242	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Cranes	Aggregate	Aggregate	Gasoline	3,420.050	0.000	0.000	0.006	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Crushing/Proc. Equipment	Aggregate	Aggregate	Gasoline	44.119	0.000	0.000	0.001	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Gasoline	5,644.449	0.001	0.001	0.048	0.000	0.001	0.000
Contra Costa	2019	Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Diesel	3.394	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Excavators	Aggregate	Aggregate	Diesel	24.291	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Other	Aggregate	Aggregate	Gasoline	5,186.650	0.000	0.000	0.004	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Other	Aggregate	Aggregate	Diesel	6,506.415	0.000	0.003	0.002	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Pavers	Aggregate	Aggregate	Diesel	6.373	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Gasoline	16,171.089	0.007	0.005	0.201	0.000	0.002	0.002
Contra Costa	2019	Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Diesel	10.849	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Gasoline	37,749.934	0.010	0.007	0.324	0.000	0.003	0.002
Contra Costa	2019	Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Diesel	1,924.664	0.000	0.001	0.001	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Gasoline	15,381.507	0.002	0.002	0.069	0.000	0.001	0.000
Contra Costa	2019	Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Diesel	186.465	0.001	0.003	0.002	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Rough Terrain Forklifts	Aggregate	Aggregate	Gasoline	24,119.200	0.001	0.003	0.031	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Rubber Tired Loaders	Aggregate	Aggregate	Gasoline	12,738.500	0.000	0.001	0.019	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Rubber Tired Loaders	Aggregate	Aggregate	Diesel	3.958	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Gasoline	1,145.405	0.000	0.000	0.010	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Diesel	30,728.813	0.002	0.014	0.012	0.000	0.001	0.000
Contra Costa	2019	Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Gasoline	38,112.542	0.003	0.003	0.103	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Diesel	1,283.012	0.004	0.027	0.015	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Surfacing Equipment	Aggregate	Aggregate	Gasoline	5,921.492	0.004	0.003	0.093	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Tampers/Rammers	Aggregate	Aggregate	Gasoline	6,793.058	0.001	0.001	0.057	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Gasoline	8,176.000	0.000	0.000	0.012	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	115.746	0.000	0.002	0.001	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Gasoline	28,545.023	0.003	0.004	0.132	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Diesel	156.568	0.000	0.003	0.002	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Off-Highway Tractors	Aggregate	Aggregate	Diesel	183,253.256	0.004	0.032	0.026	0.000	0.002	0.002
Contra Costa	2019	Construction and Mining - Off-Highway Trucks	Aggregate	Aggregate	Diesel	1,099,345.885	0.019	0.209	0.106	0.000	0.007	0.007
Contra Costa	2019	Construction and Mining - Other	Aggregate	Aggregate	Diesel	245,374.907	0.005	0.051	0.032	0.000	0.003	0.002
Contra Costa	2019	Construction and Mining - Pavers	Aggregate	Aggregate	Diesel	57,796.645	0.001	0.012	0.009	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Paving Equipment	Aggregate	Aggregate	Diesel	33,624.852	0.001	0.006	0.005	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Rollers	Aggregate	Aggregate	Diesel	149,852.204	0.004	0.031	0.029	0.000	0.002	0.002
Contra Costa	2019	Construction and Mining - Rough Terrain Forklifts	Aggregate	Aggregate	Diesel	162,677.987	0.002	0.024	0.030	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Rubber Tired Dozers	Aggregate	Aggregate	Diesel	96,167.373	0.003	0.035	0.024	0.000	0.002	0.002
Contra Costa	2019	Construction and Mining - Rubber Tired Loaders	Aggregate	Aggregate	Diesel	1,321,485.960	0.027	0.288	0.164	0.000	0.013	0.012
Contra Costa	2019	Construction and Mining - Scrapers	Aggregate	Aggregate	Diesel	860,698.145	0.018	0.213	0.126	0.000	0.009	0.008
Contra Costa	2019	Construction and Mining - Skid Steer Loaders	Aggregate	Aggregate	Diesel	157,579.978	0.002	0.025	0.030	0.000	0.001	0.001
Contra Costa	2019	Construction and Mining - Surfacing Equipment	Aggregate	Aggregate	Diesel	18,084.284	0.000	0.003	0.002	0.000	0.000	0.000
Contra Costa	2019	Construction and Mining - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	1,204,115.588	0.024	0.242	0.222	0.000	0.014	0.013
Contra Costa	2019	Construction and Mining - Trenchers	Aggregate	Aggregate	Diesel	49,764.313	0.002	0.013	0.010	0.000	0.001	0.001

TOTAL CONSTRUCTION OFFROAD (tons/yr)	7,875,154.583	0.199	1.686	2.454	0.002	0.089	0.079
ESTIMATED Unincorporated Contra Costa County (tons/year)		0.019	0.161	0.235	0.000	0.008	0.008
ESTIMATED Unincorporated Contra Costa (lbs/year)		38.0	322.8	469.7	0.4	17.0	15.1

TOTAL UNITS: https://socds.huduser.gov/permits/	2015	2016	2017	2018	2019	Average
Housing Permits in Contra Costa County	2610	2921	1,984	2,607	2,687	2,562
Housing Permits in the Unincorporated Contra Costa County	438	270	284	95	104	238
Percent in the Unincorporated County	17%	9%	14%	4%	4%	**9.6%**

Industrial and Light Commercial

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption (g/yr)	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd
Contra Costa	2019	Industrial - Aerial Lifts	Aggregate	Aggregate	Diesel	40,739.806	0.000	0.005	0.007	0.000	0.000	0.000
Contra Costa	2019	Industrial - Forklifts	Aggregate	Aggregate	Diesel	171,531.023	0.005	0.044	0.037	0.000	0.003	0.003
Contra Costa	2019	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Gasoline	27,350.160	0.003	0.002	0.087	0.000	0.001	0.001
Contra Costa	2019	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Diesel	50.830	0.000	0.001	0.001	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Electric	680.230	0.000	0.000	0.012	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Nat Gas	6,197.700	0.000	0.000	0.016	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Forklifts	Aggregate	Aggregate	Gasoline	849,275.406	0.019	0.086	2.081	0.000	0.001	0.001
Contra Costa	2019	Industrial - Misc - Forklifts	Aggregate	Aggregate	Electric	75.221	0.000	0.000	0.001	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Forklifts	Aggregate	Aggregate	Nat Gas	1,686,500.750	0.000	0.134	1.236	0.000	0.003	0.000
Contra Costa	2019	Industrial - Misc - Other General Industrial Equipment	Aggregate	Aggregate	Gasoline	14,998.942	0.001	0.001	0.083	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Other General Industrial Equipment	Aggregate	Aggregate	Diesel	39.324	0.000	0.001	0.000	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Other Material Handling Equipment	Aggregate	Aggregate	Gasoline	6,365.600	0.000	0.001	0.007	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Sweepers/Scrubbers	Aggregate	Aggregate	Gasoline	48,600.070	0.001	0.004	0.116	0.000	0.000	0.000
Contra Costa	2019	Industrial - Misc - Sweepers/Scrubbers	Aggregate	Aggregate	Diesel	10.074	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Industrial - Other General Industrial Equipment	Aggregate	Aggregate	Diesel	82,844.563	0.002	0.017	0.015	0.000	0.001	0.001
Contra Costa	2019	Industrial - Other Material Handling Equipment	Aggregate	Aggregate	Diesel	48,571.971	0.001	0.010	0.007	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Gasoline	1,112,785.886	0.137	0.085	7.311	0.000	0.001	0.001
Contra Costa	2019	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Diesel	27,665.687	0.001	0.007	0.007	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Gas Compressors	Aggregate	Aggregate	Nat Gas	334,624.700	0.000	0.019	0.223	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Gasoline	1,799,298.008	0.394	0.152	10.681	0.000	0.002	0.002
Contra Costa	2019	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Diesel	151,301.596	0.005	0.035	0.028	0.000	0.001	0.002
Contra Costa	2019	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Nat Gas	10,760.200	0.000	0.001	0.006	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pressure Washers	Aggregate	Aggregate	Gasoline	786,217.814	0.099	0.045	5.370	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pressure Washers	Aggregate	Aggregate	Diesel	800.157	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pressure Washers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pumps	Aggregate	Aggregate	Gasoline	231,905.284	0.031	0.016	1.070	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Pumps	Aggregate	Aggregate	Diesel	82,584.476	0.003	0.019	0.016	0.000	0.001	0.001
Contra Costa	2019	Light Commercial - Misc - Pumps	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Welders	Aggregate	Aggregate	Gasoline	488,565.970	0.068	0.033	3.147	0.000	0.000	0.000
Contra Costa	2019	Light Commercial - Misc - Welders	Aggregate	Aggregate	Diesel	150,267.006	0.006	0.035	0.034	0.000	0.002	0.002
Contra Costa	2019	Light Commercial - Misc - Welders	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL LIGHT COMMERCIAL + INDUSTRIAL OFFROAD (tons/yr)						8,160,608.454	0.777	0.752	31.598	0.002	0.017	0.015
ESTIMATED Unincorporated Contra Costa County (tons/year)							0.077	0.075	3.150	0.000	0.002	0.001
ESTIMATED Unincorporated Contra Costa (lbs/year)							154.88	150.00	6,300.16	0.32	3.47	2.91

EMPLOYMENT	**2019**
Employment in Contra Costa County	388,796
Employment in Unincorporated Contra Costa County	38,760
Percent in the unincorporated County	**10.0%**

Lawn and Garden

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption (g/yr)	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd
Contra Costa	2019	Lawn and Garden - Misc - Chainsaws	Aggregate	Aggregate	Gasoline	303,129.698	0.380	0.011	1.024	0.000	0.005	0.003
Contra Costa	2019	Lawn and Garden - Misc - Chainsaws	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Chainsaws Preempt	Aggregate	Aggregate	Gasoline	178,035.748	0.330	0.010	0.552	0.000	0.002	0.002
Contra Costa	2019	Lawn and Garden - Misc - Chainsaws Preempt	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Chippers/Stump Grinders	Aggregate	Aggregate	Gasoline	3,056.980	0.000	0.000	0.020	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Chippers/Stump Grinders	Aggregate	Aggregate	Diesel	193.196	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Chippers/Stump Grinders	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Lawn Mowers	Aggregate	Aggregate	Gasoline	717,684.957	0.115	0.058	4.108	0.000	0.003	0.003
Contra Costa	2019	Lawn and Garden - Misc - Lawn Mowers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Leaf Blowers/Vacuums	Aggregate	Aggregate	Gasoline	786,503.248	0.627	0.020	2.812	0.000	0.008	0.006
Contra Costa	2019	Lawn and Garden - Misc - Leaf Blowers/Vacuums	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Other	Aggregate	Aggregate	Gasoline	14,647.182	0.002	0.001	0.093	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Other	Aggregate	Aggregate	Diesel	96.904	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Rear Engine Riding Mowers	Aggregate	Aggregate	Gasoline	1,350,073.976	0.230	0.103	9.284	0.000	0.002	0.001
Contra Costa	2019	Lawn and Garden - Misc - Rear Engine Riding Mowers	Aggregate	Aggregate	Diesel	77,634.324	0.003	0.018	0.011	0.000	0.001	0.000
Contra Costa	2019	Lawn and Garden - Misc - Rear Engine Riding Mowers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Snowblowers	Aggregate	Aggregate	Gasoline	497.356	0.000	0.000	0.004	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Snowblowers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Tillers	Aggregate	Aggregate	Gasoline	13,731.922	0.005	0.001	0.076	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Tillers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Trimmers/Edgers/Brush Cutters	Aggregate	Aggregate	Gasoline	594,440.686	0.403	0.022	2.172	0.000	0.003	0.002
Contra Costa	2019	Lawn and Garden - Misc - Trimmers/Edgers/Brush Cutters	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Contra Costa	2019	Lawn and Garden - Misc - Wood Splitters	Aggregate	Aggregate	Gasoline	126,998.940	0.024	0.009	0.804	0.000	0.000	0.000
TOTAL LAWN & GARDEN (tons/yr)						4,166,725.117	2.119	0.253	20.958	0.001	0.024	0.018
ESTIMATED Unincorporated Contra Costa County (tons/year)							0.309	0.037	3.056	0.000	0.004	0.003
ESTIMATED Unincorporated Contra Costa (lbs/day)							618	74	6,111	0	7	5

HOUSING UNITS	**2019**
Housing Units in Contra Costa County (2019)	413,719
Housing Units in unincorporated Contra Costa County	60,320
Percent in the unincorporated county	**14.6%**

Contra Costa County VMT

Source: Fehr and Peers 2023. Based on the County of Contra Costa Transportation Analysis Guidelines.

	Daily VMT			Total Daily VMT	Total with RTAC	Percent Fleet VMT	Residents	Jobs	Service Population	VMT/SP	VMT/SP w RTAC
	IX	XI	II								
Existing - TOTAL	3,256,431	3,212,745	295,609	6,764,785	3,530,197		174,150	38,760	212,910	31.8	16.6
Passenger Vehicles	3,198,500	3,156,803	293,655	6,648,959	3,471,307	98%					
LHDT	40,753	39,075	1,562	81,390	41,476	1.2%					
MHDT	3,220	3,103	154	6,476	3,315	0.1%					
HHDT	13,958	13,764	238	27,960	14,099	0.4%					
2045	3,889,245	3,826,897	414,135	8,130,277	4,272,206		239,720	48,150	287,870	28.2	14.8
Passenger Vehicles	3,810,521	3,758,120	411,335	7,979,977	4,195,656	98%					
LHDT	55,028	48,113	2,209	105,350	53,780	1.3%					
MHDT	4,527	3,814	227	8,567	4,397	0.1%					
HHDT	19,170	16,850	363	36,383	18,373	0.4%					

Notes: Total may not add to 100% due to rounding.

IX = Internal-External

XI = External- Internal

II = Internal-Internal

Modeling of vehicle miles traveled (VMT) is provided by Fehr and Peers is based on the Contra Costa County Transportation Authority's Contra Costa Transportation Analysis Guidelines. VMT from passenger vehicles and trucks that have an origin or destination in the County using a transportation origin-destination methodology. Accounting of VMT is based on the recommendations of CARB's Regional Targets Advisory Committee (RTAC) created under Senate Bill 375 (SB 375). For accounting purposes, there are three types of trips:

- Vehicle trips that originated and terminated within the County (Internal-Internal, I-I). Using the accounting rules established by RTAC, 100 percent of the length of these trips, and their emissions, are attributed to the County.
- Vehicle trips that either originated or terminated (but not both) within the County (Internal-External or External-Internal, I-X and X-I). Using the accounting rules established by RTAC, 50 percent of the trip length for these trips is attributed to the
- Vehicle trips that neither originated nor terminated within the County. These trips are commonly called pass-through trips (External-External, X-X). Using the accounting rules established by RTAC, these trips are not counted towards the County's

Percent VMT from Housing assumes trip lengths for residential and non-residential land uses are similar.

Contra Costa — TRANSPORTATION SECTOR

Source: EMFAC2021 V. 1.0.2. , Web Database - Emissions Rates. Contra Costa County. Based on the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Global Warming Potentials (GWPs)

Note: MTons = metric tons; CO_2e = carbon dioxide-equivalent.

Criteria Air Pollutant Emissions

	lbs/day					
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Existing	234	1,193	9,689	27	151	57
Existing in year 2045	47	201	3,722	18	136	44
2045	57	247	4,502	22	164	53
Change from Existing Conditions (2019-2045)	-176	-946	-5,188	-5	13	-4
Change from Existing Land Uses (2045 Emission Rates)	-10	-46	-780	-4	-28	-9

	Tons/year					
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Existing	41	207	1,681	5	26	10
Existing in year 2045	8	35	646	3	24	8
2045	10	43	781	4	28	9
Change from Existing Conditions (2019-2045)	-31	-164	-900	-1	2	-1
Change from Existing Land Uses (2045 Emission Rates)	-2	-8	-135	-1	-5	-2

lbs to Tons 2000

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the 2008 Climate Change Scoping Plan Measure Documentation Supplement.

Year 2019 Existing: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.2) Emission Rates, Contra Costa County, Average Speed, Average Fleet

Source: F&P 2023	Small Trucks	Medium Trucks	Heavy Trucks	Passenger Vehicles
Truck Trip Percentage	1.2%	0.1%	0.4%	98.3%
EMFAC Default	3.66%	1.00%	2.63%	92.71%

Daily VMT	**3,530,197**	**lbs/day**

Vehicle Type	Fuel Type	Percent of VMT	Adjusted Percent VMT	ROG	NOx	CO	SOx	PM10	PM2.5
All Other Buses	Diesel	0.02%	0.00%	0.19	1.86	0.46	0.00	0.08	0.07
All Other Buses	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
LDA	Gasoline	48.63%	51.58%	68.99	315.11	4,141.18	11.91	67.14	23.64
LDA	Diesel	0.22%	0.23%	0.60	5.87	6.58	0.04	0.66	0.45
LDA	Electricity	1.15%	1.22%	0.00	0.00	0.00	0.00	1.18	0.34
LDA	Plug-in Hybrid	0.83%	0.88%	0.10	0.24	15.57	0.10	0.87	0.29
LDT1	Gasoline	5.00%	5.30%	19.68	88.23	863.65	1.43	7.92	3.02
LDT1	Diesel	0.00%	0.00%	0.04	0.20	0.24	0.00	0.03	0.03
LDT1	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.01	0.00
LDT1	Plug-in Hybrid	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT2	Gasoline	21.94%	23.27%	34.17	224.61	2,093.94	6.79	32.53	11.50
LDT2	Diesel	0.09%	0.10%	0.12	0.56	1.00	0.02	0.18	0.09
LDT2	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT2	Plug-in Hybrid	0.03%	0.04%	0.00	0.01	0.62	0.00	0.04	0.01
LHD1	Gasoline	1.79%	0.57%	3.06	13.36	68.61	0.42	3.94	1.39
LHD1	Diesel	1.22%	0.39%	7.52	86.51	22.30	0.19	4.46	2.56
LHD2	Gasoline	0.20%	0.06%	0.30	1.45	7.02	0.05	0.51	0.18
LHD2	Diesel	0.45%	0.14%	2.37	22.91	6.40	0.08	1.69	0.90
MCY	Gasoline	0.41%	0.43%	48.53	23.75	561.17	0.06	0.60	0.23
MDV	Gasoline	14.08%	14.94%	41.66	244.37	1,846.10	5.29	21.35	7.64
MDV	Diesel	0.25%	0.27%	0.28	1.94	4.20	0.09	0.49	0.24
MDV	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
MDV	Plug-in Hybrid	0.05%	0.06%	0.01	0.02	1.00	0.01	0.06	0.02
MH	Gasoline	0.08%	0.01%	0.11	0.52	2.93	0.02	0.05	0.02
MH	Diesel	0.03%	0.00%	0.04	1.66	0.15	0.00	0.06	0.05
Motor Coach	Diesel	0.01%	0.00%	0.03	0.69	0.10	0.00	0.03	0.02
OBUS	Gasoline	0.06%	0.01%	0.08	0.57	1.82	0.01	0.04	0.01
PTO	Diesel	0.05%	0.01%	0.28	4.36	1.04	0.01	0.11	0.10
SBUS	Gasoline	0.01%	0.00%	0.08	0.14	1.71	0.00	0.01	0.00
SBUS	Diesel	0.04%	0.01%	0.02	1.65	0.07	0.00	0.03	0.02
SBUS	Natural Gas	0.00%	0.00%	0.00	0.01	0.28	0.00	0.00	0.00
T6 CAIRP Class 4	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Diesel	0.00%	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Diesel	0.01%	0.00%	0.01	0.15	0.02	0.00	0.01	0.01
T6 Instate Delivery Class 4	Diesel	0.03%	0.00%	0.14	1.77	0.37	0.00	0.07	0.06
T6 Instate Delivery Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 5	Diesel	0.03%	0.00%	0.06	0.80	0.15	0.00	0.03	0.02
T6 Instate Delivery Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 6	Diesel	0.06%	0.01%	0.19	2.47	0.50	0.01	0.10	0.08
T6 Instate Delivery Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 7	Diesel	0.01%	0.00%	0.03	0.50	0.09	0.00	0.02	0.02
T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Other Class 4	Diesel	0.10%	0.01%	0.35	5.39	0.98	0.01	0.22	0.19
T6 Instate Other Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Other Class 5	Diesel	0.22%	0.02%	0.28	4.67	0.83	0.02	0.24	0.17
T6 Instate Other Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Instate Other Class 6	Diesel	0.17%	0.02%	0.37	5.82	1.06	0.01	0.26	0.20
T6 Instate Other Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Instate Other Class 7	Diesel	0.11%	0.01%	0.19	3.36	0.54	0.01	0.15	0.11
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Instate Tractor Class 6	Diesel	0.00%	0.00%	0.01	0.10	0.02	0.00	0.01	0.00

T6 Instate Tractor Class 7	Diesel	0.02%	0.00%	0.02	0.48	0.05	0.00	0.01	0.01
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 6	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 OOS Class 7	Diesel	0.01%	0.00%	0.00	0.10	0.01	0.00	0.01	0.00
T6 Public Class 4	Diesel	0.01%	0.00%	0.01	0.63	0.02	0.00	0.01	0.00
T6 Public Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 5	Diesel	0.02%	0.00%	0.01	0.49	0.02	0.00	0.01	0.00
T6 Public Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Public Class 6	Diesel	0.02%	0.00%	0.01	0.98	0.03	0.00	0.01	0.01
T6 Public Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 7	Diesel	0.03%	0.00%	0.03	2.27	0.07	0.00	0.03	0.02
T6 Public Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Utility Class 5	Diesel	0.01%	0.00%	0.00	0.09	0.01	0.00	0.00	0.00
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Diesel	0.00%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Diesel	0.00%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6TS	Gasoline	0.14%	0.01%	0.26	1.35	5.88	0.02	0.06	0.02
T7 CAIRP Class 8	Diesel	0.45%	0.07%	0.47	19.11	1.73	0.08	0.96	0.53
T7 CAIRP Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T7 NNOOS Class 8	Diesel	0.54%	0.08%	0.92	24.43	3.63	0.10	1.42	0.90
T7 NOOS Class 8	Diesel	0.20%	0.03%	0.24	8.64	0.87	0.03	0.43	0.25
T7 Other Port Class 8	Diesel	0.04%	0.01%	0.05	1.95	0.17	0.01	0.07	0.03
T7 POAK Class 8	Diesel	0.14%	0.02%	0.24	8.12	0.77	0.03	0.28	0.13
T7 POAK Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T7 Public Class 8	Diesel	0.07%	0.01%	0.15	11.04	0.48	0.02	0.21	0.11
T7 Public Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T7 Single Concrete/Transit Mix Class 8	Diesel	0.02%	0.00%	0.04	1.00	0.15	0.00	0.06	0.04
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.09	0.00	0.00	0.00
T7 Single Dump Class 8	Diesel	0.12%	0.02%	0.28	7.33	1.06	0.02	0.35	0.23
T7 Single Dump Class 8	Natural Gas	0.01%	0.00%	0.00	0.03	0.52	0.00	0.01	0.00
T7 Single Other Class 8	Diesel	0.11%	0.02%	0.32	7.33	1.20	0.02	0.38	0.26
T7 Single Other Class 8	Natural Gas	0.01%	0.00%	0.00	0.03	0.45	0.00	0.01	0.00
T7 SWCV Class 8	Diesel	0.05%	0.01%	0.02	5.44	0.05	0.02	0.16	0.06
T7 SWCV Class 8	Natural Gas	0.04%	0.01%	0.06	1.27	12.01	0.00	0.12	0.04
T7 Tractor Class 8	Diesel	0.39%	0.06%	0.68	22.30	2.46	0.07	0.95	0.56
T7 Tractor Class 8	Natural Gas	0.03%	0.00%	0.01	0.21	3.70	0.00	0.04	0.01
T7 Utility Class 8	Diesel	0.01%	0.00%	0.00	0.22	0.02	0.00	0.01	0.00
T7IS	Gasoline	0.00%	0.00%	0.02	0.06	0.62	0.00	0.00	0.00
UBUS	Gasoline	0.02%	0.00%	0.00	0.02	0.10	0.00	0.03	0.01
UBUS	Diesel	0.09%	0.01%	0.12	2.16	0.16	0.01	0.16	0.06
UBUS	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL	100.00%	100.00%	234	1,193	9,689	27	151	57

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Contra Costa
Calendar Year: 2019
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

		g/mile																	
Vehicle Category	Fuel	ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	VMT Total	% of VMT
All Other Buses	Diesel	7.83E-01	7.62E+00	1.90E+00	1.20E-02	2.88E-01	1.20E-02	4.61E-02	3.47E-01	2.76E-01	3.00E-03	1.61E-02	2.95E-01	1.27E+03	3.64E-02	2.00E-01	5,401	0.02%
All Other Buses	Natural Gas	1.04E-02	3.00E-01	3.09E+00	0.00E+00	5.82E-04	1.20E-02	4.61E-02	5.87E-02	5.35E-04	3.00E-03	1.61E-02	1.97E-02	1.09E+03	7.29E-01	2.21E-01	92	0.00%
LDA	Gasoline	1.72E-02	7.85E-02	1.03E+00	2.97E-03	1.46E-03	8.00E-03	7.26E-03	1.67E-02	1.35E-03	2.00E-03	2.54E-03	5.89E-03	3.00E+02	4.07E-03	6.89E-03	12,708,469	48.63%
LDA	Diesel	3.32E-02	3.24E-01	3.63E-01	2.30E-03	2.12E-02	8.00E-03	7.27E-03	3.65E-02	2.03E-02	2.00E-03	2.55E-03	2.48E-02	2.43E+02	1.54E-03	3.83E-02	57,342	0.22%
LDA	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-03	4.36E-03	1.24E-02	0.00E+00	2.00E-03	1.53E-03	3.53E-03	0.00E+00	0.00E+00	0.00E+00	301,373	1.15%
LDA	Plug-in Hybrid	1.46E-03	3.46E-03	2.26E-01	1.46E-03	9.14E-04	8.00E-03	3.79E-03	1.27E-02	8.41E-04	2.00E-03	1.33E-03	4.17E-03	1.47E+02	4.66E-04	6.39E-04	217,659	0.83%
LDT1	Gasoline	4.77E-02	2.14E-01	2.09E+00	3.48E-03	2.45E-03	8.00E-03	8.74E-03	1.92E-02	2.25E-03	2.00E-03	3.06E-03	7.31E-03	3.51E+02	1.03E-02	1.43E-02	1,306,567	5.00%
LDT1	Diesel	3.08E-01	1.59E+00	1.93E+00	3.96E-03	2.32E-01	8.00E-03	1.01E-02	2.50E-01	2.22E-01	2.00E-03	3.54E-03	2.27E-01	4.18E+02	1.43E-02	6.58E-02	399	0.00%
LDT1	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-03	4.39E-03	1.24E-02	0.00E+00	2.00E-03	1.54E-03	3.54E-03	0.00E+00	0.00E+00	0.00E+00	1,597	0.01%
LDT1	Plug-in Hybrid	1.47E-03	3.47E-03	2.27E-01	1.46E-03	1.07E-03	8.00E-03	3.78E-03	1.28E-02	9.80E-04	2.00E-03	1.32E-03	4.30E-03	1.48E+02	4.71E-04	6.50E-04	19	0.00%
LDT2	Gasoline	1.89E-02	1.24E-01	1.16E+00	3.75E-03	1.51E-03	8.00E-03	8.45E-03	1.80E-02	1.39E-03	2.00E-03	2.96E-03	6.35E-03	3.79E+02	4.47E-03	8.97E-03	5,733,691	21.94%
LDT2	Diesel	1.54E-02	7.50E-02	1.34E-01	3.19E-03	7.25E-03	8.00E-03	8.19E-03	2.34E-02	6.94E-03	2.00E-03	2.86E-03	1.18E-02	3.37E+02	7.17E-04	5.31E-02	23,795	0.09%
LDT2	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-03	4.35E-03	1.24E-02	0.00E+00	2.00E-03	1.52E-03	3.52E-03	0.00E+00	0.00E+00	0.00E+00	825	0.00%
LDT2	Plug-in Hybrid	1.44E-03	3.41E-03	2.23E-01	1.44E-03	1.04E-03	8.00E-03	3.79E-03	1.28E-02	9.52E-04	2.00E-03	1.33E-03	4.28E-03	1.45E+02	4.64E-04	6.42E-04	8,729	0.03%
LHD1	Gasoline	6.84E-02	2.99E-01	1.53E+00	9.47E-03	2.05E-03	8.00E-03	7.80E-02	8.80E-02	1.89E-03	2.00E-03	2.73E-02	3.12E-02	9.57E+02	1.34E-02	1.66E-02	467,246	1.79%
LHD1	Diesel	2.47E-01	2.84E+00	7.32E-01	6.12E-03	5.63E-02	1.20E-02	7.80E-02	1.46E-01	5.38E-02	3.00E-03	2.73E-02	8.41E-02	6.46E+02	1.15E-02	1.02E-01	318,262	1.22%
LHD2	Gasoline	6.01E-02	2.88E-01	1.39E+00	1.06E-02	1.87E-03	8.00E-03	9.10E-02	1.01E-01	1.72E-03	2.00E-03	3.19E-02	3.56E-02	1.07E+03	1.22E-02	1.62E-02	52,570	0.20%
LHD2	Diesel	2.12E-01	2.04E+00	5.71E-01	7.52E-03	4.74E-02	1.20E-02	9.10E-02	1.50E-01	4.54E-02	3.00E-03	3.19E-02	8.02E-02	7.94E+02	9.83E-03	1.25E-01	117,069	0.45%
MCY	Gasoline	1.45E+00	7.10E-01	1.68E+01	1.92E-03	1.91E-03	4.00E-03	1.20E-02	1.79E-02	1.80E-03	1.00E-03	4.20E-03	7.00E-03	1.94E+02	2.07E-01	4.55E-02	105,968	0.41%
MDV	Gasoline	3.58E-02	2.10E-01	1.59E+00	4.55E-03	1.65E-03	8.00E-03	8.71E-03	1.84E-02	1.52E-03	2.00E-03	3.05E-03	6.57E-03	4.59E+02	7.54E-03	1.33E-02	3,680,635	14.08%
MDV	Diesel	1.34E-02	9.24E-02	2.00E-01	4.12E-03	7.06E-03	8.00E-03	8.20E-03	2.33E-02	6.75E-03	2.00E-03	2.87E-03	1.16E-02	4.35E+02	6.23E-04	6.85E-02	66,483	0.25%
MDV	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-03	4.43E-03	1.24E-02	0.00E+00	2.00E-03	1.55E-03	3.55E-03	0.00E+00	0.00E+00	0.00E+00	40	0.00%
MDV	Plug-in Hybrid	1.46E-03	3.46E-03	2.27E-01	1.46E-03	1.07E-03	8.00E-03	3.78E-03	1.28E-02	9.82E-04	2.00E-03	1.32E-03	4.31E-03	1.48E+02	4.70E-04	6.48E-04	13,902	0.05%
MH	Gasoline	1.23E-01	5.78E-01	3.28E+00	1.93E-02	2.15E-03	1.20E-02	4.50E-02	5.92E-02	1.98E-03	3.00E-03	1.58E-02	2.07E-02	1.95E+03	2.43E-02	3.24E-02	19,766	0.08%
MH	Diesel	1.31E-01	4.90E+00	4.52E-01	1.02E-02	1.31E-01	1.60E-02	4.48E-02	1.91E-01	1.25E-01	4.00E-03	1.57E-02	1.45E-01	1.08E+03	6.10E-03	1.70E-01	7,504	0.03%
Motor Coach	Diesel	1.77E-01	4.33E+00	6.23E-01	1.66E-02	1.08E-01	1.20E-02	7.91E-02	1.99E-01	1.03E-01	3.00E-03	2.77E-02	1.34E-01	1.76E+03	8.24E-03	2.77E-01	3,505	0.01%
OBUS	Gasoline	1.20E-01	8.70E-01	2.76E+00	1.84E-02	7.69E-04	1.20E-02	4.48E-02	5.76E-02	7.07E-04	3.00E-03	1.57E-02	1.94E-02	1.85E+03	2.47E-02	3.94E-02	14,573	0.06%
PTO	Diesel	4.50E-01	7.06E+00	1.68E+00	2.08E-02	1.75E-01	0.00E+00	0.00E+00	1.75E-01	1.68E-01	0.00E+00	0.00E+00	1.68E-01	2.20E+03	2.09E-02	3.46E-01	13,666	0.05%
SBUS	Gasoline	4.71E-01	8.54E-01	1.05E+01	8.23E-03	3.40E-03	8.00E-03	4.49E-02	5.63E-02	3.16E-03	2.00E-03	1.57E-02	2.09E-02	8.31E+02	7.41E-02	3.99E-02	3,602	0.01%
SBUS	Diesel	5.31E-02	3.64E+00	1.64E-01	1.08E-02	2.02E-02	1.20E-02	4.49E-02	7.72E-02	1.94E-02	3.00E-03	1.57E-02	3.81E-02	1.14E+03	2.47E-03	1.80E-01	10,026	0.04%
SBUS	Natural Gas	5.20E-02	6.41E-01	1.26E+01	0.00E+00	3.67E-03	1.20E-02	4.49E-02	6.06E-02	3.38E-03	3.00E-03	1.57E-02	2.21E-02	1.31E+03	3.64E+00	2.66E-01	491	0.00%
T6 CAIRP Class 4	Diesel	8.78E-02	2.18E+00	3.12E-01	1.08E-02	7.44E-02	1.20E-02	4.23E-02	1.29E-01	7.12E-02	3.00E-03	1.48E-02	8.90E-02	1.14E+03	4.08E-03	1.79E-01	103	0.00%
T6 CAIRP Class 5	Diesel	5.99E-02	1.64E+00	2.28E-01	1.07E-02	5.44E-02	1.20E-02	4.23E-02	1.09E-01	5.21E-02	3.00E-03	1.48E-02	6.99E-02	1.13E+03	2.78E-03	1.78E-01	141	0.00%
T6 CAIRP Class 6	Diesel	8.56E-02	2.14E+00	3.18E-01	1.06E-02	7.67E-02	1.20E-02	4.23E-02	1.31E-01	7.34E-02	3.00E-03	1.48E-02	9.12E-02	1.12E+03	3.97E-03	1.76E-01	369	0.00%
T6 CAIRP Class 7	Diesel	8.48E-02	2.28E+00	2.89E-01	9.99E-03	6.94E-02	1.20E-02	4.23E-02	1.24E-01	6.64E-02	3.00E-03	1.48E-02	8.42E-02	1.06E+03	3.94E-03	1.66E-01	2,313	0.01%
T6 Instate Delivery Class 4	Diesel	5.67E-01	7.12E+00	1.49E+00	1.19E-02	2.29E-01	1.20E-02	4.76E-02	2.89E-01	2.20E-01	3.00E-03	1.66E-02	2.39E-01	1.26E+03	2.63E-02	1.98E-01	8,874	0.03%
T6 Instate Delivery Class 4	Natural Gas	1.04E-02	2.97E-01	3.25E+00	0.00E+00	6.54E-04	1.20E-02	4.76E-02	6.02E-02	6.02E-04	3.00E-03	1.66E-02	2.02E-02	1.11E+03	7.28E-01	2.27E-01	28	0.00%
T6 Instate Delivery Class 5	Diesel	2.80E-01	3.98E+00	7.42E-01	1.17E-02	1.08E-01	1.20E-02	4.76E-02	1.68E-01	1.03E-01	3.00E-03	1.66E-02	1.23E-01	1.24E+03	1.30E-02	1.95E-01	7,209	0.03%
T6 Instate Delivery Class 5	Natural Gas	1.04E-02	3.00E-01	3.25E+00	0.00E+00	6.39E-04	1.20E-02	4.76E-02	6.02E-02	5.87E-04	3.00E-03	1.66E-02	2.02E-02	1.11E+03	7.27E-01	2.27E-01	27	0.00%
T6 Instate Delivery Class 6	Diesel	4.35E-01	5.63E+00	1.14E+00	1.17E-02	1.78E-01	1.20E-02	4.76E-02	2.37E-01	1.70E-01	3.00E-03	1.66E-02	1.90E-01	1.24E+03	2.02E-02	1.95E-01	15,676	0.06%
T6 Instate Delivery Class 6	Natural Gas	1.04E-02	2.98E-01	3.25E+00	0.00E+00	6.48E-04	1.20E-02	4.76E-02	6.02E-02	5.96E-04	3.00E-03	1.66E-02	2.02E-02	1.11E+03	7.28E-01	2.26E-01	59	0.00%
T6 Instate Delivery Class 7	Diesel	4.82E-01	6.94E+00	1.26E+00	1.18E-02	2.19E-01	1.20E-02	4.76E-02	2.79E-01	2.10E-01	3.00E-03	1.66E-02	2.29E-01	1.25E+03	2.24E-02	1.96E-01	2,563	0.01%
T6 Instate Delivery Class 7	Natural Gas	1.05E-02	2.84E-01	3.28E+00	0.00E+00	7.30E-04	1.20E-02	4.76E-02	6.03E-02	6.71E-04	3.00E-03	1.66E-02	2.03E-02	1.09E+03	7.36E-01	2.22E-01	12	0.00%
T6 Instate Other Class 4	Diesel	5.02E-01	7.70E+00	1.41E+00	1.12E-02	2.58E-01	1.20E-02	4.49E-02	3.14E-01	2.46E-01	3.00E-03	1.57E-02	2.65E-01	1.19E+03	2.33E-02	1.87E-01	25,076	0.10%
T6 Instate Other Class 4	Natural Gas	7.97E-03	2.28E-01	2.83E+00	0.00E+00	5.11E-04	1.20E-02	4.49E-02	5.74E-02	4.69E-04	3.00E-03	1.57E-02	1.92E-02	9.65E+02	5.58E-01	1.97E-01	51	0.00%
T6 Instate Other Class 5	Diesel	1.68E-01	2.84E+00	5.08E-01	1.10E-02	8.85E-02	1.20E-02	4.49E-02	1.45E-01	8.47E-02	3.00E-03	1.57E-02	1.03E-01	1.16E+03	7.81E-03	1.83E-01	58,748	0.22%
T6 Instate Other Class 5	Natural Gas	7.93E-03	2.31E-01	2.83E+00	0.00E+00	4.93E-04	1.20E-02	4.49E-02	5.74E-02	4.54E-04	3.00E-03	1.57E-02	1.92E-02	9.64E+02	5.55E-01	1.96E-01	216	0.00%
T6 Instate Other Class 6	Diesel	2.94E-01	4.68E+00	8.53E-01	1.10E-02	1.53E-01	1.20E-02	4.49E-02	2.09E-01	1.46E-01	3.00E-03	1.57E-02	1.65E-01	1.16E+03	1.36E-02	1.82E-01	44,475	0.17%
T6 Instate Other Class 6	Natural Gas	8.01E-03	2.24E-01	2.83E+00	0.00E+00	5.35E-04	1.20E-02	4.49E-02	5.74E-02	4.92E-04	3.00E-03	1.57E-02	1.92E-02	9.66E+02	5.61E-01	1.97E-01	195	0.00%
T6 Instate Other Class 7	Diesel	2.51E-01	4.35E+00	6.99E-01	1.10E-02	1.34E-01	1.20E-02	4.49E-02	1.91E-01	1.28E-01	3.00E-03	1.57E-02	1.47E-01	1.16E+03	1.17E-02	1.83E-01	27,656	0.11%
T6 Instate Other Class 7	Natural Gas	8.72E-03	1.64E-01	2.80E+00	0.00E+00	9.07E-04	1.20E-02	4.49E-02	5.78E-02	8.34E-04	3.00E-03	1.57E-02	1.95E-02	9.36E+02	6.10E-01	1.91E-01	405	0.00%
T6 Instate Tractor Class 6	Diesel	5.67E-01	7.27E+00	1.58E+00	1.14E-02	3.33E-01	1.20E-02	4.49E-02	3.90E-01	3.19E-01	3.00E-03	1.57E-02	3.37E-01	1.21E+03	2.63E-02	1.90E-01	485	0.00%
T6 Instate Tractor Class 7	Diesel	1.65E-01	4.27E+00	4.58E-01	1.07E-02	6.85E-02	1.20E-02	4.49E-02	1.25E-01	6.56E-02	3.00E-03	1.57E-02	8.43E-02	1.13E+03	7.68E-03	1.78E-01	4,054	0.02%
T6 Instate Tractor Class 7	Natural Gas	8.54E-03	1.80E-01	2.81E+00	0.00E+00	8.12E-04	1.20E-02	4.49E-02	5.77E-02	7.47E-04	3.00E-03	1.57E-02	1.94E-02	9.36E+02	5.97E-01	1.91E-01	28	0.00%
T6 OOS Class 4	Diesel	8.78E-02	2.18E+00	3.12E-01	1.08E-02	7.44E-02	1.20E-02	4.23E-02	1.29E-01	7.12E-02	3.00E-03	1.48E-02	8.90E-02	1.14E+03	4.08E-03	1.79E-01	58	0.00%
T6 OOS Class 5	Diesel	5.99E-02	1.64E+00	2.28E-01	1.07E-02	5.44E-02	1.20E-02	4.23E-02	1.09E-01	5.21E-02	3.00E-03	1.48E-02	6.99E-02	1.13E+03	2.78E-03	1.78E-01	79	0.00%
T6 OOS Class 6	Diesel	8.56E-02	2.14E+00	3.18E-01	1.06E-02	7.67E-02	1.20E-02	4.23E-02	1.31E-01	7.34E-02	3.00E-03	1.48E-02	9.12E-02	1.12E+03	3.97E-03	1.76E-01	207	0.00%
T6 OOS Class 7	Diesel	9.39E-02	2.39E+00	3.19E-01	9.98E-03	7.66E-02	1.20E-02	4.23E-02	1.31E-01	7.33E-02	3.00E-03	1.48E-02	9.11E-02	1.05E+03	4.36E-03	1.66E-01	1,508	0.01%
T6 Public Class 4	Diesel	1.16E-01	8.19E+00	2.70E-01	1.22E-02	4.12E-02	1.20E-02	4.62E-02	9.94E-02	3.94E-02	3.00E-03	1.62E-02	5.86E-02	1.29E+03	5.37E-03	2.03E-01	2,745	0.01%
T6 Public Class 4	Natural Gas	1.10E-02	3.17E-01	3.03E+00	0.00E+00	5.68E-04	1.20E-02	4.62E-02	5.87E-02	5.23E-04	3.00E-03	1.62E-02	1.97E-02	1.07E+03	7.72E-01	2.18E-01	1	0.00%
T6 Public Class 5	Diesel	6.54E-02	3.59E+00	1.77E-01	1.18E-02	1.78E-02	1.20E-02	4.62E-02	7.59E-02	1.70E-02	3.00E-03	1.62E-02	3.62E-02	1.25E+03	3.04E-03	1.96E-01	4,833	0.02%

T6 Public Class 5	Natural Gas	1.22E-02	1.31E-01	3.08E+00	0.00E+00	1.45E-03	1.20E-02	4.62E-02	5.96E-02	1.33E-03	3.00E-03	1.62E-02	2.05E-02	1.06E+03	8.52E-01	2.16E-01	272	0.00%
T6 Public Class 6	Diesel	1.18E-01	7.79E+00	2.64E-01	1.22E-02	5.19E-02	1.20E-02	4.62E-02	1.10E-01	4.97E-02	3.00E-03	1.62E-02	6.88E-02	1.29E+03	5.50E-03	2.03E-01	4,495	0.02%
T6 Public Class 6	Natural Gas	1.19E-02	1.76E-01	3.09E+00	0.00E+00	1.24E-03	1.20E-02	4.62E-02	5.94E-02	1.14E-03	3.00E-03	1.62E-02	2.03E-02	1.05E+03	8.33E-01	2.13E-01	76	0.00%
T6 Public Class 7	Diesel	1.48E-01	9.61E+00	3.12E-01	1.24E-02	6.92E-02	1.20E-02	4.62E-02	1.27E-01	6.62E-02	3.00E-03	1.62E-02	8.54E-02	1.31E+03	6.86E-03	2.07E-01	8,450	0.03%
T6 Public Class 7	Natural Gas	1.19E-02	1.81E-01	3.10E+00	0.00E+00	1.21E-03	1.20E-02	4.62E-02	5.94E-02	1.11E-03	3.00E-03	1.62E-02	2.03E-02	1.04E+03	8.31E-01	2.12E-01	154	0.00%
T6 Utility Class 5	Diesel	2.45E-02	1.27E+00	9.54E-02	1.08E-02	6.14E-03	1.20E-02	4.55E-02	6.36E-02	5.88E-03	3.00E-03	1.59E-02	2.48E-02	1.14E+03	1.14E-03	1.79E-01	2,429	0.01%
T6 Utility Class 5	Natural Gas	9.34E-03	2.70E-01	2.89E+00	0.00E+00	5.18E-04	1.20E-02	4.55E-02	5.80E-02	4.76E-04	3.00E-03	1.59E-02	1.94E-02	1.01E+03	6.54E-01	2.06E-01	35	0.00%
T6 Utility Class 6	Diesel	3.71E-02	2.08E+00	1.24E-01	1.10E-02	1.08E-02	1.20E-02	4.55E-02	6.83E-02	1.03E-02	3.00E-03	1.59E-02	2.92E-02	1.17E+03	1.72E-03	1.83E-01	461	0.00%
T6 Utility Class 6	Natural Gas	9.34E-03	2.70E-01	2.89E+00	0.00E+00	5.18E-04	1.20E-02	4.55E-02	5.80E-02	4.76E-04	3.00E-03	1.59E-02	1.94E-02	9.95E+02	6.54E-01	2.03E-01	4	0.00%
T6 Utility Class 7	Diesel	2.80E-02	1.92E+00	1.00E-01	1.10E-02	1.03E-02	1.20E-02	4.55E-02	6.78E-02	9.87E-03	3.00E-03	1.59E-02	2.88E-02	1.17E+03	1.30E-03	1.83E-01	635	0.00%
T6 Utility Class 7	Natural Gas	9.34E-03	2.70E-01	2.89E+00	0.00E+00	5.18E-04	1.20E-02	4.55E-02	5.80E-02	4.76E-04	3.00E-03	1.59E-02	1.94E-02	1.00E+03	6.54E-01	2.04E-01	13	0.00%
T6TS	Gasoline	2.58E-01	1.33E+00	5.81E+00	1.88E-02	2.08E-03	1.20E-02	4.50E-02	5.91E-02	1.92E-03	3.00E-03	1.58E-02	2.07E-02	1.90E+03	4.74E-02	5.56E-02	36,239	0.14%
T7 CAIRP Class 8	Diesel	8.81E-02	3.58E+00	3.24E-01	1.51E-02	6.62E-02	3.60E-02	7.73E-02	1.80E-01	6.33E-02	9.00E-03	2.71E-02	9.94E-02	1.60E+03	4.09E-03	2.52E-01	118,223	0.45%
T7 CAIRP Class 8	Natural Gas	1.32E-02	2.62E-01	4.60E+00	0.00E+00	1.74E-03	3.60E-02	7.41E-02	1.12E-01	1.60E-03	9.00E-03	2.59E-02	3.65E-02	1.18E+03	9.23E-01	2.41E-01	201	0.00%
T7 NNOOS Class 8	Diesel	1.45E-01	3.84E+00	5.72E-01	1.52E-02	1.09E-01	3.60E-02	7.82E-02	2.24E-01	1.05E-01	9.00E-03	2.74E-02	1.41E-01	1.61E+03	6.74E-03	2.54E-01	140,606	0.54%
T7 NOOS Class 8	Diesel	1.03E-01	3.74E+00	3.75E-01	1.51E-02	7.38E-02	3.60E-02	7.75E-02	1.87E-01	7.06E-02	9.00E-03	2.71E-02	1.07E-01	1.60E+03	4.78E-03	2.52E-01	51,092	0.20%
T7 Other Port Class 8	Diesel	1.19E-01	4.46E+00	3.80E-01	1.63E-02	3.11E-02	3.60E-02	9.40E-02	1.61E-01	2.98E-02	9.00E-03	3.29E-02	7.17E-02	1.72E+03	5.53E-03	2.71E-01	9,668	0.04%
T7 POAK Class 8	Diesel	1.47E-01	4.97E+00	4.69E-01	1.63E-02	4.14E-02	3.60E-02	9.60E-02	1.73E-01	3.96E-02	9.00E-03	3.36E-02	8.22E-02	1.73E+03	6.85E-03	2.72E-01	36,148	0.14%
T7 POAK Class 8	Natural Gas	1.70E-02	7.05E-01	1.10E+01	0.00E+00	1.36E-03	3.60E-02	8.52E-02	1.23E-01	1.25E-03	9.00E-03	2.98E-02	4.01E-02	1.49E+03	1.19E+00	3.04E-01	79	0.00%
T7 Public Class 8	Diesel	1.73E-01	1.27E+01	5.50E-01	1.87E-02	8.30E-02	3.60E-02	1.21E-01	2.40E-01	7.94E-02	9.00E-03	4.24E-02	1.31E-01	1.98E+03	8.01E-03	3.12E-01	19,202	0.07%
T7 Public Class 8	Natural Gas	2.61E-02	7.55E-01	1.07E+01	0.00E+00	2.46E-03	3.60E-02	1.07E-01	1.45E-01	2.26E-03	9.00E-03	3.75E-02	4.87E-02	1.68E+03	1.83E+00	3.43E-01	61	0.00%
T7 Single Concrete/Transit Mix Class 8	Diesel	1.73E-01	4.05E+00	6.29E-01	1.62E-02	1.11E-01	3.60E-02	8.68E-02	2.33E-01	1.06E-01	9.00E-03	3.04E-02	1.45E-01	1.71E+03	8.02E-03	2.69E-01	5,440	0.02%
T7 Single Concrete/Transit Mix Class 8	Natural Gas	1.51E-02	4.28E-01	7.58E+00	0.00E+00	1.68E-03	3.60E-02	8.16E-02	1.19E-01	1.54E-03	9.00E-03	2.86E-02	3.91E-02	1.28E+03	1.06E+00	2.60E-01	249	0.00%
T7 Single Dump Class 8	Diesel	2.06E-01	5.33E+00	7.69E-01	1.60E-02	1.31E-01	3.60E-02	8.91E-02	2.56E-01	1.25E-01	9.00E-03	3.12E-02	1.65E-01	1.69E+03	9.58E-03	2.67E-01	30,417	0.12%
T7 Single Dump Class 8	Natural Gas	1.51E-02	4.26E-01	7.57E+00	0.00E+00	1.68E-03	3.60E-02	8.24E-02	1.20E-01	1.54E-03	9.00E-03	2.88E-02	3.94E-02	1.32E+03	1.06E+00	2.68E-01	1,525	0.01%
T7 Single Other Class 8	Diesel	2.37E-01	5.43E+00	8.92E-01	1.61E-02	1.56E-01	3.60E-02	8.97E-02	2.82E-01	1.49E-01	9.00E-03	3.14E-02	1.90E-01	1.70E+03	1.10E-02	2.68E-01	29,887	0.11%
T7 Single Other Class 8	Natural Gas	1.51E-02	4.26E-01	7.59E+00	0.00E+00	1.68E-03	3.60E-02	8.29E-02	1.21E-01	1.54E-03	9.00E-03	2.90E-02	3.96E-02	1.31E+03	1.06E+00	2.67E-01	1,308	0.01%
T7 SWCV Class 8	Diesel	3.05E-02	8.80E+00	8.25E-02	3.90E-02	1.36E-02	3.60E-02	2.10E-01	2.60E-01	1.30E-02	9.00E-03	7.35E-02	9.55E-02	4.12E+03	1.42E-03	6.49E-01	13,676	0.05%
T7 SWCV Class 8	Natural Gas	1.30E-01	2.64E+00	2.50E+01	0.00E+00	2.74E-03	3.60E-02	2.10E-01	2.49E-01	2.52E-03	9.00E-03	7.35E-02	8.50E-02	1.72E+03	5.48E+00	3.51E-01	10,621	0.04%
T7 Tractor Class 8	Diesel	1.49E-01	4.88E+00	5.39E-01	1.51E-02	8.69E-02	3.60E-02	8.54E-02	2.08E-01	8.32E-02	9.00E-03	2.99E-02	1.22E-01	1.60E+03	6.91E-03	2.51E-01	101,106	0.39%
T7 Tractor Class 8	Natural Gas	1.42E-02	5.64E-01	9.76E+00	0.00E+00	1.24E-03	3.60E-02	7.85E-02	1.16E-01	1.14E-03	9.00E-03	2.75E-02	3.76E-02	1.22E+03	9.96E-01	2.49E-01	8,401	0.03%
T7 Utility Class 8	Diesel	4.10E-02	2.46E+00	1.98E-01	1.68E-02	1.14E-02	3.60E-02	9.84E-02	1.46E-01	1.09E-02	9.00E-03	3.44E-02	5.43E-02	1.78E+03	1.90E-03	2.80E-01	1,945	0.01%
T7IS	Gasoline	9.28E+00	2.69E+01	2.61E+02	2.92E-02	1.82E-02	2.00E-02	1.18E-01	1.56E-01	1.71E-02	5.00E-03	4.13E-02	6.34E-02	2.95E+03	1.10E+00	5.76E-01	52	0.00%
UBUS	Gasoline	1.03E-02	9.66E-02	4.08E-01	1.37E-02	1.22E-03	1.00E-02	1.01E-01	1.12E-01	1.12E-03	2.50E-03	3.52E-02	3.88E-02	1.39E+03	3.24E-03	1.03E-02	5,509	0.02%
UBUS	Diesel	1.12E-01	2.03E+00	1.53E-01	1.33E-02	7.36E-03	3.09E-02	1.10E-01	1.48E-01	7.04E-03	7.73E-03	3.85E-02	5.33E-02	1.41E+03	5.20E-03	2.21E-01	23,552	0.09%
UBUS	Electricity	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-02	5.50E-02	7.80E-02	0.00E+00	5.75E-03	1.93E-02	2.50E-02	0.00E+00	0.00E+00	0.00E+00	336	0.00%
																Total VMT	26,132,029	

lbs/Mile															
ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	
1.73E-03	1.68E-02	4.18E-03	2.65E-05	2.65E-05	1.02E-04	6.36E-04	7.64E-04	6.61E-06	3.56E-05	6.08E-04	6.51E-04	2.80E+00	8.02E-05	4.41E-04	
2.30E-05	6.62E-04	6.82E-03	0.00E+00	2.65E-05	1.02E-04	1.28E-06	1.29E-04	6.61E-06	3.56E-05	1.18E-06	4.34E-05	2.40E+00	1.61E-03	4.88E-04	
3.79E-05	1.73E-04	2.27E-03	6.54E-06	1.76E-05	1.60E-05	3.23E-06	3.69E-05	4.41E-06	5.60E-06	2.97E-06	1.30E-05	6.61E-01	8.98E-06	1.52E-05	
7.31E-05	7.14E-04	8.01E-04	5.08E-06	1.76E-05	1.60E-05	4.67E-05	8.04E-05	4.41E-06	5.61E-06	4.47E-05	5.47E-05	5.37E-01	3.39E-06	8.45E-05	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	9.61E-06	0.00E+00	2.72E-05	4.41E-06	3.36E-06	0.00E+00	7.77E-06	0.00E+00	0.00E+00	0.00E+00	
3.22E-06	7.63E-06	4.99E-04	3.22E-06	1.76E-05	8.35E-06	2.02E-06	2.80E-05	4.41E-06	2.92E-06	1.85E-06	9.19E-06	3.25E-01	1.03E-06	1.41E-06	
1.05E-04	4.71E-04	4.61E-03	7.66E-06	1.76E-05	1.93E-05	5.40E-06	4.23E-05	4.41E-06	6.74E-06	4.97E-06	1.61E-05	7.74E-01	2.28E-05	3.15E-05	
6.78E-04	3.50E-03	4.27E-03	8.73E-06	1.76E-05	2.23E-05	5.11E-04	5.51E-04	4.41E-06	7.81E-06	4.89E-04	5.01E-04	9.22E-01	3.15E-05	1.45E-04	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	9.69E-06	0.00E+00	2.73E-05	4.41E-06	3.39E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00	
3.23E-06	7.65E-06	5.01E-04	3.23E-06	1.76E-05	8.34E-06	2.35E-06	2.83E-05	4.41E-06	2.92E-06	2.16E-06	9.49E-06	3.26E-01	1.04E-06	1.43E-06	
4.16E-05	2.73E-04	2.55E-03	8.26E-06	1.76E-05	1.86E-05	3.33E-06	3.96E-05	4.41E-06	6.52E-06	3.07E-06	1.40E-05	8.35E-01	9.86E-06	1.98E-05	
3.40E-05	1.65E-04	2.95E-04	7.04E-06	1.76E-05	1.80E-05	1.60E-05	5.17E-05	4.41E-06	6.32E-06	1.53E-05	2.60E-05	7.43E-01	1.58E-06	1.17E-04	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	9.60E-06	0.00E+00	2.72E-05	4.41E-06	3.36E-06	0.00E+00	7.77E-06	0.00E+00	0.00E+00	0.00E+00	
3.17E-06	7.51E-06	4.92E-04	3.17E-06	1.76E-05	8.35E-06	2.28E-06	2.83E-05	4.41E-06	2.92E-06	2.10E-06	9.43E-06	3.20E-01	1.02E-06	1.42E-06	
1.51E-04	6.58E-04	3.38E-03	2.09E-05	1.76E-05	1.72E-04	4.52E-06	1.94E-04	4.41E-06	6.02E-05	4.16E-06	6.88E-05	2.11E+00	2.95E-05	3.67E-05	
5.44E-04	6.26E-03	1.61E-03	1.35E-05	2.65E-05	1.72E-04	1.24E-04	3.22E-04	6.61E-06	6.02E-05	1.19E-04	1.85E-04	1.42E+00	2.53E-05	2.24E-04	
1.32E-04	6.34E-04	3.08E-03	2.33E-05	1.76E-05	2.01E-04	4.12E-06	2.22E-04	4.41E-06	7.02E-05	3.79E-06	7.84E-05	2.36E+00	2.69E-05	3.58E-05	
4.67E-04	4.51E-03	1.26E-03	1.66E-05	2.65E-05	2.01E-04	1.05E-04	3.32E-04	6.61E-06	7.02E-05	1.00E-04	1.77E-04	1.75E+00	2.17E-05	2.76E-04	
3.20E-03	1.56E-03	3.70E-02	4.23E-06	8.82E-06	2.65E-05	4.21E-06	3.95E-05	2.20E-06	9.26E-06	3.96E-06	1.54E-05	4.27E-01	4.56E-04	1.00E-04	
7.90E-05	4.63E-04	3.50E-03	1.00E-05	1.76E-05	1.92E-05	3.64E-06	4.05E-05	4.41E-06	6.72E-06	3.35E-06	1.45E-05	1.01E+00	1.66E-05	2.93E-05	
2.96E-05	2.04E-04	4.41E-04	9.08E-06	1.76E-05	1.81E-05	1.56E-05	5.13E-05	4.41E-06	6.33E-06	1.49E-05	2.56E-05	9.59E-01	1.37E-06	1.51E-04	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-05	9.76E-06	0.00E+00	2.74E-05	4.41E-06	3.42E-06	0.00E+00	7.83E-06	0.00E+00	0.00E+00	0.00E+00	
3.22E-06	7.63E-06	5.00E-04	3.22E-06	1.76E-05	8.34E-06	2.35E-06	2.83E-05	4.41E-06	2.92E-06	2.16E-06	9.49E-06	3.25E-01	1.04E-06	1.43E-06	
2.71E-04	1.27E-03	7.24E-03	4.25E-05	2.65E-05	9.92E-05	4.74E-06	1.30E-04	6.61E-06	3.47E-05	4.37E-06	4.57E-05	4.30E+00	5.36E-05	7.15E-05	
2.90E-04	1.08E-02	9.97E-04	2.25E-05	3.53E-05	9.87E-05	2.88E-04	4.22E-04	8.82E-06	3.46E-05	2.75E-04	3.19E-04	2.38E+00	1.35E-05	3.75E-04	
2.65E-04	1.92E-03	6.09E-03	4.05E-05	2.65E-05	9.88E-05	1.70E-06	1.27E-04	6.61E-06	3.46E-05	1.56E-06	4.27E-05	4.09E+00	5.43E-05	8.70E-05	
9.92E-04	1.56E-02	3.71E-03	4.58E-05	0.00E+00	0.00E+00	3.87E-04	3.87E-04	0.00E+00	0.00E+00	3.70E-04	3.70E-04	4.84E+00	4.61E-05	7.62E-04	
1.04E-03	1.88E-03	2.32E-02	1.81E-05	1.76E-05	9.90E-05	7.50E-06	1.24E-04	4.41E-06	3.47E-05	6.97E-06	4.60E-05	1.83E+00	1.63E-04	8.79E-05	
1.17E-04	8.03E-03	3.61E-04	2.39E-05	2.65E-05	9.90E-05	4.46E-05	1.70E-04	6.61E-06	3.47E-05	4.27E-05	8.40E-05	2.52E+00	5.43E-06	3.97E-04	
1.15E-04	1.41E-03	2.78E-02	0.00E+00	2.65E-05	9.90E-05	8.10E-06	1.34E-04	6.61E-06	3.47E-05	7.45E-06	4.87E-05	2.88E+00	8.02E-03	5.87E-04	
1.94E-04	4.80E-03	6.87E-04	2.38E-05	2.65E-05	9.33E-05	1.64E-04	2.84E-04	6.61E-06	3.26E-05	1.57E-04	1.96E-04	2.51E+00	9.00E-06	3.96E-04	
1.32E-04	3.61E-03	5.03E-04	2.37E-05	2.65E-05	9.33E-05	1.20E-04	2.40E-04	6.61E-06	3.26E-05	1.15E-04	1.54E-04	2.50E+00	6.14E-06	3.94E-04	
1.89E-04	4.72E-03	7.01E-04	2.34E-05	2.65E-05	9.33E-05	1.69E-04	2.89E-04	6.61E-06	3.26E-05	1.62E-04	2.01E-04	2.47E+00	8.76E-06	3.89E-04	
1.87E-04	5.02E-03	6.38E-04	2.20E-05	2.65E-05	9.33E-05	1.53E-04	2.73E-04	6.61E-06	3.26E-05	1.46E-04	1.86E-04	2.33E+00	8.68E-06	3.66E-04	
1.25E-03	1.57E-02	3.28E-03	2.62E-05	2.65E-05	1.05E-04	5.06E-04	6.37E-04	6.61E-06	3.67E-05	4.84E-04	5.27E-04	2.77E+00	5.80E-05	4.36E-04	
2.29E-05	6.55E-04	7.17E-03	0.00E+00	2.65E-05	1.05E-04	1.44E-06	1.33E-04	6.61E-06	3.67E-05	1.33E-06	4.46E-05	2.45E+00	1.61E-03	5.00E-04	
6.17E-04	8.76E-03	1.63E-03	2.58E-05	2.65E-05	1.05E-04	2.38E-04	3.70E-04	6.61E-06	3.67E-05	2.28E-04	2.71E-04	2.73E+00	2.87E-05	4.30E-04	
2.29E-05	6.61E-04	7.16E-03	0.00E+00	2.65E-05	1.05E-04	1.41E-06	1.33E-04	6.61E-06	3.67E-05	1.29E-06	4.46E-05	2.45E+00	1.60E-03	5.00E-04	
9.60E-04	1.24E-02	2.52E-03	2.59E-05	2.65E-05	1.05E-04	3.92E-04	5.23E-04	6.61E-06	3.67E-05	3.75E-04	4.18E-04	2.73E+00	4.46E-05	4.30E-04	
2.29E-05	6.58E-04	7.16E-03	0.00E+00	2.65E-05	1.05E-04	1.43E-06	1.33E-04	6.61E-06	3.67E-05	1.31E-06	4.46E-05	2.45E+00	1.60E-03	4.99E-04	
1.06E-03	1.53E-02	2.77E-03	2.60E-05	2.65E-05	1.05E-04	4.83E-04	6.14E-04	6.61E-06	3.67E-05	4.62E-04	5.05E-04	2.75E+00	4.94E-05	4.33E-04	
2.32E-05	6.26E-04	7.24E-03	0.00E+00	2.65E-05	1.05E-04	1.61E-06	1.33E-04	6.61E-06	3.67E-05	1.48E-06	4.48E-05	2.40E+00	1.62E-03	4.89E-04	
1.11E-03	1.70E-02	3.10E-03	2.47E-05	2.65E-05	9.89E-05	5.68E-04	6.93E-04	6.61E-06	3.46E-05	5.43E-04	5.84E-04	2.61E+00	5.14E-05	4.11E-04	
1.76E-05	5.02E-04	6.24E-03	0.00E+00	2.65E-05	9.89E-05	1.13E-06	1.26E-04	6.61E-06	3.46E-05	1.03E-06	4.23E-05	2.13E+00	1.23E-03	4.34E-04	
3.71E-04	6.27E-03	1.12E-03	2.42E-05	2.65E-05	9.89E-05	1.95E-04	3.20E-04	6.61E-06	3.46E-05	1.87E-04	2.28E-04	2.56E+00	1.72E-05	4.03E-04	
1.75E-05	5.09E-04	6.25E-03	0.00E+00	2.65E-05	9.89E-05	1.09E-06	1.26E-04	6.61E-06	3.46E-05	1.00E-06	4.22E-05	2.12E+00	1.22E-03	4.33E-04	
6.47E-04	1.03E-02	1.88E-03	2.42E-05	2.65E-05	9.89E-05	3.36E-04	4.62E-04	6.61E-06	3.46E-05	3.22E-04	3.63E-04	2.55E+00	3.01E-05	4.02E-04	
1.77E-05	4.93E-04	6.24E-03	0.00E+00	2.65E-05	9.89E-05	1.18E-06	1.27E-04	6.61E-06	3.46E-05	1.08E-06	4.23E-05	2.13E+00	1.24E-03	4.34E-04	
5.54E-04	9.59E-03	1.54E-03	2.42E-05	2.65E-05	9.89E-05	2.96E-04	4.21E-04	6.61E-06	3.46E-05	2.83E-04	3.24E-04	2.56E+00	2.57E-05	4.03E-04	
1.92E-05	3.62E-04	6.17E-03	0.00E+00	2.65E-05	9.89E-05	2.00E-06	1.27E-04	6.61E-06	3.46E-05	1.84E-06	4.31E-05	2.06E+00	1.34E-03	4.21E-04	
1.25E-03	1.60E-02	3.49E-03	2.52E-05	2.65E-05	9.89E-05	7.34E-04	8.60E-04	6.61E-06	3.46E-05	7.03E-04	7.44E-04	2.66E+00	5.81E-05	4.19E-04	
3.65E-04	9.41E-03	1.01E-03	2.36E-05	2.65E-05	9.89E-05	1.51E-04	2.76E-04	6.61E-06	3.46E-05	1.45E-04	1.86E-04	2.49E+00	1.69E-05	3.92E-04	
1.88E-05	3.97E-04	6.19E-03	0.00E+00	2.65E-05	9.89E-05	1.79E-06	1.27E-04	6.61E-06	3.46E-05	1.65E-06	4.29E-05	2.06E+00	1.32E-03	4.21E-04	
1.94E-04	4.80E-03	6.87E-04	2.38E-05	2.65E-05	9.33E-05	1.64E-04	2.84E-04	6.61E-06	3.26E-05	1.57E-04	1.96E-04	2.51E+00	9.00E-06	3.96E-04	
1.32E-04	3.61E-03	5.03E-04	2.37E-05	2.65E-05	9.33E-05	1.20E-04	2.40E-04	6.61E-06	3.26E-05	1.15E-04	1.54E-04	2.50E+00	6.14E-06	3.94E-04	
1.89E-04	4.72E-03	7.01E-04	2.34E-05	2.65E-05	9.33E-05	1.69E-04	2.89E-04	6.61E-06	3.26E-05	1.62E-04	2.01E-04	2.47E+00	8.76E-06	3.89E-04	
2.07E-04	5.28E-03	7.04E-04	2.20E-05	2.65E-05	9.33E-05	1.69E-04	2.89E-04	6.61E-06	3.26E-05	1.62E-04	2.01E-04	2.33E+00	9.61E-06	3.66E-04	
2.55E-04	1.81E-02	5.96E-04	2.68E-05	2.65E-05	1.02E-04	9.08E-05	2.19E-04	6.61E-06	3.56E-05	8.69E-05	1.29E-04	2.84E+00	1.18E-05	4.46E-04	
2.43E-05	6.98E-04	6.68E-03	0.00E+00	2.65E-05	1.02E-04	1.25E-06	1.29E-04	6.61E-06	3.56E-05	1.15E-06	4.34E-05	2.35E+00	1.70E-03	4.80E-04	
1.44E-04	7.92E-03	3.91E-04	2.60E-05	2.65E-05	1.02E-04	3.92E-05	1.67E-04	6.61E-06	3.56E-05	3.75E-05	7.97E-05	2.75E+00	6.70E-06	4.33E-04	

1.00E-06

2.68E-05	2.90E-04	6.78E-03	0.00E+00	2.65E-05	1.02E-04	3.19E-06	1.31E-04	6.61E-06	3.56E-05	2.93E-06	4.52E-05	2.34E+00	1.88E-03	4.76E-04
2.61E-04	1.72E-02	5.82E-04	2.69E-05	2.65E-05	1.02E-04	1.14E-04	2.43E-04	6.61E-06	3.56E-05	1.10E-04	1.52E-04	2.84E+00	1.21E-05	4.47E-04
2.63E-05	3.88E-04	6.81E-03	0.00E+00	2.65E-05	1.02E-04	2.73E-06	1.31E-04	6.61E-06	3.56E-05	2.51E-06	4.47E-05	2.31E+00	1.84E-03	4.70E-04
3.26E-04	2.12E-02	6.89E-04	2.74E-05	2.65E-05	1.02E-04	1.53E-04	2.81E-04	6.61E-06	3.56E-05	1.46E-04	1.88E-04	2.89E+00	1.51E-05	4.55E-04
2.62E-05	3.99E-04	6.83E-03	0.00E+00	2.65E-05	1.02E-04	2.67E-06	1.31E-04	6.61E-06	3.56E-05	2.46E-06	4.47E-05	2.29E+00	1.83E-03	4.68E-04
5.40E-05	2.80E-03	2.10E-04	2.38E-05	2.65E-05	1.00E-04	1.35E-05	1.40E-04	6.61E-06	3.51E-05	1.30E-05	5.47E-05	2.51E+00	2.51E-06	3.95E-04
2.06E-05	5.94E-04	6.38E-03	0.00E+00	2.65E-05	1.00E-04	1.14E-06	1.28E-04	6.61E-06	3.51E-05	1.05E-06	4.28E-05	2.23E+00	1.44E-03	4.54E-04
8.18E-05	4.59E-03	2.73E-04	2.43E-05	2.65E-05	1.00E-04	2.37E-05	1.50E-04	6.61E-06	3.51E-05	2.27E-05	6.44E-05	2.57E+00	3.80E-06	4.04E-04
2.06E-05	5.94E-04	6.38E-03	0.00E+00	2.65E-05	1.00E-04	1.14E-06	1.28E-04	6.61E-06	3.51E-05	1.05E-06	4.28E-05	2.19E+00	1.44E-03	4.47E-04
6.17E-05	4.23E-03	2.21E-04	2.43E-05	2.65E-05	1.00E-04	2.27E-05	1.49E-04	6.61E-06	3.51E-05	2.17E-05	6.35E-05	2.57E+00	2.86E-06	4.04E-04
2.06E-05	5.94E-04	6.38E-03	0.00E+00	2.65E-05	1.00E-04	1.14E-06	1.28E-04	6.61E-06	3.51E-05	1.05E-06	4.28E-05	2.21E+00	1.44E-03	4.50E-04
5.70E-04	2.94E-03	1.28E-02	4.15E-05	2.65E-05	9.92E-05	4.59E-06	1.30E-04	6.61E-06	3.47E-05	4.24E-06	4.56E-05	4.20E+00	1.04E-04	1.22E-04
1.94E-04	7.89E-03	7.14E-04	3.34E-05	7.94E-05	1.70E-04	1.46E-04	3.96E-04	1.98E-05	5.97E-05	1.40E-04	2.19E-04	3.53E+00	9.02E-06	5.56E-04
2.91E-05	5.77E-04	1.01E-02	0.00E+00	7.94E-05	1.63E-04	3.83E-06	2.47E-04	1.98E-05	5.72E-05	3.52E-06	8.05E-05	2.60E+00	2.04E-03	5.31E-04
3.20E-04	8.48E-03	1.26E-03	3.36E-05	7.94E-05	1.72E-04	2.41E-04	4.93E-04	1.98E-05	6.03E-05	2.31E-04	3.11E-04	3.55E+00	1.49E-05	5.59E-04
2.27E-04	8.25E-03	8.27E-04	3.34E-05	7.94E-05	1.71E-04	1.63E-04	4.13E-04	1.98E-05	5.98E-05	1.56E-04	2.35E-04	3.53E+00	1.05E-05	5.56E-04
2.63E-04	9.84E-03	8.38E-04	3.59E-05	7.94E-05	2.07E-04	6.86E-05	3.55E-04	1.98E-05	7.26E-05	6.56E-05	1.58E-04	3.80E+00	1.22E-05	5.98E-04
3.25E-04	1.10E-02	1.03E-03	3.60E-05	7.94E-05	2.12E-04	9.13E-05	3.82E-04	1.98E-05	7.41E-05	8.73E-05	1.81E-04	3.80E+00	1.51E-05	5.99E-04
3.74E-05	1.55E-03	2.43E-02	0.00E+00	7.94E-05	1.88E-04	2.99E-06	2.70E-04	1.98E-05	6.58E-05	2.75E-06	8.84E-05	3.29E+00	2.62E-03	6.71E-04
3.80E-04	2.81E-02	1.21E-03	4.13E-05	7.94E-05	2.67E-04	1.83E-04	5.30E-04	1.98E-05	9.35E-05	1.75E-04	2.88E-04	4.37E+00	1.77E-05	6.87E-04
5.76E-05	1.67E-03	2.35E-02	0.00E+00	7.94E-05	2.36E-04	5.42E-06	3.21E-04	1.98E-05	8.26E-05	4.98E-06	1.07E-04	3.71E+00	4.03E-03	7.56E-04
3.81E-04	8.93E-03	1.39E-03	3.56E-05	7.94E-05	1.91E-04	2.44E-04	5.14E-04	1.98E-05	6.69E-05	2.33E-04	3.20E-04	3.77E+00	1.77E-05	5.93E-04
3.34E-05	9.43E-04	1.67E-02	0.00E+00	7.94E-05	1.80E-04	3.69E-06	2.63E-04	1.98E-05	6.30E-05	3.40E-06	8.62E-05	2.81E+00	2.34E-03	5.74E-04
4.55E-04	1.18E-02	1.69E-03	3.53E-05	7.94E-05	1.96E-04	2.88E-04	5.64E-04	1.98E-05	6.87E-05	2.76E-04	3.64E-04	3.74E+00	2.11E-05	5.88E-04
3.34E-05	9.39E-04	1.67E-02	0.00E+00	7.94E-05	1.82E-04	3.70E-06	2.65E-04	1.98E-05	6.36E-05	3.40E-06	8.68E-05	2.90E+00	2.34E-03	5.92E-04
5.23E-04	1.20E-02	1.97E-03	3.55E-05	7.94E-05	1.98E-04	3.44E-04	6.21E-04	1.98E-05	6.92E-05	3.29E-04	4.18E-04	3.75E+00	2.43E-05	5.91E-04
3.34E-05	9.39E-04	1.67E-02	0.00E+00	7.94E-05	1.83E-04	3.69E-06	2.66E-04	1.98E-05	6.40E-05	3.40E-06	8.72E-05	2.88E+00	2.34E-03	5.88E-04
6.73E-05	1.94E-02	1.82E-04	8.60E-05	7.94E-05	4.63E-04	3.00E-05	5.72E-04	1.98E-05	1.62E-04	2.87E-05	2.11E-04	9.09E+00	3.13E-06	1.43E-03
2.87E-04	5.83E-03	5.52E-02	0.00E+00	7.94E-05	4.63E-04	6.05E-06	5.48E-04	1.98E-05	1.62E-04	5.56E-06	1.87E-04	3.80E+00	1.21E-02	7.74E-04
3.28E-04	1.08E-02	1.19E-03	3.33E-05	7.94E-05	1.88E-04	1.92E-04	4.59E-04	1.98E-05	6.59E-05	1.83E-04	2.69E-04	3.52E+00	1.52E-05	5.54E-04
3.14E-05	1.24E-03	2.15E-02	0.00E+00	7.94E-05	1.73E-04	2.74E-06	2.55E-04	1.98E-05	6.05E-05	2.51E-06	8.29E-05	2.69E+00	2.19E-03	5.49E-04
9.04E-05	5.43E-03	4.37E-04	3.71E-05	7.94E-05	2.17E-04	2.51E-05	3.21E-04	1.98E-05	7.59E-05	2.40E-05	1.20E-04	3.92E+00	4.20E-06	6.17E-04
2.04E-02	5.92E-02	5.76E-01	6.44E-05	4.41E-05	2.60E-04	4.01E-05	3.45E-04	1.10E-05	9.11E-05	3.77E-05	1.40E-04	6.51E+00	2.44E-03	1.27E-03
2.27E-05	2.13E-04	9.00E-04	3.03E-05	2.21E-05	2.22E-04	2.70E-06	2.46E-04	5.52E-06	7.76E-05	2.48E-06	8.56E-05	3.06E+00	7.14E-06	2.27E-05
2.47E-04	4.48E-03	3.38E-04	2.93E-05	6.82E-05	2.43E-04	1.62E-05	3.27E-04	1.71E-05	8.49E-05	1.55E-05	1.17E-04	3.10E+00	1.15E-05	4.88E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.07E-05	1.21E-04	0.00E+00	1.72E-04	1.27E-05	4.24E-05	0.00E+00	5.51E-05	0.00E+00	0.00E+00	0.00E+00

MTens/Mile															
ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	
7.83E-07	7.62E-06	1.90E-06	1.20E-08	1.20E-08	4.61E-08	2.88E-07	3.47E-07	3.00E-09	1.61E-08	2.76E-07	2.95E-07	1.27E-03	3.64E-08	2.00E-07	
1.04E-08	3.00E-07	3.09E-06	0.00E+00	1.20E-08	4.61E-08	5.82E-10	5.87E-08	3.00E-09	1.61E-08	5.35E-10	1.97E-08	1.09E-03	7.29E-07	2.21E-07	
1.72E-08	7.85E-08	1.03E-06	2.97E-09	8.00E-09	7.26E-09	1.46E-09	1.67E-08	2.00E-09	2.54E-09	1.35E-09	5.89E-09	3.00E-04	4.07E-09	6.89E-09	
3.32E-08	3.24E-07	3.63E-07	2.30E-09	8.00E-09	7.27E-09	2.12E-08	3.65E-08	2.00E-09	2.55E-09	2.03E-08	2.48E-08	2.43E-04	1.54E-09	3.83E-08	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.36E-09	0.00E+00	1.24E-08	2.00E-09	1.53E-09	0.00E+00	3.53E-09	0.00E+00	0.00E+00	0.00E+00	
1.46E-09	3.46E-09	2.26E-07	1.46E-09	8.00E-09	3.79E-09	9.14E-10	1.27E-08	2.00E-09	1.33E-09	8.41E-10	4.17E-09	1.47E-04	4.66E-10	6.39E-10	
4.77E-08	2.14E-07	2.09E-06	3.48E-09	8.00E-09	8.74E-09	2.45E-09	1.92E-08	2.00E-09	3.06E-09	2.25E-09	7.31E-09	3.51E-04	1.03E-08	1.43E-08	
3.08E-07	1.59E-06	1.93E-06	3.96E-09	8.00E-09	1.01E-08	2.32E-07	2.50E-07	2.00E-09	3.54E-09	2.22E-07	2.27E-07	4.18E-04	1.43E-08	6.58E-08	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.39E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00	
1.47E-09	3.47E-09	2.27E-07	1.46E-09	8.00E-09	3.78E-09	1.07E-09	1.28E-08	2.00E-09	1.32E-09	9.80E-10	4.30E-09	1.48E-04	4.71E-10	6.50E-10	
1.89E-08	1.24E-07	1.16E-06	3.75E-09	8.00E-09	8.45E-09	1.51E-09	1.80E-08	2.00E-09	2.96E-09	1.39E-09	6.35E-09	3.79E-04	4.47E-09	8.97E-09	
1.54E-08	7.50E-08	1.34E-07	3.19E-09	8.00E-09	8.19E-09	7.25E-09	2.34E-08	2.00E-09	2.86E-09	6.94E-09	1.18E-08	3.37E-04	7.17E-10	5.31E-08	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.35E-09	0.00E+00	1.24E-08	2.00E-09	1.52E-09	0.00E+00	3.52E-09	0.00E+00	0.00E+00	0.00E+00	
1.44E-09	3.41E-09	2.23E-07	1.44E-09	8.00E-09	3.79E-09	1.04E-09	1.28E-08	2.00E-09	1.33E-09	9.52E-10	4.28E-09	1.45E-04	4.64E-10	6.42E-10	
6.84E-08	2.99E-07	1.53E-06	9.47E-09	8.00E-09	7.80E-08	2.05E-09	8.80E-08	2.00E-09	2.73E-08	1.89E-09	3.12E-08	9.57E-04	1.34E-08	1.66E-08	
2.47E-07	2.84E-06	7.32E-07	6.12E-09	1.20E-08	7.80E-08	5.63E-08	1.46E-07	3.00E-09	2.73E-08	5.38E-08	8.41E-08	6.46E-04	1.15E-08	1.02E-07	
6.01E-08	2.88E-07	1.39E-06	1.06E-08	8.00E-09	9.10E-08	1.87E-09	1.01E-07	2.00E-09	3.19E-08	1.72E-09	3.56E-08	1.07E-03	1.22E-08	1.62E-08	
2.12E-07	2.04E-06	5.71E-07	7.52E-09	1.20E-08	9.10E-08	4.74E-08	1.50E-07	3.00E-09	3.19E-08	4.54E-08	8.02E-08	7.94E-04	9.83E-09	1.25E-07	
1.45E-06	7.10E-07	1.68E-05	1.92E-09	4.00E-09	1.20E-08	1.91E-09	1.79E-08	1.00E-09	4.20E-09	1.80E-09	7.00E-09	1.94E-04	2.07E-07	4.55E-08	
3.58E-08	2.10E-07	1.59E-06	4.55E-09	8.00E-09	8.71E-09	1.65E-09	1.84E-08	2.00E-09	3.05E-09	1.52E-09	6.57E-09	4.59E-04	7.54E-09	1.33E-08	
1.34E-08	9.24E-08	2.00E-07	4.12E-09	8.00E-09	8.20E-09	7.06E-09	2.33E-08	2.00E-09	2.87E-09	6.75E-09	1.16E-08	4.35E-04	6.23E-10	6.85E-08	
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.43E-09	0.00E+00	1.24E-08	2.00E-09	1.55E-09	0.00E+00	3.55E-09	0.00E+00	0.00E+00	0.00E+00	
1.46E-09	3.46E-09	2.27E-07	1.46E-09	8.00E-09	3.78E-09	1.07E-09	1.28E-08	2.00E-09	1.32E-09	9.82E-10	4.31E-09	1.48E-04	4.70E-10	6.48E-10	
1.23E-07	5.78E-07	3.28E-06	1.93E-08	1.20E-08	4.50E-08	2.15E-09	5.92E-08	3.00E-09	1.58E-08	1.98E-09	2.07E-08	1.95E-03	2.43E-08	3.24E-08	
1.31E-07	4.90E-06	4.52E-07	1.02E-08	1.60E-08	4.48E-08	1.31E-07	1.91E-07	4.00E-09	1.57E-08	1.25E-07	1.45E-07	1.08E-03	6.10E-09	1.70E-07	
1.77E-07	4.33E-06	6.23E-07	1.66E-08	1.20E-08	7.91E-08	1.08E-07	1.99E-07	3.00E-09	2.77E-08	1.03E-07	1.34E-07	1.76E-03	8.24E-09	2.77E-07	
1.20E-07	8.70E-07	2.76E-06	1.84E-08	1.20E-08	4.48E-08	7.69E-10	5.76E-08	3.00E-09	1.57E-08	7.07E-10	1.94E-08	1.85E-03	2.47E-08	3.94E-08	
4.50E-07	7.06E-06	1.68E-06	2.08E-08	0.00E+00	0.00E+00	1.75E-07	1.75E-07	0.00E+00	0.00E+00	1.68E-07	1.68E-07	2.20E-03	2.09E-08	3.46E-07	
4.71E-07	8.54E-07	1.05E-05	8.23E-09	8.00E-09	4.49E-08	3.40E-09	5.63E-08	2.00E-09	1.57E-08	3.16E-09	2.09E-08	8.31E-04	7.41E-08	3.99E-08	
5.31E-08	3.64E-06	1.64E-07	1.08E-08	1.20E-08	4.49E-08	2.02E-08	7.72E-08	3.00E-09	1.57E-08	1.94E-08	3.81E-08	1.14E-03	2.47E-09	1.80E-07	
5.20E-08	6.41E-07	1.26E-05	0.00E+00	1.20E-08	4.49E-08	3.67E-09	6.06E-08	3.00E-09	1.57E-08	3.38E-09	2.21E-08	1.31E-03	3.64E-06	2.66E-07	
8.78E-08	2.18E-06	3.12E-07	1.08E-08	1.20E-08	4.23E-08	7.44E-08	1.29E-07	3.00E-09	1.48E-08	7.12E-08	8.90E-08	1.14E-03	4.08E-09	1.79E-07	
5.99E-08	1.64E-06	2.28E-07	1.07E-08	1.20E-08	4.23E-08	5.44E-08	1.09E-07	3.00E-09	1.48E-08	5.21E-08	6.99E-08	1.13E-03	2.78E-09	1.78E-07	
8.56E-08	2.14E-06	3.18E-07	1.06E-08	1.20E-08	4.23E-08	7.67E-08	1.31E-07	3.00E-09	1.48E-08	7.34E-08	9.12E-08	1.12E-03	3.97E-09	1.76E-07	
8.48E-08	2.28E-06	2.89E-07	9.99E-09	1.20E-08	4.23E-08	6.94E-08	1.24E-07	3.00E-09	1.48E-08	6.64E-08	8.42E-08	1.06E-03	3.94E-09	1.66E-07	
5.67E-07	7.12E-06	1.49E-06	1.19E-08	1.20E-08	4.76E-08	2.29E-07	2.89E-07	3.00E-09	1.66E-08	2.20E-07	2.39E-07	1.26E-03	2.63E-08	1.98E-07	
1.04E-08	2.97E-07	3.25E-06	0.00E+00	1.20E-08	4.76E-08	6.54E-10	6.02E-08	3.00E-09	1.66E-08	6.02E-10	2.02E-08	1.11E-03	7.28E-07	2.27E-07	
2.80E-07	3.98E-06	7.42E-07	1.17E-08	1.20E-08	4.76E-08	1.08E-07	1.68E-07	3.00E-09	1.66E-08	1.03E-07	1.23E-07	1.24E-03	1.30E-08	1.95E-07	
1.04E-08	3.00E-07	3.25E-06	0.00E+00	1.20E-08	4.76E-08	6.39E-10	6.02E-08	3.00E-09	1.66E-08	5.87E-10	2.02E-08	1.11E-03	7.27E-07	2.27E-07	
4.35E-07	5.63E-06	1.14E-06	1.17E-08	1.20E-08	4.76E-08	1.78E-07	2.37E-07	3.00E-09	1.66E-08	1.70E-07	1.90E-07	1.24E-03	2.02E-08	1.95E-07	
1.04E-08	2.98E-07	3.25E-06	0.00E+00	1.20E-08	4.76E-08	6.48E-10	6.02E-08	3.00E-09	1.66E-08	5.96E-10	2.02E-08	1.11E-03	7.28E-07	2.26E-07	
4.82E-07	6.94E-06	1.26E-06	1.18E-08	1.20E-08	4.76E-08	2.19E-07	2.79E-07	3.00E-09	1.66E-08	2.10E-07	2.29E-07	1.25E-03	2.24E-08	1.96E-07	
1.05E-08	2.84E-07	3.28E-06	0.00E+00	1.20E-08	4.76E-08	7.30E-10	6.03E-08	3.00E-09	1.66E-08	6.71E-10	2.03E-08	1.09E-03	7.36E-07	2.22E-07	
5.02E-07	7.70E-06	1.41E-06	1.12E-08	1.20E-08	4.49E-08	2.58E-07	3.14E-07	3.00E-09	1.57E-08	2.46E-07	2.65E-07	1.19E-03	2.33E-08	1.87E-07	
7.97E-09	2.28E-07	2.83E-06	0.00E+00	1.20E-08	4.49E-08	5.11E-10	5.74E-08	3.00E-09	1.57E-08	4.69E-10	1.92E-08	9.65E-04	5.58E-07	1.97E-07	
1.68E-07	2.84E-06	5.08E-07	1.10E-08	1.20E-08	4.49E-08	8.85E-08	1.45E-07	3.00E-09	1.57E-08	8.47E-08	1.03E-07	1.16E-03	7.81E-09	1.83E-07	
7.93E-09	2.31E-07	2.83E-06	0.00E+00	1.20E-08	4.49E-08	4.93E-10	5.74E-08	3.00E-09	1.57E-08	4.54E-10	1.92E-08	9.64E-04	5.55E-07	1.96E-07	
2.94E-07	4.68E-06	8.53E-07	1.10E-08	1.20E-08	4.49E-08	1.53E-07	2.09E-07	3.00E-09	1.57E-08	1.46E-07	1.65E-07	1.16E-03	1.36E-08	1.82E-07	
8.01E-09	2.24E-07	2.83E-06	0.00E+00	1.20E-08	4.49E-08	5.35E-10	5.74E-08	3.00E-09	1.57E-08	4.92E-10	1.92E-08	9.66E-04	5.61E-07	1.97E-07	
2.51E-07	4.35E-06	6.99E-07	1.10E-08	1.20E-08	4.49E-08	1.34E-07	1.91E-07	3.00E-09	1.57E-08	1.28E-07	1.47E-07	1.16E-03	1.17E-08	1.83E-07	
8.72E-09	1.64E-07	2.80E-06	0.00E+00	1.20E-08	4.49E-08	9.07E-10	5.78E-08	3.00E-09	1.57E-08	8.34E-10	1.95E-08	9.36E-04	6.10E-07	1.91E-07	
5.67E-07	7.27E-06	1.58E-06	1.14E-08	1.20E-08	4.49E-08	3.33E-07	3.90E-07	3.00E-09	1.57E-08	3.19E-07	3.37E-07	1.21E-03	2.63E-08	1.90E-07	
1.65E-07	4.27E-06	4.58E-07	1.07E-08	1.20E-08	4.49E-08	6.85E-08	1.25E-07	3.00E-09	1.57E-08	6.56E-08	8.43E-08	1.13E-03	7.68E-09	1.78E-07	
8.54E-09	1.80E-07	2.81E-06	0.00E+00	1.20E-08	4.49E-08	8.12E-10	5.77E-08	3.00E-09	1.57E-08	7.47E-10	1.94E-08	9.36E-04	5.97E-07	1.91E-07	
8.78E-08	2.18E-06	3.12E-07	1.08E-08	1.20E-08	4.23E-08	7.44E-08	1.29E-07	3.00E-09	1.48E-08	7.12E-08	8.90E-08	1.14E-03	4.08E-09	1.79E-07	
5.99E-08	1.64E-06	2.28E-07	1.07E-08	1.20E-08	4.23E-08	5.44E-08	1.09E-07	3.00E-09	1.48E-08	5.21E-08	6.99E-08	1.13E-03	2.78E-09	1.78E-07	
8.56E-08	2.14E-06	3.18E-07	1.06E-08	1.20E-08	4.23E-08	7.67E-08	1.31E-07	3.00E-09	1.48E-08	7.34E-08	9.12E-08	1.12E-03	3.97E-09	1.76E-07	
9.39E-08	2.39E-06	3.19E-07	9.98E-09	1.20E-08	4.23E-08	7.66E-08	1.31E-07	3.00E-09	1.48E-08	7.33E-08	9.11E-08	1.05E-03	4.36E-09	1.66E-07	
1.16E-07	8.19E-06	2.70E-07	1.22E-08	1.20E-08	4.62E-08	4.12E-08	9.94E-08	3.00E-09	1.62E-08	3.94E-08	5.86E-08	1.29E-03	5.37E-09	2.03E-07	
1.10E-08	3.17E-07	3.03E-06	0.00E+00	1.20E-08	4.62E-08	5.68E-10	5.87E-08	3.00E-09	1.62E-08	5.23E-10	1.97E-08	1.07E-03	7.72E-07	2.18E-07	
6.54E-08	3.59E-06	1.77E-07	1.18E-08	1.20E-08	4.62E-08	1.78E-08	7.59E-08	3.00E-09	1.62E-08	1.70E-08	3.62E-08	1.25E-03	3.04E-09	1.96E-07	

1.22E-08	1.31E-07	3.08E-06	0.00E+00	1.20E-08	4.62E-08	1.45E-09	5.96E-08	3.00E-09	1.62E-08	1.33E-09	2.05E-08	1.06E-03	8.52E-07	2.16E-07
1.18E-07	7.79E-06	2.64E-07	1.22E-08	1.20E-08	4.62E-08	5.19E-08	1.10E-07	3.00E-09	1.62E-08	4.97E-08	6.88E-08	1.29E-03	5.50E-09	2.03E-07
1.19E-08	1.76E-07	3.09E-06	0.00E+00	1.20E-08	4.62E-08	1.24E-09	5.94E-08	3.00E-09	1.62E-08	1.14E-09	2.03E-08	1.05E-03	8.33E-07	2.13E-07
1.48E-07	9.61E-06	3.12E-07	1.24E-08	1.20E-08	4.62E-08	6.92E-08	1.27E-07	3.00E-09	1.62E-08	6.62E-08	8.54E-08	1.31E-03	6.86E-09	2.07E-07
1.19E-08	1.81E-07	3.10E-06	0.00E+00	1.20E-08	4.62E-08	1.21E-09	5.94E-08	3.00E-09	1.62E-08	1.11E-09	2.03E-08	1.04E-03	8.31E-07	2.12E-07
2.45E-08	1.27E-06	9.54E-08	1.08E-08	1.20E-08	4.55E-08	6.14E-09	6.36E-08	3.00E-09	1.59E-08	5.88E-09	2.48E-08	1.14E-03	1.14E-09	1.79E-07
9.34E-09	2.70E-07	2.89E-06	0.00E+00	1.20E-08	4.55E-08	5.18E-10	5.80E-08	3.00E-09	1.59E-08	4.76E-10	1.94E-08	1.01E-03	6.54E-07	2.06E-07
3.71E-08	2.08E-06	1.24E-07	1.10E-08	1.20E-08	4.55E-08	1.08E-08	6.83E-08	3.00E-09	1.59E-08	1.03E-08	2.92E-08	1.17E-03	1.72E-09	1.83E-07
9.34E-09	2.70E-07	2.89E-06	0.00E+00	1.20E-08	4.55E-08	5.18E-10	5.80E-08	3.00E-09	1.59E-08	4.76E-10	1.94E-08	9.95E-04	6.54E-07	2.03E-07
2.80E-08	1.92E-06	1.00E-07	1.10E-08	1.20E-08	4.55E-08	1.03E-08	6.78E-08	3.00E-09	1.59E-08	9.87E-09	2.88E-08	1.17E-03	1.30E-09	1.83E-07
9.34E-09	2.70E-07	2.89E-06	0.00E+00	1.20E-08	4.55E-08	5.18E-10	5.80E-08	3.00E-09	1.59E-08	4.76E-10	1.94E-08	1.00E-03	6.54E-07	2.04E-07
2.58E-07	1.33E-06	5.81E-06	1.88E-08	1.20E-08	4.50E-08	2.08E-09	5.91E-08	3.00E-09	1.58E-08	1.92E-09	2.07E-08	1.90E-03	4.74E-08	5.56E-08
8.81E-08	3.58E-06	3.24E-07	1.51E-08	3.60E-08	7.73E-08	6.62E-08	1.80E-07	9.00E-09	2.71E-08	6.33E-08	9.94E-08	1.60E-03	4.09E-09	2.52E-07
1.32E-08	2.62E-07	4.60E-06	0.00E+00	3.60E-08	7.41E-08	1.74E-09	1.12E-07	9.00E-09	2.59E-08	1.60E-09	3.65E-08	1.18E-03	9.23E-07	2.41E-07
1.45E-07	3.84E-06	5.72E-07	1.52E-08	3.60E-08	7.82E-08	1.09E-07	2.24E-07	9.00E-09	2.74E-08	1.05E-07	1.41E-07	1.61E-03	6.74E-09	2.54E-07
1.03E-07	3.74E-06	3.75E-07	1.51E-08	3.60E-08	7.75E-08	7.38E-08	1.87E-07	9.00E-09	2.71E-08	7.06E-08	1.07E-07	1.60E-03	4.78E-09	2.52E-07
1.19E-07	4.46E-06	3.80E-07	1.63E-08	3.60E-08	9.40E-08	3.11E-08	1.61E-07	9.00E-09	3.29E-08	2.98E-08	7.17E-08	1.72E-03	5.53E-09	2.71E-07
1.47E-07	4.97E-06	4.69E-07	1.63E-08	3.60E-08	9.60E-08	4.14E-08	1.73E-07	9.00E-09	3.36E-08	3.96E-08	8.22E-08	1.73E-03	6.85E-09	2.72E-07
1.70E-08	7.05E-07	1.10E-05	0.00E+00	3.60E-08	8.52E-08	1.36E-09	1.23E-07	9.00E-09	2.98E-08	1.25E-09	4.01E-08	1.49E-03	1.19E-06	3.04E-07
1.73E-07	1.27E-05	5.50E-07	1.87E-08	3.60E-08	1.21E-07	8.30E-08	2.40E-07	9.00E-09	4.24E-08	7.94E-08	1.31E-07	1.98E-03	8.01E-09	3.12E-07
2.61E-08	7.55E-07	1.07E-05	0.00E+00	3.60E-08	1.07E-07	2.46E-09	1.45E-07	9.00E-09	3.75E-08	2.26E-09	4.87E-08	1.68E-03	1.83E-06	3.43E-07
1.73E-07	4.05E-06	6.29E-07	1.62E-08	3.60E-08	8.68E-08	1.11E-07	2.33E-07	9.00E-09	3.04E-08	1.06E-07	1.45E-07	1.71E-03	8.02E-09	2.69E-07
1.51E-08	4.28E-07	7.58E-06	0.00E+00	3.60E-08	8.16E-08	1.68E-09	1.19E-07	9.00E-09	2.86E-08	1.54E-09	3.91E-08	1.28E-03	1.06E-06	2.60E-07
2.06E-07	5.33E-06	7.69E-07	1.60E-08	3.60E-08	8.91E-08	1.31E-07	2.56E-07	9.00E-09	3.12E-08	1.25E-07	1.65E-07	1.69E-03	9.58E-09	2.67E-07
1.51E-08	4.26E-07	7.57E-06	0.00E+00	3.60E-08	8.24E-08	1.68E-09	1.20E-07	9.00E-09	2.88E-08	1.54E-09	3.94E-08	1.32E-03	1.06E-06	2.68E-07
2.37E-07	5.43E-06	8.92E-07	1.61E-08	3.60E-08	8.97E-08	1.56E-07	2.82E-07	9.00E-09	3.14E-08	1.49E-07	1.90E-07	1.70E-03	1.10E-08	2.68E-07
1.51E-08	4.26E-07	7.59E-06	0.00E+00	3.60E-08	8.29E-08	1.68E-09	1.21E-07	9.00E-09	2.90E-08	1.54E-09	3.96E-08	1.31E-03	1.06E-06	2.67E-07
3.05E-08	8.80E-06	8.25E-08	3.90E-08	3.60E-08	2.10E-07	1.36E-08	2.60E-07	9.00E-09	7.35E-08	1.30E-08	9.55E-08	4.12E-03	1.42E-09	6.49E-07
1.30E-07	2.64E-06	2.50E-05	0.00E+00	3.60E-08	2.10E-07	2.74E-09	2.49E-07	9.00E-09	7.35E-08	2.52E-09	8.50E-08	1.72E-03	5.48E-06	3.51E-07
1.49E-07	4.88E-06	5.39E-07	1.51E-08	3.60E-08	8.54E-08	8.69E-08	2.08E-07	9.00E-09	2.99E-08	8.32E-08	1.22E-07	1.60E-03	6.91E-09	2.51E-07
1.42E-08	5.64E-07	9.76E-06	0.00E+00	3.60E-08	7.85E-08	1.24E-09	1.16E-07	9.00E-09	2.75E-08	1.14E-09	3.76E-08	1.22E-03	9.96E-07	2.49E-07
4.10E-08	2.46E-06	1.98E-07	1.68E-08	3.60E-08	9.84E-08	1.14E-08	1.46E-07	9.00E-09	3.44E-08	1.09E-08	5.43E-08	1.78E-03	1.90E-09	2.80E-07
9.28E-06	2.69E-05	2.61E-04	2.92E-08	2.00E-08	1.18E-07	1.82E-08	1.56E-07	5.00E-09	4.13E-08	1.71E-08	6.34E-08	2.95E-03	1.10E-06	5.76E-07
1.03E-08	9.66E-08	4.08E-07	1.37E-08	1.00E-08	1.01E-07	1.22E-09	1.12E-07	2.50E-09	3.52E-08	1.12E-09	3.88E-08	1.39E-03	3.24E-09	1.03E-08
1.12E-07	2.03E-06	1.53E-07	1.33E-08	3.09E-08	1.10E-07	7.36E-09	1.48E-07	7.73E-09	3.85E-08	7.04E-09	5.33E-08	1.41E-03	5.20E-09	2.21E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-08	5.50E-08	0.00E+00	7.80E-08	5.75E-09	1.93E-08	0.00E+00	2.50E-08	0.00E+00	0.00E+00	0.00E+00

Existing in Year 2045: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.2) Emission Rates, Contra Costa County, Average Speed, Average Fleet

Source: F&P 2023	Small Trucks	Medium Trucks	Heavy Trucks	Passenger Vehicles
Truck Trip Percentage	1.2%	0.1%	0.4%	98.3%
EMFAC Default	3.44%	1.10%	2.99%	92.47%

Daily VMT	**3,530,197**			**lbs/day**					
Vehicle Type	**Fuel Type**	**Percent of VMT**	**Adjusted Percent of VMT**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
All Other Buses	Diesel	0.02%	0.00%	0.01	0.22	0.04	0.00	0.01	0.01
All Other Buses	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
LDA	Gasoline	42.85%	45.57%	9.92	69.74	1,629.40	7.80	56.48	17.93
LDA	Diesel	0.03%	0.03%	0.01	0.04	0.28	0.00	0.04	0.01
LDA	Electricity	6.20%	6.59%	0.00	0.00	0.00	0.00	6.36	1.81
LDA	Plug-in Hybrid	2.05%	2.18%	0.19	0.45	29.29	0.19	2.07	0.61
LDT1	Gasoline	2.66%	2.83%	0.69	4.75	108.32	0.56	3.83	1.23
LDT1	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	Electricity	0.08%	0.09%	0.00	0.00	0.00	0.00	0.09	0.02
LDT1	Plug-in Hybrid	0.06%	0.07%	0.01	0.01	0.91	0.01	0.06	0.02
LDT2	Gasoline	22.89%	24.34%	7.45	43.58	1,026.34	5.02	32.72	10.49
LDT2	Diesel	0.09%	0.09%	0.08	0.20	0.89	0.02	0.15	0.07
LDT2	Electricity	0.64%	0.68%	0.00	0.00	0.00	0.00	0.66	0.19
LDT2	Plug-in Hybrid	0.62%	0.66%	0.06	0.14	8.93	0.06	0.63	0.19
LHD1	Gasoline	0.93%	0.32%	0.11	0.55	14.75	0.19	2.17	0.76
LHD1	Diesel	0.61%	0.21%	1.48	4.90	3.83	0.09	1.78	0.80
LHD1	Electricity	1.21%	0.41%	0.00	0.00	0.00	0.00	1.51	0.50
LHD2	Gasoline	0.11%	0.04%	0.01	0.06	1.69	0.02	0.28	0.10
LHD2	Diesel	0.29%	0.10%	0.86	3.28	2.27	0.05	0.97	0.45
LHD2	Electricity	0.29%	0.31%	0.00	0.00	0.00	0.00	1.29	0.43
MCY	Gasoline	0.33%	0.35%	21.28	12.86	267.92	0.05	0.49	0.20
MDV	Gasoline	12.87%	13.68%	4.80	28.74	610.63	3.44	18.57	5.97
MDV	Diesel	0.14%	0.15%	0.05	0.14	1.60	0.04	0.21	0.07
MDV	Electricity	0.58%	0.62%	0.00	0.00	0.00	0.00	0.60	0.17
MDV	Plug-in Hybrid	0.38%	0.41%	0.04	0.08	5.46	0.04	0.39	0.11
MH	Gasoline	0.04%	0.00%	0.00	0.07	0.06	0.01	0.02	0.01
MH	Diesel	0.02%	0.00%	0.02	0.56	0.06	0.00	0.02	0.01
Motor Coach	Diesel	0.01%	0.00%	0.00	0.12	0.00	0.00	0.02	0.01
OBUS	Gasoline	0.01%	0.00%	0.00	0.04	0.07	0.00	0.01	0.00
OBUS	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
PTO	Diesel	0.03%	0.00%	0.00	0.77	0.05	0.00	0.00	0.00
PTO	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
SBUS	Gasoline	0.02%	0.00%	0.00	0.02	0.03	0.00	0.01	0.00
SBUS	Diesel	0.02%	0.00%	0.00	0.08	0.01	0.00	0.01	0.00
SBUS	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
SBUS	Natural Gas	0.00%	0.00%	0.00	0.00	0.09	0.00	0.00	0.00
T6 CAIRP Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Diesel	0.01%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 4	Diesel	0.02%	0.00%	0.00	0.04	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 4	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 5	Diesel	0.01%	0.00%	0.00	0.04	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 5	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 6	Diesel	0.03%	0.00%	0.00	0.08	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 6	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Delivery Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 7	Diesel	0.01%	0.00%	0.00	0.04	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00

T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Other Class 4	Diesel	0.05%	0.00%	0.00	0.09	0.01	0.00	0.02	0.01
T6 Instate Other Class 4	Electricity	0.06%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Other Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Other Class 5	Diesel	0.12%	0.01%	0.00	0.21	0.03	0.01	0.05	0.02
T6 Instate Other Class 5	Electricity	0.13%	0.01%	0.00	0.00	0.00	0.00	0.03	0.01
T6 Instate Other Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Instate Other Class 6	Diesel	0.09%	0.01%	0.00	0.16	0.03	0.01	0.04	0.01
T6 Instate Other Class 6	Electricity	0.10%	0.01%	0.00	0.00	0.00	0.00	0.02	0.01
T6 Instate Other Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Instate Other Class 7	Diesel	0.07%	0.01%	0.00	0.22	0.02	0.00	0.03	0.01
T6 Instate Other Class 7	Electricity	0.05%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Instate Tractor Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Diesel	0.01%	0.00%	0.00	0.04	0.00	0.00	0.01	0.00
T6 Instate Tractor Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 OOS Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 7	Diesel	0.01%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 Public Class 4	Diesel	0.01%	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6 Public Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 5	Diesel	0.01%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Public Class 5	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 6	Diesel	0.01%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Public Class 6	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 7	Diesel	0.02%	0.00%	0.00	0.06	0.01	0.00	0.01	0.00
T6 Public Class 7	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Utility Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 5	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6TS	Gasoline	0.08%	0.01%	0.01	0.04	0.10	0.01	0.03	0.01
T6TS	Electricity	0.09%	0.01%	0.00	0.00	0.00	0.00	0.02	0.01
T7 CAIRP Class 8	Diesel	0.43%	0.06%	0.05	5.42	0.17	0.05	0.66	0.30
T7 CAIRP Class 8	Electricity	0.12%	0.02%	0.00	0.00	0.00	0.00	0.10	0.03
T7 CAIRP Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T7 NNOOS Class 8	Diesel	0.66%	0.09%	0.08	9.12	0.26	0.08	1.01	0.45
T7 NOOS Class 8	Diesel	0.24%	0.03%	0.03	3.41	0.10	0.03	0.37	0.17
T7 Other Port Class 8	Diesel	0.05%	0.01%	0.00	0.58	0.03	0.01	0.07	0.03
T7 Other Port Class 8	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T7 POAK Class 8	Diesel	0.16%	0.02%	0.02	2.09	0.11	0.02	0.24	0.10
T7 POAK Class 8	Electricity	0.04%	0.00%	0.00	0.00	0.00	0.00	0.03	0.01
T7 POAK Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T7 Public Class 8	Diesel	0.04%	0.01%	0.01	0.92	0.07	0.01	0.07	0.03
T7 Public Class 8	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.03	0.01
T7 Public Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T7 Single Concrete/Transit Mix Class 8	Diesel	0.01%	0.00%	0.00	0.07	0.00	0.00	0.01	0.00
T7 Single Concrete/Transit Mix Class 8	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T7 Single Dump Class 8	Diesel	0.06%	0.01%	0.01	0.66	0.03	0.01	0.08	0.03
T7 Single Dump Class 8	Electricity	0.05%	0.01%	0.00	0.00	0.00	0.00	0.04	0.01
T7 Single Dump Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.17	0.00	0.00	0.00
T7 Single Other Class 8	Diesel	0.07%	0.01%	0.01	0.75	0.04	0.01	0.10	0.04

T7 Single Other Class 8	Electricity	0.07%	0.01%	0.00	0.00	0.00	0.00	0.06	0.02
T7 Single Other Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.19	0.00	0.01	0.00
T7 SWCV Class 8	Diesel	0.01%	0.00%	0.00	0.34	0.01	0.00	0.02	0.01
T7 SWCV Class 8	Electricity	0.04%	0.00%	0.00	0.00	0.00	0.00	0.05	0.02
T7 SWCV Class 8	Natural Gas	0.05%	0.01%	0.01	0.18	5.54	0.00	0.12	0.04
T7 Tractor Class 8	Diesel	0.40%	0.05%	0.04	4.92	0.20	0.05	0.59	0.25
T7 Tractor Class 8	Electricity	0.08%	0.01%	0.00	0.00	0.00	0.00	0.07	0.02
T7 Tractor Class 8	Natural Gas	0.03%	0.00%	0.01	0.07	1.43	0.00	0.04	0.01
T7 Utility Class 8	Diesel	0.00%	0.00%	0.00	0.05	0.00	0.00	0.01	0.00
T7 Utility Class 8	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T7IS	Gasoline	0.00%	0.00%	0.00	0.01	0.08	0.00	0.00	0.00
T7IS	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	Gasoline	0.01%	0.00%	0.00	0.00	0.05	0.00	0.01	0.00
UBUS	Electricity	0.09%	0.01%	0.00	0.00	0.00	0.00	0.08	0.02
		100%	100%	47	201	3,722	18	136	44

Year 2045: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.2) Emission Rates, Contra Costa County, Average Speed, Average Fleet

Source: F&P 2023	Small Trucks	Medium Trucks	Heavy Trucks	Passenger Vehicles
Truck Trip Percentage	1.3%	0.1%	0.4%	98.2%
EMFAC Default	3.44%	1.10%	2.99%	92.47%

Daily VMT	**4,272,206**			**lbs/day**					
Vehicle Type	**Fuel Type**	**Percent of VMT**	**Adjusted Percent of VMT**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
All Other Buses	Diesel	0.02%	0.00%	0.01	0.28	0.05	0.00	0.02	0.01
All Other Buses	Natural Gas	0.00%	0.00%	0.00	0.00	0.12	0.00	0.00	0.00
LDA	Gasoline	42.85%	45.51%	11.99	84.29	1,969.41	9.43	68.27	21.67
LDA	Diesel	0.03%	0.03%	0.01	0.05	0.34	0.00	0.04	0.02
LDA	Electricity	6.20%	6.58%	0.00	0.00	0.00	0.00	7.68	2.19
LDA	Plug-in Hybrid	2.05%	2.17%	0.23	0.54	35.40	0.23	2.50	0.73
LDT1	Gasoline	2.66%	2.83%	0.83	5.75	130.92	0.68	4.63	1.49
LDT1	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	Electricity	0.08%	0.09%	0.00	0.00	0.00	0.00	0.10	0.03
LDT1	Plug-in Hybrid	0.06%	0.07%	0.01	0.02	1.10	0.01	0.08	0.02
LDT2	Gasoline	22.89%	24.31%	9.00	52.67	1,240.50	6.07	39.54	12.68
LDT2	Diesel	0.09%	0.09%	0.10	0.24	1.07	0.02	0.18	0.08
LDT2	Electricity	0.64%	0.68%	0.00	0.00	0.00	0.00	0.79	0.23
LDT2	Plug-in Hybrid	0.62%	0.66%	0.07	0.16	10.79	0.07	0.76	0.22
LHD1	Gasoline	0.93%	0.34%	0.14	0.71	19.13	0.24	2.81	0.98
LHD1	Diesel	0.61%	0.22%	1.92	6.35	4.96	0.12	2.30	1.03
LHD1	Electricity	1.21%	0.44%	0.00	0.00	0.00	0.00	1.96	0.65
LHD2	Gasoline	0.11%	0.04%	0.01	0.08	2.20	0.03	0.37	0.13
LHD2	Diesel	0.29%	0.10%	1.12	4.25	2.94	0.07	1.26	0.58
LHD2	Electricity	0.29%	0.11%	0.00	0.00	0.00	0.00	0.54	0.18
MCY	Gasoline	0.33%	0.35%	25.72	15.54	323.82	0.06	0.60	0.24
MDV	Gasoline	12.87%	13.66%	5.80	34.73	738.05	4.15	22.45	7.22
MDV	Diesel	0.14%	0.15%	0.06	0.17	1.94	0.04	0.26	0.09
MDV	Electricity	0.58%	0.62%	0.00	0.00	0.00	0.00	0.72	0.21
MDV	Plug-in Hybrid	0.38%	0.41%	0.04	0.10	6.60	0.04	0.47	0.14
MH	Gasoline	0.04%	0.01%	0.01	0.10	0.08	0.01	0.03	0.01
MH	Diesel	0.02%	0.00%	0.02	0.73	0.07	0.00	0.03	0.01
Motor Coach	Diesel	0.01%	0.00%	0.00	0.16	0.01	0.00	0.02	0.01
OBUS	Gasoline	0.01%	0.00%	0.00	0.05	0.09	0.00	0.01	0.00
OBUS	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
PTO	Diesel	0.03%	0.00%	0.01	1.00	0.07	0.01	0.00	0.00
PTO	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
SBUS	Gasoline	0.02%	0.00%	0.00	0.03	0.04	0.00	0.01	0.00
SBUS	Diesel	0.02%	0.00%	0.00	0.10	0.01	0.00	0.01	0.01
SBUS	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
SBUS	Natural Gas	0.00%	0.00%	0.00	0.00	0.11	0.00	0.00	0.00
T6 CAIRP Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Diesel	0.01%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 4	Diesel	0.02%	0.00%	0.00	0.06	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 4	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Delivery Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 5	Diesel	0.01%	0.00%	0.00	0.05	0.01	0.00	0.01	0.00
T6 Instate Delivery Class 5	Electricity	0.02%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 6	Diesel	0.03%	0.00%	0.00	0.11	0.02	0.00	0.02	0.01
T6 Instate Delivery Class 6	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Delivery Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 7	Diesel	0.01%	0.00%	0.00	0.05	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00

T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Other Class 4	Diesel	0.05%	0.00%	0.00	0.12	0.02	0.00	0.03	0.01
T6 Instate Other Class 4	Electricity	0.06%	0.01%	0.00	0.00	0.00	0.00	0.02	0.01
T6 Instate Other Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Instate Other Class 5	Diesel	0.12%	0.01%	0.01	0.28	0.04	0.01	0.06	0.02
T6 Instate Other Class 5	Electricity	0.13%	0.01%	0.00	0.00	0.00	0.00	0.04	0.01
T6 Instate Other Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T6 Instate Other Class 6	Diesel	0.09%	0.01%	0.00	0.22	0.03	0.01	0.05	0.02
T6 Instate Other Class 6	Electricity	0.10%	0.01%	0.00	0.00	0.00	0.00	0.03	0.01
T6 Instate Other Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Instate Other Class 7	Diesel	0.07%	0.01%	0.00	0.30	0.03	0.01	0.04	0.01
T6 Instate Other Class 7	Electricity	0.05%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T6 Instate Tractor Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Diesel	0.01%	0.00%	0.00	0.05	0.01	0.00	0.01	0.00
T6 Instate Tractor Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 OOS Class 4	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 5	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 OOS Class 7	Diesel	0.01%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 Public Class 4	Diesel	0.01%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Public Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
T6 Public Class 5	Diesel	0.01%	0.00%	0.00	0.05	0.01	0.00	0.01	0.00
T6 Public Class 5	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Public Class 6	Diesel	0.01%	0.00%	0.00	0.04	0.00	0.00	0.00	0.00
T6 Public Class 6	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Public Class 7	Diesel	0.02%	0.00%	0.00	0.07	0.01	0.00	0.01	0.00
T6 Public Class 7	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Utility Class 5	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 Utility Class 5	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6TS	Gasoline	0.08%	0.01%	0.01	0.05	0.13	0.01	0.04	0.01
T6TS	Electricity	0.09%	0.01%	0.00	0.00	0.00	0.00	0.03	0.01
T7 CAIRP Class 8	Diesel	0.43%	0.06%	0.07	7.06	0.23	0.07	0.86	0.39
T7 CAIRP Class 8	Electricity	0.12%	0.02%	0.00	0.00	0.00	0.00	0.13	0.04
T7 CAIRP Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T7 NNOOS Class 8	Diesel	0.66%	0.09%	0.10	11.88	0.34	0.10	1.31	0.59
T7 NOOS Class 8	Diesel	0.24%	0.03%	0.04	4.44	0.13	0.04	0.48	0.22
T7 Other Port Class 8	Diesel	0.05%	0.01%	0.01	0.75	0.04	0.01	0.09	0.04
T7 Other Port Class 8	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T7 POAK Class 8	Diesel	0.16%	0.02%	0.02	2.72	0.14	0.03	0.31	0.12
T7 POAK Class 8	Electricity	0.04%	0.01%	0.00	0.00	0.00	0.00	0.04	0.01
T7 POAK Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T7 Public Class 8	Diesel	0.04%	0.01%	0.02	1.19	0.09	0.01	0.09	0.03
T7 Public Class 8	Electricity	0.03%	0.00%	0.00	0.00	0.00	0.00	0.03	0.01
T7 Public Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T7 Single Concrete/Transit Mix Class 8	Diesel	0.01%	0.00%	0.00	0.09	0.00	0.00	0.02	0.01
T7 Single Concrete/Transit Mix Class 8	Electricity	0.01%	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T7 Single Dump Class 8	Diesel	0.06%	0.01%	0.01	0.86	0.04	0.01	0.11	0.04
T7 Single Dump Class 8	Electricity	0.05%	0.01%	0.00	0.00	0.00	0.00	0.06	0.02
T7 Single Dump Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.22	0.00	0.01	0.00
T7 Single Other Class 8	Diesel	0.07%	0.01%	0.01	0.98	0.05	0.01	0.14	0.05

T7 Single Other Class 8	Electricity	0.07%	0.01%	0.00	0.00	0.00	0.00	0.08	0.02
T7 Single Other Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.25	0.00	0.01	0.00
T7 SWCV Class 8	Diesel	0.01%	0.00%	0.00	0.44	0.01	0.00	0.02	0.01
T7 SWCV Class 8	Electricity	0.04%	0.01%	0.00	0.00	0.00	0.00	0.07	0.02
T7 SWCV Class 8	Natural Gas	0.05%	0.01%	0.01	0.23	7.22	0.00	0.16	0.05
T7 Tractor Class 8	Diesel	0.40%	0.06%	0.06	6.41	0.26	0.07	0.77	0.32
T7 Tractor Class 8	Electricity	0.08%	0.01%	0.00	0.00	0.00	0.00	0.09	0.03
T7 Tractor Class 8	Natural Gas	0.03%	0.00%	0.01	0.09	1.87	0.00	0.06	0.02
T7 Utility Class 8	Diesel	0.00%	0.00%	0.00	0.06	0.01	0.00	0.01	0.00
T7 Utility Class 8	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T7IS	Gasoline	0.00%	0.00%	0.00	0.01	0.11	0.00	0.00	0.00
T7IS	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	Gasoline	0.01%	0.00%	0.00	0.00	0.07	0.00	0.01	0.00
UBUS	Electricity	0.09%	0.01%	0.00	0.00	0.00	0.00	0.10	0.03
		100%	100%	57	247	4,502	22	164	53

Source: EMFAC2021 (v1.0.2) Emission Rates
Region Type: County
Region: Contra Costa
Calendar Year: 2045
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

g/mile

2.20E-03

Vehicle Category	Fuel	ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX	VMT Total	% of VMT
All Other Buses	Diesel	0.0482023	1.0396672	0.175379	0.0100037	0.013294	0.012	0.0461373	0.0714313	0.0127189	0.003	0.0161481	0.0318669	1056.4233	0.0022389	0.1664399	6,384	0.020%
All Other Buses	Natural Gas	0.0119435	0.1062462	3.378567	0	0.0015899	0.012	0.0461373	0.0597272	0.0014618	0.003	0.0161481	0.0206099	920.52685	0.8359115	0.1876554	110	0.000%
LDA	Gasoline	0.0027979	0.019665	0.4594603	0.0021999	0.0004938	0.008	0.0074333	0.0159271	0.0004541	0.002	0.0026016	0.0050557	222.52852	0.000965	0.0032065	13,762,597	42.851%
LDA	Diesel	0.004491	0.0185521	0.130639	0.0017278	0.0012758	0.008	0.0074618	0.0167376	0.0012206	0.002	0.0026116	0.0058322	182.34868	0.0002086	0.0287291	8,294	0.026%
LDA	Electricity	0	0	0	0	0	0.008	0.0043934	0.0123935	0	0.002	0.0015377	0.0035377	0	0	0	1,990,003	6.196%
LDA	Plug-in Hybrid	0.0011242	0.0026422	0.1728897	0.0011111	0.0002028	0.008	0.0039951	0.0121979	0.0001865	0.002	0.0013983	0.0035847	112.38798	0.0003425	0.0004464	657,425	2.047%
LDT1	Gasoline	0.0031204	0.0215819	0.4916631	0.0025531	0.0005447	0.008	0.0088326	0.0173773	0.0005008	0.002	0.0030914	0.0055922	258.25564	0.001054	0.0033835	854,993	2.662%
LDT1	Diesel	0.011547	0.0267724	0.1213164	0.0031902	0.0040887	0.008	0.0087537	0.0208424	0.0039118	0.002	0.0030638	0.0089756	336.67623	0.0005363	0.0530435	10	0.000%
LDT1	Electricity	0	0	0	0	0	0.008	0.0043945	0.0123945	0	0.002	0.0015381	0.0035381	0	0	0	26,674	0.083%
LDT1	Plug-in Hybrid	0.0011204	0.0026333	0.1723082	0.0011073	0.000195	0.008	0.0039983	0.0121932	0.0001793	0.002	0.0013994	0.0035787	112.00971	0.000343	0.0004491	20,424	0.064%
LDT2	Gasoline	0.0039313	0.0230043	0.5417927	0.0026496	0.0005136	0.008	0.0087577	0.0172712	0.0004722	0.002	0.0030652	0.0055374	268.01048	0.0012999	0.0034864	7,351,513	22.889%
LDT2	Diesel	0.01158	0.0274343	0.1218747	0.0023744	0.0041118	0.008	0.0087589	0.0208708	0.003934	0.002	0.0030656	0.0089996	250.5867	0.0005379	0.03948	28,253	0.088%
LDT2	Electricity	0	0	0	0	0	0.008	0.0043946	0.0123946	0	0.002	0.0015381	0.0035381	0	0	0	205,505	0.640%
LDT2	Plug-in Hybrid	0.0011226	0.0026384	0.1726353	0.0011095	0.0001992	0.008	0.0039981	0.0121972	0.0001831	0.002	0.0013993	0.0035825	112.22524	0.0003429	0.000448	200,691	0.625%
LHD1	Gasoline	0.0042341	0.0219607	0.593743	0.0074533	0.0012744	0.008	0.078	0.0872744	0.0011718	0.002	0.0273	0.0304718	753.92124	0.0012555	0.0018581	300,298	0.935%
LHD1	Diesel	0.0913701	0.3022812	0.2362061	0.005734	0.0196634	0.012	0.078	0.1096634	0.0188128	0.003	0.0273	0.0491128	605.14081	0.004244	0.0953402	195,896	0.610%
LHD1	Electricity	0	0	0	0	0	0.008	0.039	0.047	0	0.002	0.01365	0.01565	0	0	0	389,367	1.212%
LHD2	Gasoline	0.0036018	0.0216063	0.6028785	0.0083574	0.0012565	0.008	0.091	0.1002565	0.0011553	0.002	0.03185	0.0350053	845.37532	0.0011059	0.0021771	33,970	0.106%
LHD2	Diesel	0.1133306	0.4307398	0.2975405	0.0067019	0.0248746	0.012	0.091	0.1278746	0.0237985	0.003	0.03185	0.0586485	707.28933	0.005264	0.1114337	92,038	0.287%
LHD2	Electricity	0	0	0	0	0	0.008	0.0455	0.0535	0	0.002	0.015925	0.017925	0	0	0	93,744	0.292%
MCY	Gasoline	0.7803644	0.4714589	9.8257191	0.0018259	0.0021187	0.004	0.012	0.0181187	0.0019754	0.001	0.0042	0.0071754	184.69102	0.1309164	0.0354614	105,817	0.329%
MDV	Gasoline	0.0045044	0.026989	0.573515	0.0032271	0.0005307	0.008	0.0089116	0.0174423	0.000488	0.002	0.0031191	0.0056071	326.42796	0.0014262	0.0037182	4,131,948	12.865%
MDV	Diesel	0.0044283	0.0117473	0.1365246	0.0031175	0.0011147	0.008	0.0089528	0.0180675	0.0010664	0.002	0.0031335	0.0061999	329.00609	0.0002057	0.051835	45,544	0.142%
MDV	Electricity	0	0	0	0	0	0.008	0.0044001	0.0124001	0	0.002	0.00154	0.00354	0	0	0	186,791	0.582%
MDV	Plug-in Hybrid	0.0011239	0.0026413	0.172825	0.0011107	0.0002037	0.008	0.0040021	0.0122058	0.0001873	0.002	0.0014007	0.003588	112.34944	0.0003417	0.0004444	122,560	0.382%
MH	Gasoline	0.0114614	0.1963862	0.1585281	0.0192267	0.0014727	0.012	0.0450174	0.0584902	0.0013541	0.003	0.0157561	0.0201102	1944.8378	0.004036	0.0181226	11,674	0.036%
MH	Diesel	0.0862098	2.576505	0.2540272	0.0103064	0.0283879	0.016	0.0447853	0.0891732	0.0271599	0.004	0.0156748	0.0468347	1087.6895	0.0040043	0.1713659	6,730	0.021%
Motor Coach	Diesel	0.0105293	0.9325411	0.0359028	0.0145012	0.0236612	0.012	0.0814729	0.1171341	0.0226376	0.003	0.0285155	0.0541531	1531.3695	0.0004891	0.2412679	4,011	0.012%
OBUS	Gasoline	0.02462	0.2777057	0.4903288	0.0151856	0.0012812	0.012	0.0447987	0.0580799	0.001178	0.003	0.0156795	0.0198576	1536.0679	0.0054995	0.0165529	4,573	0.014%
OBUS	Electricity	0	0	0	0	0	0.012	0.0223994	0.0343994	0	0.003	0.0078398	0.0108398	0	0	0	5,190	0.016%
PTO	Diesel	0.0147593	2.5647613	0.1826767	0.0165735	0.0040723	0	0	0.0040723	0.0038961	0	0	0.0038961	1750.2117	0.0006855	0.2757466	9,261	0.029%
PTO	Electricity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8,466	0.026%
SBUS	Gasoline	0.0083844	0.1291335	0.1940946	0.0072857	0.001228	0.008	0.0449171	0.0541451	0.0011291	0.002	0.015721	0.0188501	736.97368	0.0019944	0.0121762	4,991	0.016%
SBUS	Diesel	0.0078703	0.43011	0.058087	0.010006	0.0036115	0.012	0.0449171	0.0605286	0.0034552	0.003	0.015721	0.0221762	1056.6674	0.0003656	0.1664784	5,574	0.017%
SBUS	Electricity	0	0	0	0	0	0.0106252	0.0224586	0.0330838	0	0.0026563	0.0078605	0.0105168	0	0	0	7,025	0.022%
SBUS	Natural Gas	0.0384401	0.2964605	8.1369977	0	0.0036743	0.012	0.0449171	0.0605914	0.0033783	0.003	0.015721	0.0220993	1128.2014	2.6903716	0.2299912	333	0.001%
T6 CAIRP Class 4	Diesel	0.0053749	0.1781381	0.0275472	0.0096198	0.0054093	0.012	0.0423138	0.0597231	0.0051753	0.003	0.0148098	0.0229851	1015.8784	0.0002496	0.1600521	58	0.000%
T6 CAIRP Class 4	Electricity	0	0	0	0	0	0.012	0.0211569	0.0331569	0	0.003	0.0074049	0.0104049	0	0	0	80	0.000%
T6 CAIRP Class 5	Diesel	0.0053867	0.1795849	0.0275971	0.009624	0.0054214	0.012	0.0423138	0.0597353	0.0051869	0.003	0.0148098	0.0229967	1016.3293	0.0002502	0.1601231	80	0.000%
T6 CAIRP Class 5	Electricity	0	0	0	0	0	0.012	0.0211569	0.0331569	0	0.003	0.0074049	0.0104049	0	0	0	110	0.000%
T6 CAIRP Class 6	Diesel	0.0053599	0.1787864	0.0274814	0.0096084	0.0054266	0.012	0.0423138	0.0597404	0.0051918	0.003	0.0148098	0.0230017	1014.6808	0.000249	0.1598634	208	0.001%
T6 CAIRP Class 6	Electricity	0	0	0	0	0	0.012	0.0211569	0.0331569	0	0.003	0.0074049	0.0104049	0	0	0	289	0.001%
T6 CAIRP Class 7	Diesel	0.0057742	0.1953994	0.0296042	0.0084859	0.0057515	0.012	0.0423138	0.0600653	0.0055027	0.003	0.0148098	0.0233125	896.13389	0.0002682	0.1411863	2,380	0.007%
T6 CAIRP Class 7	Electricity	0	0	0	0	0	0.012	0.0211569	0.0331569	0	0.003	0.0074049	0.0104049	0	0	0	739	0.002%
T6 Instate Delivery Class 4	Diesel	0.0061363	0.3699076	0.0540164	0.009945	0.001934	0.012	0.0475629	0.0614969	0.0018503	0.003	0.016647	0.0214973	1050.2269	0.000285	0.1654637	5,851	0.018%
T6 Instate Delivery Class 4	Electricity	0	0	0	0	0	0.012	0.0237815	0.0357815	0	0.003	0.0083235	0.0113235	0	0	0	6,073	0.019%
T6 Instate Delivery Class 4	Natural Gas	0.0124695	0.0603231	3.8169558	0	0.0020138	0.012	0.0475629	0.0615767	0.0018516	0.003	0.016647	0.0214986	1006.7448	0.8727229	0.2052315	78	0.000%
T6 Instate Delivery Class 5	Diesel	0.0061166	0.3654042	0.0537491	0.009968	0.0019263	0.012	0.0475629	0.0614892	0.001843	0.003	0.016647	0.02149	1052.6588	0.0002841	0.1658468	4,753	0.015%
T6 Instate Delivery Class 5	Electricity	0	0	0	0	0	0.012	0.0237815	0.0357815	0	0.003	0.0083235	0.0113235	0	0	0	4,940	0.015%
T6 Instate Delivery Class 5	Natural Gas	0.0124715	0.0600929	3.8175048	0	0.0020151	0.012	0.0475629	0.061578	0.0018528	0.003	0.016647	0.0214998	1005.8654	0.8728632	0.2050522	62	0.000%
T6 Instate Delivery Class 6	Diesel	0.0061745	0.3714455	0.0540212	0.0099553	0.0019403	0.012	0.0475629	0.0615032	0.0018564	0.003	0.016647	0.0215034	1051.3128	0.0002868	0.1656348	10,333	0.032%
T6 Instate Delivery Class 6	Electricity	0	0	0	0	0	0.012	0.0237815	0.0357815	0	0.003	0.0083235	0.0113235	0	0	0	10,742	0.033%

T6 Instate Delivery Class 6	Natural Gas	0.0124641	0.0609431	3.8154774	0	0.0020102	0.012	0.0475629	0.0615732	0.0018483	0.003	0.016647	0.0214954	1006.5513	0.8723451	0.2051921	137	0.000%
T6 Instate Delivery Class 7	Diesel	0.0108905	0.7861263	0.0815582	0.0101938	0.0029678	0.012	0.0475629	0.0625308	0.0028394	0.003	0.016647	0.0224865	1076.4958	0.0005058	0.1696023	2,172	0.007%
T6 Instate Delivery Class 7	Electricity	0	0	0	0	0	0.012	0.0237815	0.0357815	0	0.003	0.0083235	0.0113235	0	0	0	1,256	0.004%
T6 Instate Delivery Class 7	Natural Gas	0.0117678	0.1414364	3.6308079	0	0.0015519	0.012	0.0475629	0.0611148	0.0014269	0.003	0.016647	0.021074	1034.4348	0.8236124	0.2108763	45	0.000%
T6 Instate Other Class 4	Diesel	0.0055291	0.2765935	0.0427715	0.0096245	0.003152	0.012	0.0448637	0.0600158	0.0030157	0.003	0.0157023	0.021718	1016.3806	0.0002568	0.1601312	15,980	0.050%
T6 Instate Other Class 4	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	17,676	0.055%
T6 Instate Other Class 4	Natural Gas	0.009963	0.0520674	2.6717096	0	0.0015566	0.012	0.0448637	0.0584203	0.0014312	0.003	0.0157023	0.0201335	878.48354	0.6972956	0.1790846	218	0.001%
T6 Instate Other Class 5	Diesel	0.0055661	0.2756171	0.0427693	0.0096337	0.0031551	0.012	0.0448637	0.0600189	0.0030186	0.003	0.0157023	0.0217209	1017.3546	0.0002585	0.1602846	37,507	0.117%
T6 Instate Other Class 5	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	41,479	0.129%
T6 Instate Other Class 5	Natural Gas	0.0099593	0.0523903	2.6720042	0	0.0015547	0.012	0.0448637	0.0584184	0.0014295	0.003	0.0157023	0.0201318	877.19718	0.6970389	0.1788224	503	0.002%
T6 Instate Other Class 6	Diesel	0.005566	0.279844	0.0428505	0.0096279	0.0031701	0.012	0.0448637	0.0600339	0.003033	0.003	0.0157023	0.0217353	1016.7371	0.0002585	0.1601874	28,438	0.089%
T6 Instate Other Class 6	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	31,399	0.098%
T6 Instate Other Class 6	Natural Gas	0.0099606	0.0522803	2.6719038	0	0.0015553	0.012	0.0448637	0.0584191	0.0014301	0.003	0.0157023	0.0201324	877.20453	0.6971263	0.1788239	381	0.001%
T6 Instate Other Class 7	Diesel	0.0074317	0.4880791	0.0543921	0.0097581	0.0041265	0.012	0.0448637	0.0609903	0.003948	0.003	0.0157023	0.0226503	1030.4827	0.0003452	0.162353	22,177	0.069%
T6 Instate Other Class 7	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	15,181	0.047%
T6 Instate Other Class 7	Natural Gas	0.0094782	0.0957212	2.7201941	0	0.0013039	0.012	0.0448637	0.0581677	0.0011989	0.003	0.0157023	0.0199012	897.02735	0.6633665	0.1828649	471	0.001%
T6 Instate Tractor Class 6	Diesel	0.0054278	0.2695972	0.0419187	0.0096482	0.003114	0.012	0.0448637	0.0599777	0.0029792	0.003	0.0157023	0.0216816	1018.879	0.0002521	0.1605248	302	0.001%
T6 Instate Tractor Class 6	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	348	0.001%
T6 Instate Tractor Class 6	Natural Gas	0.0099615	0.0521973	2.6718281	0	0.0015558	0.012	0.0448637	0.0584196	0.0014305	0.003	0.0157023	0.0201328	878.52686	0.6971923	0.1790934	4	0.000%
T6 Instate Tractor Class 7	Diesel	0.0069236	0.4425969	0.051994	0.009013	0.0039106	0.012	0.0448637	0.0607744	0.0037414	0.003	0.0157023	0.0224438	951.79897	0.0003216	0.1499563	4,468	0.014%
T6 Instate Tractor Class 7	Electricity	0	0	0	0	0	0.012	0.0224319	0.0344319	0	0.003	0.0078512	0.0108512	0	0	0	941	0.003%
T6 Instate Tractor Class 7	Natural Gas	0.0094882	0.0948277	2.7192419	0	0.0013091	0.012	0.0448637	0.0581729	0.0012037	0.003	0.0157023	0.019906	880.62758	0.6640646	0.1795217	93	0.000%
T6 OOS Class 4	Diesel	0.0052592	0.2221693	0.0269357	0.00903	0.0055842	0.012	0.0423138	0.0598981	0.0053427	0.003	0.0148098	0.0231525	953.60201	0.0002443	0.1502404	78	0.000%
T6 OOS Class 5	Diesel	0.005282	0.2246809	0.0270241	0.0090375	0.0056053	0.012	0.0423138	0.0599191	0.0053628	0.003	0.0148098	0.0231727	954.3897	0.0002453	0.1503645	107	0.000%
T6 OOS Class 6	Diesel	0.0052307	0.2194254	0.0268172	0.00901	0.0055584	0.012	0.0423138	0.0598722	0.0053179	0.003	0.0148098	0.0231278	951.48303	0.000243	0.1499065	280	0.001%
T6 OOS Class 7	Diesel	0.005648	0.2318964	0.0289595	0.0081202	0.0058938	0.012	0.0423138	0.0602076	0.0056388	0.003	0.0148098	0.0234487	857.52126	0.0002623	0.1351028	2,033	0.006%
T6 Public Class 4	Diesel	0.0160276	0.6653429	0.0660734	0.0103401	0.0046987	0.012	0.0461694	0.0628681	0.0044954	0.003	0.0161593	0.0236547	1091.948	0.0007444	0.1720369	1,647	0.005%
T6 Public Class 4	Electricity	0	0	0	0	0	0.012	0.0230847	0.0350847	0	0.003	0.0080796	0.0110796	0	0	0	1,490	0.005%
T6 Public Class 4	Natural Gas	0.0126218	0.0581353	3.0578162	0	0.0017947	0.012	0.0461694	0.0599641	0.0016502	0.003	0.0161593	0.0208094	977.0832	0.8833823	0.1991848	110	0.000%
T6 Public Class 5	Diesel	0.0138665	0.5547852	0.0622835	0.010391	0.003897	0.012	0.0461694	0.0620664	0.0037284	0.003	0.0161593	0.0228877	1097.3277	0.0006441	0.1728844	3,050	0.009%
T6 Public Class 5	Electricity	0	0	0	0	0	0.012	0.0230847	0.0350847	0	0.003	0.0080796	0.0110796	0	0	0	2,758	0.009%
T6 Public Class 5	Natural Gas	0.0125564	0.0689268	3.0613735	0	0.0017435	0.012	0.0461694	0.0599129	0.001603	0.003	0.0161593	0.0207623	990.74354	0.8788037	0.2019696	228	0.001%
T6 Public Class 6	Diesel	0.0120489	0.511168	0.0571533	0.0103544	0.0037824	0.012	0.0461694	0.0619518	0.0036188	0.003	0.0161593	0.0227781	1093.4552	0.0005596	0.1722743	2,749	0.009%
T6 Public Class 6	Electricity	0	0	0	0	0	0.012	0.0230847	0.0350847	0	0.003	0.0080796	0.0110796	0	0	0	2,466	0.008%
T6 Public Class 6	Natural Gas	0.0125868	0.0639127	3.0597747	0	0.0017673	0.012	0.0461694	0.0599367	0.0016249	0.003	0.0161593	0.0207842	980.7937	0.8809317	0.1999412	189	0.001%
T6 Public Class 7	Diesel	0.0109851	0.4817364	0.0538311	0.0102023	0.0035772	0.012	0.0461694	0.0617466	0.0034225	0.003	0.0161593	0.0225818	1077.398	0.0005102	0.1697445	5,641	0.018%
T6 Public Class 7	Electricity	0	0	0	0	0	0.012	0.0230847	0.0350847	0	0.003	0.0080796	0.0110796	0	0	0	4,133	0.013%
T6 Public Class 7	Natural Gas	0.0125886	0.0636114	3.0598609	0	0.0017687	0.012	0.0461694	0.0599381	0.0016262	0.003	0.0161593	0.0207855	980.74549	0.8810616	0.1999314	398	0.001%
T6 Utility Class 5	Diesel	0.0050943	0.192546	0.035576	0.0096326	0.0023182	0.012	0.0454967	0.0598149	0.0022179	0.003	0.0159238	0.0211418	1017.2384	0.0002366	0.1602663	1,193	0.004%
T6 Utility Class 5	Electricity	0	0	0	0	0	0.012	0.0227484	0.0347484	0	0.003	0.0079619	0.0109619	0	0	0	1,710	0.005%
T6 Utility Class 5	Natural Gas	0.0111369	0.0541674	2.7453396	0	0.0016363	0.012	0.0454967	0.059133	0.0015045	0.003	0.0159238	0.0204284	915.65481	0.7794545	0.1866622	10	0.000%
T6 Utility Class 6	Diesel	0.0050952	0.1883103	0.0355821	0.0096331	0.002301	0.012	0.0454967	0.0597977	0.0022015	0.003	0.0159238	0.0211253	1017.2872	0.0002367	0.160274	226	0.001%
T6 Utility Class 6	Electricity	0	0	0	0	0	0.012	0.0227484	0.0347484	0	0.003	0.0079619	0.0109619	0	0	0	323	0.001%
T6 Utility Class 6	Natural Gas	0.0111369	0.0541674	2.7453396	0	0.0016363	0.012	0.0454967	0.059133	0.0015045	0.003	0.0159238	0.0204284	915.6688	0.7794545	0.1866651	2	0.000%
T6 Utility Class 7	Diesel	0.0050452	0.1834542	0.0352327	0.0096392	0.0022884	0.012	0.0454967	0.0597851	0.0021894	0.003	0.0159238	0.0211132	1017.9341	0.0002343	0.1603759	309	0.001%
T6 Utility Class 7	Electricity	0	0	0	0	0	0.012	0.0227484	0.0347484	0	0.003	0.0079619	0.0109619	0	0	0	454	0.001%
T6 Utility Class 7	Natural Gas	0.0111369	0.0541674	2.7453396	0	0.0016363	0.012	0.0454967	0.059133	0.0015045	0.003	0.0159238	0.0204284	915.67231	0.7794545	0.1866658	3	0.000%
T6TS	Gasoline	0.0110763	0.0694032	0.1841074	0.0152225	0.0014928	0.012	0.0450174	0.0585102	0.0013726	0.003	0.0157561	0.0201287	1539.8019	0.0030193	0.0070168	25,161	0.078%
T6TS	Electricity	0	0	0	0	0	0.012	0.0225087	0.0345087	0	0.003	0.0078781	0.0108781	0	0	0	28,960	0.090%
T7 CAIRP Class 8	Diesel	0.0114677	1.2072941	0.0388014	0.0121027	0.0299	0.036	0.0818327	0.1477327	0.0286066	0.009	0.0286414	0.066248	1278.0825	0.0005326	0.2013624	138,534	0.431%
T7 CAIRP Class 8	Electricity	0	0	0	0	0	0.036	0.0409485	0.0769485	0	0.009	0.014332	0.023332	0	0	0	39,270	0.122%
T7 CAIRP Class 8	Natural Gas	0.0133626	0.1528523	2.8835663	0	0.0019662	0.036	0.0818259	0.1197921	0.0018078	0.009	0.0286391	0.0394469	1022.864	0.935233	0.2085175	254	0.001%
T7 NNOOS Class 8	Diesel	0.0111527	1.3309651	0.0377624	0.0115955	0.0295077	0.036	0.0818184	0.1473261	0.0282312	0.009	0.0286364	0.0658677	1224.5275	0.000518	0.1929248	211,410	0.658%
T7 NOOS Class 8	Diesel	0.0115072	1.3693581	0.0389311	0.0115877	0.0312467	0.036	0.0818402	0.1490869	0.029895	0.009	0.0286441	0.067539	1223.6993	0.0005345	0.1927943	76,819	0.239%
T7 Other Port Class 8	Diesel	0.0100333	1.2320039	0.0634813	0.0129867	0.0164234	0.036	0.0941574	0.1465807	0.0157129	0.009	0.0329551	0.057668	1371.4406	0.000466	0.216071	14,474	0.045%
T7 Other Port Class 8	Electricity	0	0	0	0	0	0.036	0.0470787	0.0830787	0	0.009	0.0164775	0.0254775	0	0	0	3,660	0.011%
T7 POAK Class 8	Diesel	0.0102352	1.2810158	0.0647593	0.0129436	0.0171345	0.036	0.0941574	0.1472919	0.0163933	0.009	0.0329551	0.0583484	1366.8905	0.0004754	0.2153542	50,375	0.157%
T7 POAK Class 8	Electricity	0	0	0	0	0	0.036	0.0470787	0.0830787	0	0.009	0.0164775	0.0254775	0	0	0	11,547	0.036%
T7 POAK Class 8	Natural Gas	0.0167608	0.1726945	4.9769136	0	0.0025243	0.036	0.0941574	0.1326817	0.002321	0.009	0.0329551	0.0442761	1151.7012	1.1730664	0.2347818	114	0.000%
T7 Public Class 8	Diesel	0.0302096	2.0716184	0.1510499	0.0153486	0.0106776	0.036	0.1073291	0.1540067	0.0102157	0.009	0.0375652	0.0567809	1620.8674	0.0014032	0.2553683	13,649	0.042%
T7 Public Class 8	Electricity	0	0	0	0	0	0.036	0.0542879	0.0902879	0	0.009	0.0190008	0.0280008	0	0	0	9,021	0.028%

T7 Public Class 8	Natural Gas	0.0243831	0.2685858	8.0817303	0	0.0032879	0.036	0.1062516	0.1455396	0.0030231	0.009	0.0371881	0.0492112	1461.5566	1.706541	0.2979479	106	0.000%
T7 Single Concrete/Transit Mix Class 8	Diesel	0.008628	0.8048666	0.0436795	0.0137139	0.0137111	0.036	0.0886278	0.1383389	0.013118	0.009	0.0310197	0.0531377	1448.2351	0.0004007	0.22817	2,613	0.008%
T7 Single Concrete/Transit Mix Class 8	Electricity	0	0	0	0	0	0.036	0.0443891	0.0803891	0	0.009	0.0155362	0.0245362	0	0	0	3,633	0.011%
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.015246	0.1639574	4.0448237	0	0.002255	0.036	0.0886293	0.1268844	0.0020734	0.009	0.0310203	0.0420937	1124.7242	1.0670505	0.2292824	161	0.001%
T7 Single Dump Class 8	Diesel	0.0105433	1.1094634	0.0569782	0.0141188	0.0175577	0.036	0.0869987	0.1405564	0.0167981	0.009	0.0304495	0.0562477	1490.9961	0.0004897	0.234907	18,391	0.057%
T7 Single Dump Class 8	Electricity	0	0	0	0	0	0.036	0.0443695	0.0803695	0	0.009	0.0155293	0.0245293	0	0	0	16,441	0.051%
T7 Single Dump Class 8	Natural Gas	0.0152311	0.2000811	4.5296567	0	0.0021757	0.036	0.0869649	0.1251406	0.0020005	0.009	0.0304377	0.0414382	1152.8841	1.0660067	0.235023	1,137	0.004%
T7 Single Other Class 8	Diesel	0.0096894	1.0087904	0.0502156	0.0139609	0.0166123	0.036	0.0872983	0.1399107	0.0158937	0.009	0.0305544	0.0554481	1474.3125	0.00045	0.2322785	22,936	0.071%
T7 Single Other Class 8	Electricity	0	0	0	0	0	0.036	0.0443738	0.0803738	0	0.009	0.0155308	0.0245308	0	0	0	22,563	0.070%
T7 Single Other Class 8	Natural Gas	0.015241	0.175851	4.2063555	0	0.0022287	0.036	0.0873358	0.1255644	0.0020492	0.009	0.0305675	0.0416167	1135.3124	1.0666967	0.2314409	1,403	0.004%
T7 SWCV Class 8	Diesel	0.03587	5.6393339	0.0923463	0.0374855	0.0149105	0.036	0.2100001	0.2609105	0.0142655	0.009	0.0735	0.0967655	3958.5925	0.0016661	0.6236779	1,867	0.006%
T7 SWCV Class 8	Electricity	0	0	0	0	0	0.036	0.105	0.141	0	0.009	0.03675	0.04575	0	0	0	11,286	0.035%
T7 SWCV Class 8	Natural Gas	0.0133996	0.3485691	10.97397	0	0.0012249	0.036	0.2100001	0.247225	0.0011263	0.009	0.0735	0.0836263	1338.2669	0.7141486	0.2728145	15,575	0.048%
T7 Tractor Class 8	Diesel	0.0103114	1.1909537	0.0483514	0.0121155	0.0219952	0.036	0.0856966	0.1436919	0.0210437	0.009	0.0299938	0.0600376	1279.4315	0.0004789	0.2015749	127,449	0.397%
T7 Tractor Class 8	Electricity	0	0	0	0	0	0.036	0.0432856	0.0792856	0	0.009	0.0151499	0.02415	0	0	0	26,092	0.081%
T7 Tractor Class 8	Natural Gas	0.0145704	0.1816585	3.9810527	0	0.0021165	0.036	0.0855105	0.1236271	0.0019461	0.009	0.0299287	0.0408748	1079.8052	1.0197621	0.2201253	11,110	0.035%
T7 Utility Class 8	Diesel	0.0111927	1.0682666	0.1023557	0.0146562	0.0072636	0.036	0.1010452	0.1443088	0.0069493	0.009	0.0353658	0.0513152	1547.7449	0.0005199	0.2438478	1,305	0.004%
T7 Utility Class 8	Electricity	0	0	0	0	0	0.036	0.0519352	0.0879352	0	0.009	0.0181773	0.0271773	0	0	0	995	0.003%
T7IS	Gasoline	0.4406703	2.1906501	30.050889	0.017883	0.0015577	0.02	0.0965067	0.1180644	0.0014323	0.005	0.0337773	0.0402096	1808.9207	0.095236	0.1015766	87	0.000%
T7IS	Electricity	0	0	0	0	0	0.02	0.0485262	0.0685262	0	0.005	0.0169842	0.0219842	0	0	0	93	0.000%
UBUS	Gasoline	0.0030949	0.0149761	0.5694445	0.0084046	0.0013024	0.008	0.091	0.1003024	0.0011975	0.002	0.03185	0.0350475	850.15021	0.00114	0.0024992	2,864	0.009%
UBUS	Electricity	0	0	0	0	0	0.0288654	0.055	0.0838654	0	0.0072163	0.01925	0.0264663	0	0	0	27,930	0.087%
																TOTAL VMT	32,117,502	100%

lbs/Mile														
ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX
1.06E-04	2.29E-03	3.87E-04	2.21E-05	2.93E-05	1.02E-04	2.93E-05	1.57E-04	6.61E-06	3.56E-05	2.80E-05	7.03E-05	2.33E+00	4.94E-06	3.67E-04
2.63E-05	2.34E-04	7.45E-03	0.00E+00	3.51E-06	1.02E-04	3.51E-06	1.32E-04	6.61E-06	3.56E-05	3.22E-06	4.54E-05	2.03E+00	1.84E-03	4.14E-04
6.17E-06	4.34E-05	1.01E-03	4.85E-06	1.09E-06	1.64E-05	1.09E-06	3.51E-05	4.41E-06	5.74E-06	1.00E-06	1.11E-05	4.91E-01	2.13E-06	7.07E-06
9.90E-06	4.09E-05	2.88E-04	3.81E-06	2.81E-06	1.65E-05	2.81E-06	3.69E-05	4.41E-06	5.76E-06	2.69E-06	1.29E-05	4.02E-01	4.60E-07	6.33E-05
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.69E-06	0.00E+00	2.73E-05	4.41E-06	3.39E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00
2.48E-06	5.83E-06	3.81E-04	2.45E-06	4.47E-07	8.81E-06	4.47E-07	2.69E-05	4.41E-06	3.08E-06	4.11E-07	7.90E-06	2.48E-01	7.55E-07	9.84E-07
6.88E-06	4.76E-05	1.08E-03	5.63E-06	1.20E-06	1.95E-05	1.20E-06	3.83E-05	4.41E-06	6.82E-06	1.10E-06	1.23E-05	5.69E-01	2.32E-06	7.46E-06
2.55E-05	5.90E-05	2.67E-04	7.03E-06	9.01E-06	1.93E-05	9.01E-06	4.59E-05	4.41E-06	6.75E-06	8.62E-06	1.98E-05	7.42E-01	1.18E-06	1.17E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.69E-06	0.00E+00	2.73E-05	4.41E-06	3.39E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00
2.47E-06	5.81E-06	3.80E-04	2.44E-06	4.30E-07	8.81E-06	4.30E-07	2.69E-05	4.41E-06	3.09E-06	3.95E-07	7.89E-06	2.47E-01	7.56E-07	9.90E-07
8.67E-06	5.07E-05	1.19E-03	5.84E-06	1.13E-06	1.93E-05	1.13E-06	3.81E-05	4.41E-06	6.76E-06	1.04E-06	1.22E-05	5.91E-01	2.87E-06	7.69E-06
2.55E-05	6.05E-05	2.69E-04	5.23E-06	9.06E-06	1.93E-05	9.06E-06	4.60E-05	4.41E-06	6.76E-06	8.67E-06	1.98E-05	5.52E-01	1.19E-06	8.70E-05
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.69E-06	0.00E+00	2.73E-05	4.41E-06	3.39E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00
2.47E-06	5.82E-06	3.81E-04	2.45E-06	4.39E-07	8.81E-06	4.39E-07	2.69E-05	4.41E-06	3.08E-06	4.04E-07	7.90E-06	2.47E-01	7.56E-07	9.88E-07
9.33E-06	4.84E-05	1.31E-03	1.64E-05	2.81E-06	1.72E-04	2.81E-06	1.92E-04	4.41E-06	6.02E-05	2.58E-06	6.72E-05	1.66E+00	2.77E-06	4.10E-06
2.01E-04	6.66E-04	5.21E-04	1.26E-05	4.33E-05	1.72E-04	4.33E-05	2.42E-04	6.61E-06	6.02E-05	4.15E-05	1.08E-04	1.33E+00	9.36E-06	2.10E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.60E-05	0.00E+00	1.04E-04	4.41E-06	3.01E-05	0.00E+00	3.45E-05	0.00E+00	0.00E+00	0.00E+00
7.94E-06	4.76E-05	1.33E-03	1.84E-05	2.77E-06	2.01E-04	2.77E-06	2.21E-04	4.41E-06	7.02E-05	2.55E-06	7.72E-05	1.86E+00	2.44E-06	4.80E-06
2.50E-04	9.50E-04	6.56E-04	1.48E-05	5.48E-05	2.01E-04	5.48E-05	2.82E-04	6.61E-06	7.02E-05	5.25E-05	1.29E-04	1.56E+00	1.16E-05	2.46E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-04	0.00E+00	1.18E-04	4.41E-06	3.51E-05	0.00E+00	3.95E-05	0.00E+00	0.00E+00	0.00E+00
1.72E-03	1.04E-03	2.17E-02	4.03E-06	4.67E-06	2.65E-05	4.67E-06	3.99E-05	2.20E-06	9.26E-06	4.36E-06	1.58E-05	4.07E-01	2.89E-04	7.82E-05
9.93E-06	5.95E-05	1.26E-03	7.11E-06	1.17E-06	1.96E-05	1.17E-06	3.85E-05	4.41E-06	6.88E-06	1.08E-06	1.24E-05	7.20E-01	3.14E-06	8.20E-06
9.76E-06	2.59E-05	3.01E-04	6.87E-06	2.46E-06	1.97E-05	2.46E-06	3.98E-05	4.41E-06	6.91E-06	2.35E-06	1.37E-05	7.25E-01	4.53E-07	1.14E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.70E-06	0.00E+00	2.73E-05	4.41E-06	3.40E-06	0.00E+00	7.80E-06	0.00E+00	0.00E+00	0.00E+00
2.48E-06	5.82E-06	3.81E-04	2.45E-06	4.49E-07	8.82E-06	4.49E-07	2.69E-05	4.41E-06	3.09E-06	4.13E-07	7.91E-06	2.48E-01	7.53E-07	9.80E-07
2.53E-05	4.33E-04	3.49E-04	4.24E-05	3.25E-06	9.92E-05	3.25E-06	1.29E-04	6.61E-06	3.47E-05	2.99E-06	4.43E-05	4.29E+00	8.90E-06	4.00E-05
1.90E-04	5.68E-03	5.60E-04	2.27E-05	6.26E-05	9.87E-05	6.26E-05	1.97E-04	8.82E-06	3.46E-05	5.99E-05	1.03E-04	2.40E+00	8.83E-06	3.78E-04
2.32E-05	2.06E-03	7.92E-05	3.20E-05	5.22E-05	1.80E-04	5.22E-05	2.58E-04	6.61E-06	6.29E-05	4.99E-05	1.19E-04	3.38E+00	1.08E-06	5.32E-04
5.43E-05	6.12E-04	1.08E-03	3.35E-05	2.82E-06	9.88E-05	2.82E-06	1.28E-04	6.61E-06	3.46E-05	2.60E-06	4.38E-05	3.39E+00	1.21E-05	3.65E-05
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.94E-05	0.00E+00	7.58E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
3.25E-05	5.65E-03	4.03E-04	3.65E-05	8.98E-06	0.00E+00	8.98E-06	8.98E-06	0.00E+00	0.00E+00	8.59E-06	8.59E-06	3.86E+00	1.51E-06	6.08E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1.85E-05	2.85E-04	4.28E-04	1.61E-05	2.71E-06	9.90E-05	2.71E-06	1.19E-04	4.41E-06	3.47E-05	2.49E-06	4.16E-05	1.62E+00	4.40E-06	2.68E-05
1.74E-05	9.48E-04	1.28E-04	2.21E-05	7.96E-06	9.90E-05	7.96E-06	1.33E-04	6.61E-06	3.47E-05	7.62E-06	4.89E-05	2.33E+00	8.06E-07	3.67E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.29E-05	5.86E-06	1.73E-05	0.00E+00	2.32E-05	0.00E+00	0.00E+00	0.00E+00
8.47E-05	6.54E-04	1.79E-02	0.00E+00	8.10E-06	9.90E-05	8.10E-06	1.34E-04	6.61E-06	3.47E-05	7.45E-06	4.87E-05	2.49E+00	5.93E-03	5.07E-04
1.18E-05	3.93E-04	6.07E-05	2.12E-05	1.19E-05	9.33E-05	1.19E-05	1.32E-04	6.61E-06	3.26E-05	1.14E-05	5.07E-05	2.24E+00	5.50E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-05	0.00E+00	7.31E-05	6.61E-06	1.63E-05	0.00E+00	2.29E-05	0.00E+00	0.00E+00	0.00E+00
1.19E-05	3.96E-04	6.08E-05	2.12E-05	1.20E-05	9.33E-05	1.20E-05	1.32E-04	6.61E-06	3.26E-05	1.14E-05	5.07E-05	2.24E+00	5.52E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-05	0.00E+00	7.31E-05	6.61E-06	1.63E-05	0.00E+00	2.29E-05	0.00E+00	0.00E+00	0.00E+00
1.18E-05	3.94E-04	6.06E-05	2.12E-05	1.20E-05	9.33E-05	1.20E-05	1.32E-04	6.61E-06	3.26E-05	1.14E-05	5.07E-05	2.24E+00	5.49E-07	3.52E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-05	0.00E+00	7.31E-05	6.61E-06	1.63E-05	0.00E+00	2.29E-05	0.00E+00	0.00E+00	0.00E+00
1.27E-05	4.31E-04	6.53E-05	1.87E-05	1.27E-05	9.33E-05	1.27E-05	1.32E-04	6.61E-06	3.26E-05	1.21E-05	5.14E-05	1.98E+00	5.91E-07	3.11E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-05	0.00E+00	7.31E-05	6.61E-06	1.63E-05	0.00E+00	2.29E-05	0.00E+00	0.00E+00	0.00E+00
1.35E-05	8.15E-04	1.19E-04	2.19E-05	4.26E-06	1.05E-04	4.26E-06	1.36E-04	6.61E-06	3.67E-05	4.08E-06	4.74E-05	2.32E+00	6.28E-07	3.65E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-05	0.00E+00	7.89E-05	6.61E-06	1.84E-05	0.00E+00	2.50E-05	0.00E+00	0.00E+00	0.00E+00
2.75E-05	1.33E-04	8.41E-03	0.00E+00	4.44E-06	1.05E-04	4.44E-06	1.36E-04	6.61E-06	3.67E-05	4.08E-06	4.74E-05	2.22E+00	1.92E-03	4.52E-04
1.35E-05	8.06E-04	1.18E-04	2.20E-05	4.25E-06	1.05E-04	4.25E-06	1.36E-04	6.61E-06	3.67E-05	4.06E-06	4.74E-05	2.32E+00	6.26E-07	3.66E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-05	0.00E+00	7.89E-05	6.61E-06	1.84E-05	0.00E+00	2.50E-05	0.00E+00	0.00E+00	0.00E+00
2.75E-05	1.32E-04	8.42E-03	0.00E+00	4.44E-06	1.05E-04	4.44E-06	1.36E-04	6.61E-06	3.67E-05	4.08E-06	4.74E-05	2.22E+00	1.92E-03	4.52E-04
1.36E-05	8.19E-04	1.19E-04	2.19E-05	4.28E-06	1.05E-04	4.28E-06	1.36E-04	6.61E-06	3.67E-05	4.09E-06	4.74E-05	2.32E+00	6.32E-07	3.65E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-05	0.00E+00	7.89E-05	6.61E-06	1.84E-05	0.00E+00	2.50E-05	0.00E+00	0.00E+00	0.00E+00

1.00E-06

2.75E-05	1.34E-04	8.41E-03	0.00E+00	4.43E-06	1.05E-04	4.43E-06	1.36E-04	6.61E-06	3.67E-05	4.07E-06	4.74E-05	2.22E+00	1.92E-03	4.52E-04
2.40E-05	1.73E-03	1.80E-04	2.25E-05	6.54E-06	1.05E-04	6.54E-06	1.38E-04	6.61E-06	3.67E-05	6.26E-06	4.96E-05	2.37E+00	1.12E-06	3.74E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.24E-05	0.00E+00	7.89E-05	6.61E-06	1.84E-05	0.00E+00	2.50E-05	0.00E+00	0.00E+00	0.00E+00
2.59E-05	3.12E-04	8.00E-03	0.00E+00	3.42E-06	1.05E-04	3.42E-06	1.35E-04	6.61E-06	3.67E-05	3.15E-06	4.65E-05	2.28E+00	1.82E-03	4.65E-04
1.22E-05	6.10E-04	9.43E-05	2.12E-05	6.95E-06	9.89E-05	6.95E-06	1.32E-04	6.61E-06	3.46E-05	6.65E-06	4.79E-05	2.24E+00	5.66E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.20E-05	1.15E-04	5.89E-03	0.00E+00	3.43E-06	9.89E-05	3.43E-06	1.29E-04	6.61E-06	3.46E-05	3.16E-06	4.44E-05	1.94E+00	1.54E-03	3.95E-04
1.23E-05	6.08E-04	9.43E-05	2.12E-05	6.96E-06	9.89E-05	6.96E-06	1.32E-04	6.61E-06	3.46E-05	6.65E-06	4.79E-05	2.24E+00	5.70E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.20E-05	1.15E-04	5.89E-03	0.00E+00	3.43E-06	9.89E-05	3.43E-06	1.29E-04	6.61E-06	3.46E-05	3.15E-06	4.44E-05	1.93E+00	1.54E-03	3.94E-04
1.23E-05	6.17E-04	9.45E-05	2.12E-05	6.99E-06	9.89E-05	6.99E-06	1.32E-04	6.61E-06	3.46E-05	6.69E-06	4.79E-05	2.24E+00	5.70E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.20E-05	1.15E-04	5.89E-03	0.00E+00	3.43E-06	9.89E-05	3.43E-06	1.29E-04	6.61E-06	3.46E-05	3.15E-06	4.44E-05	1.93E+00	1.54E-03	3.94E-04
1.64E-05	1.08E-03	1.20E-04	2.15E-05	9.10E-06	9.89E-05	9.10E-06	1.34E-04	6.61E-06	3.46E-05	8.70E-06	4.99E-05	2.27E+00	7.61E-07	3.58E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.09E-05	2.11E-04	6.00E-03	0.00E+00	2.87E-06	9.89E-05	2.87E-06	1.28E-04	6.61E-06	3.46E-05	2.64E-06	4.39E-05	1.98E+00	1.46E-03	4.03E-04
1.20E-05	5.94E-04	9.24E-05	2.13E-05	6.87E-06	9.89E-05	6.87E-06	1.32E-04	6.61E-06	3.46E-05	6.57E-06	4.78E-05	2.25E+00	5.56E-07	3.54E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.20E-05	1.15E-04	5.89E-03	0.00E+00	3.43E-06	9.89E-05	3.43E-06	1.29E-04	6.61E-06	3.46E-05	3.15E-06	4.44E-05	1.94E+00	1.54E-03	3.95E-04
1.53E-05	9.76E-04	1.15E-04	1.99E-05	8.62E-06	9.89E-05	8.62E-06	1.34E-04	6.61E-06	3.46E-05	8.25E-06	4.95E-05	2.10E+00	7.09E-07	3.31E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-05	0.00E+00	7.59E-05	6.61E-06	1.73E-05	0.00E+00	2.39E-05	0.00E+00	0.00E+00	0.00E+00
2.09E-05	2.09E-04	5.99E-03	0.00E+00	2.89E-06	9.89E-05	2.89E-06	1.28E-04	6.61E-06	3.46E-05	2.65E-06	4.39E-05	1.94E+00	1.46E-03	3.96E-04
1.16E-05	4.90E-04	5.94E-05	1.99E-05	1.23E-05	9.33E-05	1.23E-05	1.32E-04	6.61E-06	3.26E-05	1.18E-05	5.10E-05	2.10E+00	5.39E-07	3.31E-04
1.16E-05	4.95E-04	5.96E-05	1.99E-05	1.24E-05	9.33E-05	1.24E-05	1.32E-04	6.61E-06	3.26E-05	1.18E-05	5.11E-05	2.10E+00	5.41E-07	3.31E-04
1.15E-05	4.84E-04	5.91E-05	1.99E-05	1.23E-05	9.33E-05	1.23E-05	1.32E-04	6.61E-06	3.26E-05	1.17E-05	5.10E-05	2.10E+00	5.36E-07	3.30E-04
1.25E-05	5.11E-04	6.38E-05	1.79E-05	1.30E-05	9.33E-05	1.30E-05	1.33E-04	6.61E-06	3.26E-05	1.24E-05	5.17E-05	1.89E+00	5.78E-07	2.98E-04
3.53E-05	1.47E-03	1.46E-04	2.28E-05	1.04E-05	1.02E-04	1.04E-05	1.39E-04	6.61E-06	3.56E-05	9.91E-06	5.21E-05	2.41E+00	1.64E-06	3.79E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05	0.00E+00	7.73E-05	6.61E-06	1.78E-05	0.00E+00	2.44E-05	0.00E+00	0.00E+00	0.00E+00
2.78E-05	1.28E-04	6.74E-03	0.00E+00	3.96E-06	1.02E-04	3.96E-06	1.32E-04	6.61E-06	3.56E-05	3.64E-06	4.59E-05	2.15E+00	1.95E-03	4.39E-04
3.06E-05	1.22E-03	1.37E-04	2.29E-05	8.59E-06	1.02E-04	8.59E-06	1.37E-04	6.61E-06	3.56E-05	8.22E-06	5.05E-05	2.42E+00	1.42E-06	3.81E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05	0.00E+00	7.73E-05	6.61E-06	1.78E-05	0.00E+00	2.44E-05	0.00E+00	0.00E+00	0.00E+00
2.77E-05	1.52E-04	6.75E-03	0.00E+00	3.84E-06	1.02E-04	3.84E-06	1.32E-04	6.61E-06	3.56E-05	3.53E-06	4.58E-05	2.18E+00	1.94E-03	4.45E-04
2.66E-05	1.13E-03	1.26E-04	2.28E-05	8.34E-06	1.02E-04	8.34E-06	1.37E-04	6.61E-06	3.56E-05	7.98E-06	5.02E-05	2.41E+00	1.23E-06	3.80E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05	0.00E+00	7.73E-05	6.61E-06	1.78E-05	0.00E+00	2.44E-05	0.00E+00	0.00E+00	0.00E+00
2.77E-05	1.41E-04	6.75E-03	0.00E+00	3.90E-06	1.02E-04	3.90E-06	1.32E-04	6.61E-06	3.56E-05	3.58E-06	4.58E-05	2.16E+00	1.94E-03	4.41E-04
2.42E-05	1.06E-03	1.19E-04	2.25E-05	7.89E-06	1.02E-04	7.89E-06	1.36E-04	6.61E-06	3.56E-05	7.55E-06	4.98E-05	2.38E+00	1.12E-06	3.74E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-05	0.00E+00	7.73E-05	6.61E-06	1.78E-05	0.00E+00	2.44E-05	0.00E+00	0.00E+00	0.00E+00
2.78E-05	1.40E-04	6.75E-03	0.00E+00	3.90E-06	1.02E-04	3.90E-06	1.32E-04	6.61E-06	3.56E-05	3.59E-06	4.58E-05	2.16E+00	1.94E-03	4.41E-04
1.12E-05	4.24E-04	7.84E-05	2.12E-05	5.11E-06	1.00E-04	5.11E-06	1.32E-04	6.61E-06	3.51E-05	4.89E-06	4.66E-05	2.24E+00	5.22E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.02E-05	0.00E+00	7.66E-05	6.61E-06	1.76E-05	0.00E+00	2.42E-05	0.00E+00	0.00E+00	0.00E+00
2.46E-05	1.19E-04	6.05E-03	0.00E+00	3.61E-06	1.00E-04	3.61E-06	1.30E-04	6.61E-06	3.51E-05	3.32E-06	4.50E-05	2.02E+00	1.72E-03	4.12E-04
1.12E-05	4.15E-04	7.84E-05	2.12E-05	5.07E-06	1.00E-04	5.07E-06	1.32E-04	6.61E-06	3.51E-05	4.85E-06	4.66E-05	2.24E+00	5.22E-07	3.53E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.02E-05	0.00E+00	7.66E-05	6.61E-06	1.76E-05	0.00E+00	2.42E-05	0.00E+00	0.00E+00	0.00E+00
2.46E-05	1.19E-04	6.05E-03	0.00E+00	3.61E-06	1.00E-04	3.61E-06	1.30E-04	6.61E-06	3.51E-05	3.32E-06	4.50E-05	2.02E+00	1.72E-03	4.12E-04
1.11E-05	4.04E-04	7.77E-05	2.13E-05	5.04E-06	1.00E-04	5.04E-06	1.32E-04	6.61E-06	3.51E-05	4.83E-06	4.65E-05	2.24E+00	5.17E-07	3.54E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.02E-05	0.00E+00	7.66E-05	6.61E-06	1.76E-05	0.00E+00	2.42E-05	0.00E+00	0.00E+00	0.00E+00
2.46E-05	1.19E-04	6.05E-03	0.00E+00	3.61E-06	1.00E-04	3.61E-06	1.30E-04	6.61E-06	3.51E-05	3.32E-06	4.50E-05	2.02E+00	1.72E-03	4.12E-04
2.44E-05	1.53E-04	4.06E-04	3.36E-05	3.29E-06	9.92E-05	3.29E-06	1.29E-04	6.61E-06	3.47E-05	3.03E-06	4.44E-05	3.39E+00	6.66E-06	1.55E-05
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.96E-05	0.00E+00	7.61E-05	6.61E-06	1.74E-05	0.00E+00	2.40E-05	0.00E+00	0.00E+00	0.00E+00
2.53E-05	2.66E-03	8.55E-05	2.67E-05	6.59E-05	1.80E-04	6.59E-05	3.26E-04	1.98E-05	6.31E-05	6.31E-05	1.46E-04	2.82E+00	1.17E-06	4.44E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.03E-05	0.00E+00	1.70E-04	1.98E-05	3.16E-05	0.00E+00	5.14E-05	0.00E+00	0.00E+00	0.00E+00
2.95E-05	3.37E-04	6.36E-03	0.00E+00	4.33E-06	1.80E-04	4.33E-06	2.64E-04	1.98E-05	6.31E-05	3.99E-06	8.70E-05	2.26E+00	2.06E-03	4.60E-04
2.46E-05	2.93E-03	8.33E-05	2.56E-05	6.51E-05	1.80E-04	6.51E-05	3.25E-04	1.98E-05	6.31E-05	6.22E-05	1.45E-04	2.70E+00	1.14E-06	4.25E-04
2.54E-05	3.02E-03	8.58E-05	2.55E-05	6.89E-05	1.80E-04	6.89E-05	3.29E-04	1.98E-05	6.31E-05	6.59E-05	1.49E-04	2.70E+00	1.18E-06	4.25E-04
2.21E-05	2.72E-03	1.40E-04	2.86E-05	3.62E-05	2.08E-04	3.62E-05	3.23E-04	1.98E-05	7.27E-05	3.46E-05	1.27E-04	3.02E+00	1.03E-06	4.76E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-04	0.00E+00	1.83E-04	1.98E-05	3.63E-05	0.00E+00	5.62E-05	0.00E+00	0.00E+00	0.00E+00
2.26E-05	2.82E-03	1.43E-04	2.85E-05	3.78E-05	2.08E-04	3.78E-05	3.25E-04	1.98E-05	7.27E-05	3.61E-05	1.29E-04	3.01E+00	1.05E-06	4.75E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-04	0.00E+00	1.83E-04	1.98E-05	3.63E-05	0.00E+00	5.62E-05	0.00E+00	0.00E+00	0.00E+00
3.70E-05	3.81E-04	1.10E-02	0.00E+00	5.57E-06	2.08E-04	5.57E-06	2.93E-04	1.98E-05	7.27E-05	5.12E-06	9.76E-05	2.54E+00	2.59E-03	5.18E-04
6.66E-05	4.57E-03	3.33E-04	3.38E-05	2.35E-05	2.37E-04	2.35E-05	3.40E-04	1.98E-05	8.28E-05	2.25E-05	1.25E-04	3.57E+00	3.09E-06	5.63E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-04	0.00E+00	1.99E-04	1.98E-05	4.19E-05	0.00E+00	6.17E-05	0.00E+00	0.00E+00	0.00E+00

5.38E-05	5.92E-04	1.78E-02	0.00E+00	7.25E-06	2.34E-04	7.25E-06	3.21E-04	1.98E-05	8.20E-05	6.66E-06	1.08E-04	3.22E+00	3.76E-03	6.57E-04
1.90E-05	1.77E-03	9.63E-05	3.02E-05	3.02E-05	1.95E-04	3.02E-05	3.05E-04	1.98E-05	6.84E-05	2.89E-05	1.17E-04	3.19E+00	8.83E-07	5.03E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.79E-05	0.00E+00	1.77E-04	1.98E-05	3.43E-05	0.00E+00	5.41E-05	0.00E+00	0.00E+00	0.00E+00
3.36E-05	3.61E-04	8.92E-03	0.00E+00	4.97E-06	1.95E-04	4.97E-06	2.80E-04	1.98E-05	6.84E-05	4.57E-06	9.28E-05	2.48E+00	2.35E-03	5.05E-04
2.32E-05	2.45E-03	1.26E-04	3.11E-05	3.87E-05	1.92E-04	3.87E-05	3.10E-04	1.98E-05	6.71E-05	3.70E-05	1.24E-04	3.29E+00	1.08E-06	5.18E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.78E-05	0.00E+00	1.77E-04	1.98E-05	3.42E-05	0.00E+00	5.41E-05	0.00E+00	0.00E+00	0.00E+00
3.36E-05	4.41E-04	9.99E-03	0.00E+00	4.80E-06	1.92E-04	4.80E-06	2.76E-04	1.98E-05	6.71E-05	4.41E-06	9.14E-05	2.54E+00	2.35E-03	5.18E-04
2.14E-05	2.22E-03	1.11E-04	3.08E-05	3.66E-05	1.92E-04	3.66E-05	3.08E-04	1.98E-05	6.74E-05	3.50E-05	1.22E-04	3.25E+00	9.92E-07	5.12E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.78E-05	0.00E+00	1.77E-04	1.98E-05	3.42E-05	0.00E+00	5.41E-05	0.00E+00	0.00E+00	0.00E+00
3.36E-05	3.88E-04	9.27E-03	0.00E+00	4.91E-06	1.93E-04	4.91E-06	2.77E-04	1.98E-05	6.74E-05	4.52E-06	9.17E-05	2.50E+00	2.35E-03	5.10E-04
7.91E-05	1.24E-02	2.04E-04	8.26E-05	3.29E-05	4.63E-04	3.29E-05	5.75E-04	1.98E-05	1.62E-04	3.14E-05	2.13E-04	8.73E+00	3.67E-06	1.37E-03
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-04	0.00E+00	3.11E-04	1.98E-05	8.10E-05	0.00E+00	1.01E-04	0.00E+00	0.00E+00	0.00E+00
2.95E-05	7.68E-04	2.42E-02	0.00E+00	2.70E-06	4.63E-04	2.70E-06	5.45E-04	1.98E-05	1.62E-04	2.48E-06	1.84E-04	2.95E+00	1.57E-03	6.01E-04
2.27E-05	2.63E-03	1.07E-04	2.67E-05	4.85E-05	1.89E-04	4.85E-05	3.17E-04	1.98E-05	6.61E-05	4.64E-05	1.32E-04	2.82E+00	1.06E-06	4.44E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.54E-05	0.00E+00	1.75E-04	1.98E-05	3.34E-05	0.00E+00	5.32E-05	0.00E+00	0.00E+00	0.00E+00
3.21E-05	4.00E-04	8.78E-03	0.00E+00	4.67E-06	1.89E-04	4.67E-06	2.73E-04	1.98E-05	6.60E-05	4.29E-06	9.01E-05	2.38E+00	2.25E-03	4.85E-04
2.47E-05	2.36E-03	2.26E-04	3.23E-05	1.60E-05	2.23E-04	1.60E-05	3.18E-04	1.98E-05	7.80E-05	1.53E-05	1.13E-04	3.41E+00	1.15E-06	5.38E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E-04	0.00E+00	1.94E-04	1.98E-05	4.01E-05	0.00E+00	5.99E-05	0.00E+00	0.00E+00	0.00E+00
9.72E-04	4.83E-03	6.63E-02	3.94E-05	3.43E-06	2.13E-04	3.43E-06	2.60E-04	1.10E-05	7.45E-05	3.16E-06	8.86E-05	3.99E+00	2.10E-04	2.24E-04
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-04	0.00E+00	1.51E-04	1.10E-05	3.74E-05	0.00E+00	4.85E-05	0.00E+00	0.00E+00	0.00E+00
6.82E-06	3.30E-05	1.26E-03	1.85E-05	2.87E-06	2.01E-04	2.87E-06	2.21E-04	4.41E-06	7.02E-05	2.64E-06	7.73E-05	1.87E+00	2.51E-06	5.51E-06
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-04	0.00E+00	1.85E-04	1.59E-05	4.24E-05	0.00E+00	5.83E-05	0.00E+00	0.00E+00	0.00E+00

MTens/Mile														
ROG_RUNEX	NOx_RUNEX	CO_RUNEX	SOx_RUNEX	PM10_RUNEX	PM10_PMTW	PM10_PMBW	PM10_TOTAL	PM2.5_RUNEX	PM2.5_PMTW	PM2.5_PMBW	PM 2.5 Total	CO2_RUNEX	CH4_RUNEX	N2O_RUNEX
4.82E-08	1.04E-06	1.75E-07	1.00E-08	1.20E-08	4.61E-08	1.33E-08	7.14E-08	3.00E-09	1.61E-08	1.27E-08	3.19E-08	1.06E-03	2.24E-09	1.66E-07
1.19E-08	1.06E-07	3.38E-06	0.00E+00	1.20E-08	4.61E-08	1.59E-09	5.97E-08	3.00E-09	1.61E-08	1.46E-09	2.06E-08	9.21E-04	8.36E-07	1.88E-07
2.80E-09	1.97E-08	4.59E-07	2.20E-09	8.00E-09	7.43E-09	4.94E-10	1.59E-08	2.00E-09	2.60E-09	4.54E-10	5.06E-09	2.23E-04	9.65E-10	3.21E-09
4.49E-09	1.86E-08	1.31E-07	1.73E-09	8.00E-09	7.46E-09	1.28E-09	1.67E-08	2.00E-09	2.61E-09	1.22E-09	5.83E-09	1.82E-04	2.09E-10	2.87E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.39E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00
1.12E-09	2.64E-09	1.73E-07	1.11E-09	8.00E-09	4.00E-09	2.03E-10	1.22E-08	2.00E-09	1.40E-09	1.86E-10	3.58E-09	1.12E-04	3.42E-10	4.46E-10
3.12E-09	2.16E-08	4.92E-07	2.55E-09	8.00E-09	8.83E-09	5.45E-10	1.74E-08	2.00E-09	3.09E-09	5.01E-10	5.59E-09	2.58E-04	1.05E-09	3.38E-09
1.15E-08	2.68E-08	1.21E-07	3.19E-09	8.00E-09	8.75E-09	4.09E-09	2.08E-08	2.00E-09	3.06E-09	3.91E-09	8.98E-09	3.37E-04	5.36E-10	5.30E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.39E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00
1.12E-09	2.63E-09	1.72E-07	1.11E-09	8.00E-09	4.00E-09	1.95E-10	1.22E-08	2.00E-09	1.40E-09	1.79E-10	3.58E-09	1.12E-04	3.43E-10	4.49E-10
3.93E-09	2.30E-08	5.42E-07	2.65E-09	8.00E-09	8.76E-09	5.14E-10	1.73E-08	2.00E-09	3.07E-09	4.72E-10	5.54E-09	2.68E-04	1.30E-09	3.49E-09
1.16E-08	2.74E-08	1.22E-07	2.37E-09	8.00E-09	8.76E-09	4.11E-09	2.09E-08	2.00E-09	3.07E-09	3.93E-09	9.00E-09	2.51E-04	5.38E-10	3.95E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.39E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00
1.12E-09	2.64E-09	1.73E-07	1.11E-09	8.00E-09	4.00E-09	1.99E-10	1.22E-08	2.00E-09	1.40E-09	1.83E-10	3.58E-09	1.12E-04	3.43E-10	4.48E-10
4.23E-09	2.20E-08	5.94E-07	7.45E-09	8.00E-09	7.80E-08	1.27E-09	8.73E-08	2.00E-09	2.73E-08	1.17E-09	3.05E-08	7.54E-04	1.26E-09	1.86E-09
9.14E-08	3.02E-07	2.36E-07	5.73E-09	1.20E-08	7.80E-08	1.97E-08	1.10E-07	3.00E-09	2.73E-08	1.88E-08	4.91E-08	6.05E-04	4.24E-09	9.53E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	3.90E-08	0.00E+00	4.70E-08	2.00E-09	1.37E-08	0.00E+00	1.57E-08	0.00E+00	0.00E+00	0.00E+00
3.60E-09	2.16E-08	6.03E-07	8.36E-09	8.00E-09	9.10E-08	1.26E-09	1.00E-07	2.00E-09	3.19E-08	1.16E-09	3.50E-08	8.45E-04	1.11E-09	2.18E-09
1.13E-07	4.31E-07	2.98E-07	6.70E-09	1.20E-08	9.10E-08	2.49E-08	1.28E-07	3.00E-09	3.19E-08	2.38E-08	5.86E-08	7.07E-04	5.26E-09	1.11E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.55E-08	0.00E+00	5.35E-08	2.00E-09	1.59E-08	0.00E+00	1.79E-08	0.00E+00	0.00E+00	0.00E+00
7.80E-07	4.71E-07	9.83E-06	1.83E-09	4.00E-09	1.20E-08	2.12E-09	1.81E-08	1.00E-09	4.20E-09	1.98E-09	7.18E-09	1.85E-04	1.31E-07	3.55E-08
4.50E-09	2.70E-08	5.74E-07	3.23E-09	8.00E-09	8.91E-09	5.31E-10	1.74E-08	2.00E-09	3.12E-09	4.88E-10	5.61E-09	3.26E-04	1.43E-09	3.72E-09
4.43E-09	1.17E-08	1.37E-07	3.12E-09	8.00E-09	8.95E-09	1.11E-09	1.81E-08	2.00E-09	3.13E-09	1.07E-09	6.20E-09	3.29E-04	2.06E-10	5.18E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.00E-09	4.40E-09	0.00E+00	1.24E-08	2.00E-09	1.54E-09	0.00E+00	3.54E-09	0.00E+00	0.00E+00	0.00E+00
1.12E-09	2.64E-09	1.73E-07	1.11E-09	8.00E-09	4.00E-09	2.04E-10	1.22E-08	2.00E-09	1.40E-09	1.87E-10	3.59E-09	1.12E-04	3.42E-10	4.44E-10
1.15E-08	1.96E-07	1.59E-07	1.92E-08	1.20E-08	4.50E-08	1.47E-09	5.85E-08	3.00E-09	1.58E-08	1.35E-09	2.01E-08	1.94E-03	4.04E-09	1.81E-08
8.62E-08	2.58E-06	2.54E-07	1.03E-08	1.60E-08	4.48E-08	2.84E-08	8.92E-08	4.00E-09	1.57E-08	2.72E-08	4.68E-08	1.09E-03	4.00E-09	1.71E-07
1.05E-08	9.33E-07	3.59E-08	1.45E-08	1.20E-08	8.15E-08	2.37E-08	1.17E-07	3.00E-09	2.85E-08	2.26E-08	5.42E-08	1.53E-03	4.89E-10	2.41E-07
2.46E-08	2.78E-07	4.90E-07	1.52E-08	1.20E-08	4.48E-08	1.28E-09	5.81E-08	3.00E-09	1.57E-08	1.18E-09	1.99E-08	1.54E-03	5.50E-09	1.66E-08
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.84E-09	0.00E+00	1.08E-08	0.00E+00	0.00E+00	0.00E+00
1.48E-08	2.56E-06	1.83E-07	1.66E-08	0.00E+00	0.00E+00	4.07E-09	4.07E-09	0.00E+00	0.00E+00	3.90E-09	3.90E-09	1.75E-03	6.86E-10	2.76E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8.38E-09	1.29E-07	1.94E-07	7.29E-09	8.00E-09	4.49E-08	1.23E-09	5.41E-08	2.00E-09	1.57E-08	1.13E-09	1.89E-08	7.37E-04	1.99E-09	1.22E-08
7.87E-09	4.30E-07	5.81E-08	1.00E-08	1.20E-08	4.49E-08	3.61E-09	6.05E-08	3.00E-09	1.57E-08	3.46E-09	2.22E-08	1.06E-03	3.66E-10	1.66E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-08	2.25E-08	0.00E+00	3.31E-08	2.66E-09	7.86E-09	0.00E+00	1.05E-08	0.00E+00	0.00E+00	0.00E+00
3.84E-08	2.96E-07	8.14E-06	0.00E+00	1.20E-08	4.49E-08	3.67E-09	6.06E-08	3.00E-09	1.57E-08	3.38E-09	2.21E-08	1.13E-03	2.69E-06	2.30E-07
5.37E-09	1.78E-07	2.75E-08	9.62E-09	1.20E-08	4.23E-08	5.41E-09	5.97E-08	3.00E-09	1.48E-08	5.18E-09	2.30E-08	1.02E-03	2.50E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.12E-08	0.00E+00	3.32E-08	3.00E-09	7.40E-09	0.00E+00	1.04E-08	0.00E+00	0.00E+00	0.00E+00
5.39E-09	1.80E-07	2.76E-08	9.62E-09	1.20E-08	4.23E-08	5.42E-09	5.97E-08	3.00E-09	1.48E-08	5.19E-09	2.30E-08	1.02E-03	2.50E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.12E-08	0.00E+00	3.32E-08	3.00E-09	7.40E-09	0.00E+00	1.04E-08	0.00E+00	0.00E+00	0.00E+00
5.36E-09	1.79E-07	2.75E-08	9.61E-09	1.20E-08	4.23E-08	5.43E-09	5.97E-08	3.00E-09	1.48E-08	5.19E-09	2.30E-08	1.01E-03	2.49E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.12E-08	0.00E+00	3.32E-08	3.00E-09	7.40E-09	0.00E+00	1.04E-08	0.00E+00	0.00E+00	0.00E+00
5.77E-09	1.95E-07	2.96E-08	8.49E-09	1.20E-08	4.23E-08	5.75E-09	6.01E-08	3.00E-09	1.48E-08	5.50E-09	2.33E-08	8.96E-04	2.68E-10	1.41E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.12E-08	0.00E+00	3.32E-08	3.00E-09	7.40E-09	0.00E+00	1.04E-08	0.00E+00	0.00E+00	0.00E+00
6.14E-09	3.70E-07	5.40E-08	9.95E-09	1.20E-08	4.76E-08	1.93E-09	6.15E-08	3.00E-09	1.66E-08	1.85E-09	2.15E-08	1.05E-03	2.85E-10	1.65E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.38E-08	0.00E+00	3.58E-08	3.00E-09	8.32E-09	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00
1.25E-08	6.03E-08	3.82E-06	0.00E+00	1.20E-08	4.76E-08	2.01E-09	6.16E-08	3.00E-09	1.66E-08	1.85E-09	2.15E-08	1.01E-03	8.73E-07	2.05E-07
6.12E-09	3.65E-07	5.37E-08	9.97E-09	1.20E-08	4.76E-08	1.93E-09	6.15E-08	3.00E-09	1.66E-08	1.84E-09	2.15E-08	1.05E-03	2.84E-10	1.66E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.38E-08	0.00E+00	3.58E-08	3.00E-09	8.32E-09	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00
1.25E-08	6.01E-08	3.82E-06	0.00E+00	1.20E-08	4.76E-08	2.02E-09	6.16E-08	3.00E-09	1.66E-08	1.85E-09	2.15E-08	1.01E-03	8.73E-07	2.05E-07
6.17E-09	3.71E-07	5.40E-08	9.96E-09	1.20E-08	4.76E-08	1.94E-09	6.15E-08	3.00E-09	1.66E-08	1.86E-09	2.15E-08	1.05E-03	2.87E-10	1.66E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.38E-08	0.00E+00	3.58E-08	3.00E-09	8.32E-09	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00

1.25E-08	6.09E-08	3.82E-06	0.00E+00	1.20E-08	4.76E-08	2.01E-09	6.16E-08	3.00E-09	1.66E-08	1.85E-09	2.15E-08	1.01E-03	8.72E-07	2.05E-07
1.09E-08	7.86E-07	8.16E-08	1.02E-08	1.20E-08	4.76E-08	2.97E-09	6.25E-08	3.00E-09	1.66E-08	2.84E-09	2.25E-08	1.08E-03	5.06E-10	1.70E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.38E-08	0.00E+00	3.58E-08	3.00E-09	8.32E-09	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00
1.18E-08	1.41E-07	3.63E-06	0.00E+00	1.20E-08	4.76E-08	1.55E-09	6.11E-08	3.00E-09	1.66E-08	1.43E-09	2.11E-08	1.03E-03	8.24E-07	2.11E-07
5.53E-09	2.77E-07	4.28E-08	9.62E-09	1.20E-08	4.49E-08	3.15E-09	6.00E-08	3.00E-09	1.57E-08	3.02E-09	2.17E-08	1.02E-03	2.57E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.96E-09	5.21E-08	2.67E-06	0.00E+00	1.20E-08	4.49E-08	1.56E-09	5.84E-08	3.00E-09	1.57E-08	1.43E-09	2.01E-08	8.78E-04	6.97E-07	1.79E-07
5.57E-09	2.76E-07	4.28E-08	9.63E-09	1.20E-08	4.49E-08	3.16E-09	6.00E-08	3.00E-09	1.57E-08	3.02E-09	2.17E-08	1.02E-03	2.59E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.96E-09	5.24E-08	2.67E-06	0.00E+00	1.20E-08	4.49E-08	1.55E-09	5.84E-08	3.00E-09	1.57E-08	1.43E-09	2.01E-08	8.77E-04	6.97E-07	1.79E-07
5.57E-09	2.80E-07	4.29E-08	9.63E-09	1.20E-08	4.49E-08	3.17E-09	6.00E-08	3.00E-09	1.57E-08	3.03E-09	2.17E-08	1.02E-03	2.59E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.96E-09	5.23E-08	2.67E-06	0.00E+00	1.20E-08	4.49E-08	1.56E-09	5.84E-08	3.00E-09	1.57E-08	1.43E-09	2.01E-08	8.77E-04	6.97E-07	1.79E-07
7.43E-09	4.88E-07	5.44E-08	9.76E-09	1.20E-08	4.49E-08	4.13E-09	6.10E-08	3.00E-09	1.57E-08	3.95E-09	2.27E-08	1.03E-03	3.45E-10	1.62E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.48E-09	9.57E-08	2.72E-06	0.00E+00	1.20E-08	4.49E-08	1.30E-09	5.82E-08	3.00E-09	1.57E-08	1.20E-09	1.99E-08	8.97E-04	6.63E-07	1.83E-07
5.43E-09	2.70E-07	4.19E-08	9.65E-09	1.20E-08	4.49E-08	3.11E-09	6.00E-08	3.00E-09	1.57E-08	2.98E-09	2.17E-08	1.02E-03	2.52E-10	1.61E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.96E-09	5.22E-08	2.67E-06	0.00E+00	1.20E-08	4.49E-08	1.56E-09	5.84E-08	3.00E-09	1.57E-08	1.43E-09	2.01E-08	8.79E-04	6.97E-07	1.79E-07
6.92E-09	4.43E-07	5.20E-08	9.01E-09	1.20E-08	4.49E-08	3.91E-09	6.08E-08	3.00E-09	1.57E-08	3.74E-09	2.24E-08	9.52E-04	3.22E-10	1.50E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.24E-08	0.00E+00	3.44E-08	3.00E-09	7.85E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
9.49E-09	9.48E-08	2.72E-06	0.00E+00	1.20E-08	4.49E-08	1.31E-09	5.82E-08	3.00E-09	1.57E-08	1.20E-09	1.99E-08	8.81E-04	6.64E-07	1.80E-07
5.26E-09	2.22E-07	2.69E-08	9.03E-09	1.20E-08	4.23E-08	5.58E-09	5.99E-08	3.00E-09	1.48E-08	5.34E-09	2.32E-08	9.54E-04	2.44E-10	1.50E-07
5.28E-09	2.25E-07	2.70E-08	9.04E-09	1.20E-08	4.23E-08	5.61E-09	5.99E-08	3.00E-09	1.48E-08	5.36E-09	2.32E-08	9.54E-04	2.45E-10	1.50E-07
5.23E-09	2.19E-07	2.68E-08	9.01E-09	1.20E-08	4.23E-08	5.56E-09	5.99E-08	3.00E-09	1.48E-08	5.32E-09	2.31E-08	9.51E-04	2.43E-10	1.50E-07
5.65E-09	2.32E-07	2.90E-08	8.12E-09	1.20E-08	4.23E-08	5.89E-09	6.02E-08	3.00E-09	1.48E-08	5.64E-09	2.34E-08	8.58E-04	2.62E-10	1.35E-07
1.60E-08	6.65E-07	6.61E-08	1.03E-08	1.20E-08	4.62E-08	4.70E-09	6.29E-08	3.00E-09	1.62E-08	4.50E-09	2.37E-08	1.09E-03	7.44E-10	1.72E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.31E-08	0.00E+00	3.51E-08	3.00E-09	8.08E-09	0.00E+00	1.11E-08	0.00E+00	0.00E+00	0.00E+00
1.26E-08	5.81E-08	3.06E-06	0.00E+00	1.20E-08	4.62E-08	1.79E-09	6.00E-08	3.00E-09	1.62E-08	1.65E-09	2.08E-08	9.77E-04	8.83E-07	1.99E-07
1.39E-08	5.55E-07	6.23E-08	1.04E-08	1.20E-08	4.62E-08	3.90E-09	6.21E-08	3.00E-09	1.62E-08	3.73E-09	2.29E-08	1.10E-03	6.44E-10	1.73E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.31E-08	0.00E+00	3.51E-08	3.00E-09	8.08E-09	0.00E+00	1.11E-08	0.00E+00	0.00E+00	0.00E+00
1.26E-08	6.89E-08	3.06E-06	0.00E+00	1.20E-08	4.62E-08	1.74E-09	5.99E-08	3.00E-09	1.62E-08	1.60E-09	2.08E-08	9.91E-04	8.79E-07	2.02E-07
1.20E-08	5.11E-07	5.72E-08	1.04E-08	1.20E-08	4.62E-08	3.78E-09	6.20E-08	3.00E-09	1.62E-08	3.62E-09	2.28E-08	1.09E-03	5.60E-10	1.72E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.31E-08	0.00E+00	3.51E-08	3.00E-09	8.08E-09	0.00E+00	1.11E-08	0.00E+00	0.00E+00	0.00E+00
1.26E-08	6.39E-08	3.06E-06	0.00E+00	1.20E-08	4.62E-08	1.77E-09	5.99E-08	3.00E-09	1.62E-08	1.62E-09	2.08E-08	9.81E-04	8.81E-07	2.00E-07
1.10E-08	4.82E-07	5.38E-08	1.02E-08	1.20E-08	4.62E-08	3.58E-09	6.17E-08	3.00E-09	1.62E-08	3.42E-09	2.26E-08	1.08E-03	5.10E-10	1.70E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.31E-08	0.00E+00	3.51E-08	3.00E-09	8.08E-09	0.00E+00	1.11E-08	0.00E+00	0.00E+00	0.00E+00
1.26E-08	6.36E-08	3.06E-06	0.00E+00	1.20E-08	4.62E-08	1.77E-09	5.99E-08	3.00E-09	1.62E-08	1.63E-09	2.08E-08	9.81E-04	8.81E-07	2.00E-07
5.09E-09	1.93E-07	3.56E-08	9.63E-09	1.20E-08	4.55E-08	2.32E-09	5.98E-08	3.00E-09	1.59E-08	2.22E-09	2.11E-08	1.02E-03	2.37E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.27E-08	0.00E+00	3.47E-08	3.00E-09	7.96E-09	0.00E+00	1.10E-08	0.00E+00	0.00E+00	0.00E+00
1.11E-08	5.42E-08	2.75E-06	0.00E+00	1.20E-08	4.55E-08	1.64E-09	5.91E-08	3.00E-09	1.59E-08	1.50E-09	2.04E-08	9.16E-04	7.79E-07	1.87E-07
5.10E-09	1.88E-07	3.56E-08	9.63E-09	1.20E-08	4.55E-08	2.30E-09	5.98E-08	3.00E-09	1.59E-08	2.20E-09	2.11E-08	1.02E-03	2.37E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.27E-08	0.00E+00	3.47E-08	3.00E-09	7.96E-09	0.00E+00	1.10E-08	0.00E+00	0.00E+00	0.00E+00
1.11E-08	5.42E-08	2.75E-06	0.00E+00	1.20E-08	4.55E-08	1.64E-09	5.91E-08	3.00E-09	1.59E-08	1.50E-09	2.04E-08	9.16E-04	7.79E-07	1.87E-07
5.05E-09	1.83E-07	3.52E-08	9.64E-09	1.20E-08	4.55E-08	2.29E-09	5.98E-08	3.00E-09	1.59E-08	2.19E-09	2.11E-08	1.02E-03	2.34E-10	1.60E-07
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.27E-08	0.00E+00	3.47E-08	3.00E-09	7.96E-09	0.00E+00	1.10E-08	0.00E+00	0.00E+00	0.00E+00
1.11E-08	5.42E-08	2.75E-06	0.00E+00	1.20E-08	4.55E-08	1.64E-09	5.91E-08	3.00E-09	1.59E-08	1.50E-09	2.04E-08	9.16E-04	7.79E-07	1.87E-07
1.11E-08	6.94E-08	1.84E-07	1.52E-08	1.20E-08	4.50E-08	1.49E-09	5.85E-08	3.00E-09	1.58E-08	1.37E-09	2.01E-08	1.54E-03	3.02E-09	7.02E-09
0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-08	2.25E-08	0.00E+00	3.45E-08	3.00E-09	7.88E-09	0.00E+00	1.09E-08	0.00E+00	0.00E+00	0.00E+00
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0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.89E-08	5.50E-08	0.00E+00	8.39E-08	7.22E-09	1.93E-08	0.00E+00	2.65E-08	0.00E+00	0.00E+00	0.00E+00

We Can Model Regional Emissions, But Are the Results Meaningful for CEQA?

Authors: AEP Climate Change Committee (Michael Hendrix, Dave Mitchell, Haseeb Qureshi, Jennifer Reed, Brian Schuster, Nicole Vermilion, and Rich Walters)

On December 24, 2018, the California Supreme Court, *Sierra Club v. County of Fresno (Friant Ranch, L.P.] (2018) 6 Cal.5th 502, Case No. S219783 (Friant Ranch*), held that simply identifying that a project exceeds an emissions threshold is not sufficient to identify a project's significant effect on the environment relative to the health effects of project emissions. The Court found that an EIR should make a reasonable effort to substantively connect a project's criteria pollutant emissions to likely health consequences, or explain why it is not currently feasible to provide such an analysis. In 2019, there were several CEQA documents that included health effects modeling to provide additional analysis for projects with criteria air pollutant emissions that exceed a significance threshold. While it is technically possible to conduct this modeling, we argue that this additional layer of quantitative analysis may not always provide decision-makers and the public with additional meaningful information. It is the air districts that are best suited to provide frameworks for how to identify health effects of regional criteria pollutant emissions under CEQA.

Introduction

Significance thresholds for regional criteria pollutants used by California air districts and lead agencies represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable national or state ambient air quality standard (AAQS). By analyzing the project's emissions against these thresholds, the CEQA document assesses whether these emissions directly contribute to any regional or local exceedances of the applicable AAQS and exposure levels. The basis of the ruling in Friant Ranch was that the EIR did not provide a meaningful analysis of the adverse health effects that would be associated with the project's criteria pollutant emissions, which were identified as being far above the relevant thresholds. The discussion of the adverse health effects in the EIR was general in nature and did not connect the levels of the pollutants that would be emitted by the project to adverse health effects.

The process of correlating project-related criteria pollutant emissions to health-based consequences is called a health impact assessment (HIA). An HIA involves two steps: 1) running a regional photochemical grid model (PGM) to estimate the small increases in concentrations of ozone and particulate matter (PM) in the region as a result of a project's emissions of criteria and precursor pollutants; and 2) running the U.S. EPA Benefits Mapping and Analysis Program (BenMAP) to estimate the resulting health impacts from these increases in concentrations of ozone and PM.

Limitations of Regional-Scale Dispersion Models

It is technically feasible to conduct regional-scale criteria pollutant modeling for a development project. Particulate matter (PM) can be divided into two categories: directly emitted PM and secondary PM. Secondary PM, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur oxides (SO_x) and NO_x, Ozone (O_3) is a secondary pollutant formed from the oxidation of reactive organic gases (ROGs) and nitrogen oxides (NOx) in the presence of sunlight. Rates of ozone formation are a function of a variety of complex physical factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns.. Secondary formation of PM and ozone can occur far from the original emissions source from regional transport due to wind and topography (e.g. low-level jet stream). As such, modeling concentrations of secondary PM and ozone require photochemical grid models (PGMs), such as CMAQ and CAMx. These models have a much larger "grid" system and much lower resolution than localized dispersion modeling (e.g., AERMOD). For example, common grid cells in PGMs are 4x4 kilometers, while AERMOD can identify concentrations at the meter-level.

Photochemical modeling also depends on all emission sources in the entire domain. Low resolution and spatial averaging produces "noise" and model uncertainty that can exceed a project's specific emissions. Additionally, regional-scale models are highly contingent upon background concentrations. Factors such as meteorology and topography greatly affect the certainty levels of predicted concentrations at receptor points. As a result, there are statistical ranges of uncertainty through all the modeling steps. Due to these factors, it is difficult to predict ground-level secondary PM and ozone concentrations associated with relatively small emission sources with a high degree of certainty. While it is possible to use a regional-scale model to predict these regional concentrations, when a project's emissions are less than the regional model's resolution, the resultant ambient air quality concentrations will be within the margin of uncertainty. In CEQA terms, this would fit the definition of "speculative". Only when the scale of emissions would result in changes in ambient air quality beyond the model margin of uncertainty would the results not be "speculative" as defined by CEQA.

Identifying Health Effects due to Ambient Air Quality Changes

BenMap is a model developed by the USEPA to understand the health effects from changes in ozone and PM concentrations. If there is an acceptable level of confidence that the results provided by the regional dispersion modeling are valid, then these concentrations can be translated into health outcomes using BenMap. The health outcomes in BenMap are based on changes in ambient air concentrations and the population exposed to these changes. Data provided by this analysis may indicate increased number of workdays lost to illness, hospital admissions (respiratory), emergency room visits (asthma), or mortality, among other health effects. These are called "health incidences."

Translating the incremental increase in PM and ozone concentrations to specific health effects is also subject to uncertainty. For example, regional models assign the same toxicity to PM regardless of the source of PM (such as road dust as exhaust), and thus potentially overpredict adverse health effects of PM. BenMap also assumes that health effects can occur at any concentration, including small incremental concentrations, and assumes that impacts seen at large concentration differences can be linearly scaled down to small increases in concentration, with no consideration of potential thresholds below which health impacts may not occur. Additionally, BenMap is used for assessing impacts over large areas and populations and was not intended to be used for individual projects. For health incidences, the number of hospitalizations or increase in morbidity predicted by BenMap is greatly affected by the population characteristics.[1] Small increases in emissions in an area with a high population have a much greater affect than large increases in emissions over an area with a small population. As a result, the same amount of emissions generated in an urban area could result in greater health consequences than if the same emissions occurred on the urban periphery, where fewer people may be affected. This will also depend on other factors including meteorology and photochemistry, as discussed above. Emissions in areas with conditions that favor high air dispersion or unfavorable ozone formation will likely have relatively lower effects on ambient air quality and health outcomes.

While BenMap provides additional statistical information about health consequences requested by the Court in the Friant Ranch decision, this information is only meaningful when presented with the full health context of the region or locality at hand. For example, if the BenMap analysis says that the project would result in two additional hospital admissions, this result alone is not useful unless one identifies how many hospital admissions are caused by poor air quality now (without the project) and how many hospital admissions occur

[1] BenMap assigns prevalence rate for asthma and other health effects based on indicators such as gender, race, age, ethnicity, etc. The BenMap user manual specifically states that there are a wide range of variables that can be included in the health effect function. The health effect function was developed based on epidemiological studies, and specifically states that "there are a number of issues that arise when deriving and choosing between health effect functions that go well beyond this user manual. Hence, it is important to have a trained health researcher assist in developing the impact function data file."

overall (due to air quality and other causes). Because health is not solely influenced by ambient air quality, and has many factors that are highly variable across geographies and populations, there is an added level of uncertainty in using a generalized identification of health effects due to air quality conditions overlaid onto a specific diverse set of health conditions and other factors. Regardless of the uncertainty levels, if regional health effects are identified for a project, then the CEQA analysis needs to provide a full health baseline for decision-makers and the public to be able to understand the marginal change due to project criteria pollutant emissions. Given the margin of uncertainty at each step in the process (regional scale modeling, existing ambient air quality effects on health, population health conditions vulnerability, and marginal health effects of air pollution), the identification of marginal health effects due to individual projects using regional air quality modelling and tools such as BenMap are likely to be within the level of uncertainty and thus defined as "speculative" per CEQA.

The Role of Air Districts

Regional, community, multiscale air quality modeling conducted by the air districts for each individual air basin or locality within the air basin would be the most appropriate indictor of health effects for projects. The AQMPs provide a forecast of regional emissions based on regional dispersion modeling for all sources within the air basin. Regional-scale models attempt to account for all emissions sources within an air basin.

The regional scale model requires inputs such as existing and future regional sources of pollutants and global meteorological data, which are generally not accessible by CEQA practitioners. Modeling of future years should consider future concentrations of air pollutants based on regional growth projections and existing programs, rules, and regulations adopted by Federal, State, and local air districts. In general, air pollution in California is decreasing as a result of Federal and State laws. Based on the air quality management plans (AQMPs) required for air districts in a nonattainment area, air quality in the air basins are anticipated to improve despite an increase in population and employment growth. Air districts are charged with assessing programs, rules, and regulations so that the increase in population and employment does not conflict with the mandate to achieve the AAQS. Because emissions forecasting and health outcomes based on the regional growth projections to achieve the AAQS is under the purview of the air districts, it should also fall on the air districts to identify the potential health outcomes associated with individual project's criteria pollutant emissions.

The South Coast Air Quality Management District (South Coast AQMD) and the Sacramento Metropolitan Air Quality Management District (Sacramento Metropolitan AQMD) are exploring concepts for project-level analysis in light of Friant Ranch to assist local lead agencies.

» South Coast AQMD is looking at the largest land use development project they have had in the air basin and doing a sensitivity analysis (using CAMx for photochemical grid modeling and BenMap for health outcomes) to see how locating a very large project in different parts of the air basin (Los Angeles, Inland Empire, v. Orange County) would affect the health incidence.

» Sacramento Metropolitan AQMD is also looking at a screening process. Rather than looking at the upper end (i.e., largest project in the air basin), Sacramento Metropolitan AQMD is starting at the smallest project that exceeds the regional significance threshold and running CAMx and BenMap at different locations in the air basin to see how it affects regional health incidences.

Guidance from Air Districts would be the most effective way to incorporate meaningful information concerning regional health effects of project criteria pollutants in CEQA analyses, including guidance as to when modelling is and is not useful and meaningful, how modelling should be conducted, and how to best present additional information to inform decision-makers and the public about a project's impacts.

So…until air districts do their part, what should we do?

PROJECTS WITH CRITERIA POLLUTANT EMISSIONS BELOW AIR DISTRICT THRESHOLDS

The Friant Ranch ruling was about providing disclosure of health effects of project emissions that were well over the significance thresholds. Since the air district thresholds are tied to a level the air districts find to not have a significant effect on ambient air quality, there should be no need to discuss the health effects of criteria pollutant emissions that are less than the significance thresholds.

PROJECTS WITH CRITERIA POLLUTANT EMISSIONS ABOVE AIR DISTRICT THRESHOLDS

Pursuant to Section 15125 of the CEQA Guidelines, the environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. For CEQA, the health effects associated with buildout of a project would occur at the project's horizon year. Because CEQA requires an analysis of the change from existing conditions, the change in effects would be associated with changes in ambient air quality and associated health outcomes between existing conditions and the project's horizon year. Therefore, in order to show how a project affects health outcomes in an air basin, the CEQA documents will need to qualitatively or quantitatively address: (1) existing ambient criteria pollutant concentrations, health incidences due to existing air quality, and health incidences overall; 2) future (without project) ambient criteria pollutant concentrations and health incidences, and 3) future (with project) ambient criteria pollutant concentrations and health incidences.

Projects with significant criteria pollutant emissions could use regional modelling and BenMap to identify health effects of project emissions, but it is likely that many (or most) projects that are not regionally substantial in scale will be shown to have minimal regional changes in PM and ozone concentrations and therefore minimal changes in associated health effects. In addition, many projects may have emissions that are less than the uncertainty level of regional air quality models and BenMap health effects modeling; in these cases, quantitative results will not be meaningful. Thus, absent better direction from air districts, CEQA lead agencies will have to determine on a case by case basis whether a qualitative discussion of health effects will suffice, or whether regional modeling, despite its limitations, should be conducted for the project.

Where a project has substantial criteria pollutant emissions when considered on a regional scale, and there is reason to believe that the modeling of ambient air quality and regional health effects would produce non-speculative results when considering modeling uncertainties, then CEQA lead agencies should use regional modelling.

Conclusion

The purpose of CEQA is to inform the public as to the potential for a project to result in one or more significant adverse effects on the environment (including health effects). A CEQA document must provide an understandable and clear environmental analysis and provide an adequate basis for decision making and public disclosure. Regional dispersion modeling of criteria pollutants and secondary pollutants like PM and ozone can provide additional information, but that information may be within the margin of modelling uncertainty and/or may not be meaningful for the public and decision-makers unless a full health context is presented in the CEQA document. Simply providing health outcomes based on use of a regional-scale model and BenMap may not satisfy the goal to provide decision-makers and the public with information that would assist in weighting the environmental consequences of a project. A CEQA document must provide an analysis that is understandable for decision making and public disclosure. Regional scale modeling may provide a technical method for this type of analysis, but it does not necessarily provide a meaningful way to connect the magnitude of a project's criteria pollutant emissions to health effects without speculation.

In order to accurately connect the dots, we urge California air districts to provide more guidance on how to identify and describe the health effects of exceeding regional criteria pollutant thresholds. The air districts are the primary agency responsible for ensuring that the air basins attain the AAQS and ensure the health and welfare of its residents relative to air quality. Because emissions forecasting and health outcomes are based on the regional growth projections to achieve the AAQS is under the purview of the air districts, it should fall on the air districts to identify the potential health outcomes associated with exceeding the CEQA thresholds for projects. The air districts should provide lead agencies with a consistent, reliable, and meaningful analytical approach to correlate specific health effects that may result from a project's criteria pollutant emissions.

Glossary

AAQS – Ambient Air Quality Standards

BenMap – Benefits Mapping and Analysis Program

CAMx – Comprehensive Air Quality Model with extensions

CMAQ – Community Multiscale Air Quality

NOx – Nitrogen Oxides

PM – Particulate Matter

SOx – Sulfur Oxides

State – California

USEPA – United States Environmental Protection Agency

S219783

IN THE SUPREME COURT OF C ALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

SUPREME COURT
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After a Published Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*

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TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE SUPREME COURT:

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this amicus brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed amicus brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?
2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review de novo.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

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BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, "[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 ["*Laurel Heights I*"]) Accordingly, "an agency must use its best efforts to find out and disclose all that it reasonably can." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)[1].). However, "[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project's pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

[1] The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq.*

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality

management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "chapter 7" hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Executive Summary" hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called "criteria" document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called "criteria pollutants." EPA must then establish "national ambient air quality standards" at levels "requisite to protect public health",

allowing "an adequate margin of safety." (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), http://www.epa.gov/air/criteria.html (last updated Oct. 21, 2014).)[2]

Under the Clean Air Act, EPA sets emission standards for motor vehicles and "nonroad engines" (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as "stationary sources." The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified "major" stationary sources use technology to achieve the "lowest achievable emission rate," and to control minor stationary sources as

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[2] Particulate matter (PM) is further divided into two categories: fine particulate or $PM_{2.5}$ (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM_{10}) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), http://www.epa.gov/airquality/particlepollution/ (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called "hazardous air pollutants" calling for EPA to establish "maximum achievable control technology" (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as "toxic air contaminants" (TACs) which are subject to two state-required programs. The first program requires "air toxics control measures" for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare "health risk assessments" for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as "significant," the facility must implement a "risk reduction plan" to bring its risk levels below "significant" levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv; then follow "Rule 1401" hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the "lead agency" that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called "responsible" agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to "trustee agencies" and agencies "with jurisdiction by law" including "authority over resources which may be affected by the project." (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.[3]

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[3] The SCAQMD's CEQA program for its rules is a "Certified Regulatory Program" under which it prepares a "functionally equivalent" document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.[4] SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a "responsible agency" for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii; then follow "Rule 1303" hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with "jurisdiction by law" over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

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[4] The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015; then follow "16. Lead Agency Projects and Environmental Documents Received by SCAQMD" hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, http://www.arb.ca.gov/regact/diesltac/diesltac.htm; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, supra, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT'S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR's conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1, supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must "draw[] a line that divides *sufficient* discussions from those that are *insufficient*." (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that "[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis." (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." Case law reflects this: "Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible." (*Association of Irritated Residents v. County of Madera, supra,* 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be "feasible"; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a "health risk assessment" before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the "maximally exposed individual" (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it

is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588), pp. 11-16*; (last visited Apr. 1, 2015) http://www.aqmd.gov/home/library/documents-support-material; "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, http://www.aqmd.gov/home/forms ; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from

the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants[5], such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, http://www.epa.gov/airquality/ozonepollution/ (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, http://www.epa.gov/ttnamti1/archive/cpreldoc.html (last visited Apr. 1, 2015).) NO_x and VOC are known as "precursors" of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population,* Figure 9, http://www.epa.gov/apti/ozonehealth/population.html#levels (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP (February 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Appendix V: Modeling & Attainment Demonstrations" hyperlink,

[5] See discussion of types of pollutants, supra, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts "internal bank" of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.[6] The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).[7] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6*)* at p. 4.1-35, Table 4.1-29.)

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[6] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6,* http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011; the follow "26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System" (last visited April 1, 2015).)

[7] The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; https://www.epa.gov/ttnamti1/archive/cpreldoc.html; then search "Guideline on Ozone Monitoring Site Selection" click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA "significance" threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook; then follow "SCAQMD Air Quality Significance Thresholds" hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a "major" stationary source for "extreme" ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA "significance" finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD's thresholds of significance may determine

that many projects have "significant" air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter ($PM_{2.5}$)[8], another "criteria" pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of $PM_{2.5}$. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional $PM_{2.5}$ in the District, up to 2.82 tons/day (5,650 lbs/day of $PM_{2.5}$, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this $PM_{2.5}$ health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties. [9] (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

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[8] SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for "$PM_{2.5}$" or particulate matter less than 2.5 microns in diameter.

[9] Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011; then follow "Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project" hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small $PM_{2.5}$ increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated $PM_{2.5}$ emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the "normal" "existing conditions" CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.[10]

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[10] Whether a particular study would result in "informational value" is a part of deciding whether it is "feasible." CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.[11] Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

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technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

[11] In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, "a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (*Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency's action de novo under the "independent judgment" test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby "accord[ing] greater deference to the agency's substantive factual conclusions." (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project's impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR's analysis is sufficient to meet CEQA's informational purposes,[12] while Friant Ranch contends that the substantial evidence standard applies to this question.

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[12] Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,[13] containing two levels of inquiry that should be judged by different standards.[14]

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

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[13] Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

[14] Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document.*" (*Laurel Heights I, supra,* 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses "in sufficient detail to enable meaningful participation and criticism by the public. '[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.'" (*Laurel Heights I, supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, *supra*, 57 Cal.4th 439, 448, 457:

whether "existing conditions" baseline would be misleading or uninformative judged by substantial evidence standard.[15])

If the lead agency's determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA's information disclosure provisions, since it would be infeasible to provide additional information. This Court's decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency's finding that "the precise parameters of future herbicide use could not be predicted." *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact "substantial". (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

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[15] The substantial evidence standard recognizes that the courts "have neither the resources nor the scientific expertise" to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra,* 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra,* 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.[16]

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[16] We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield, supra,* 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project. " *Bakersfield, supra,* 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra,* 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra,* at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR . . . ." (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra,* at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra*, at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, "Environmental Checklist Form."[17]) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency's noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts' proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA's prohibition on courts interpreting its provisions "in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines." (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra,* at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project's significant impacts on human health. However, except in certain particular circumstances,[18] neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law's requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe "health and safety problems caused by {a project's} physical changes"].) Accordingly, courts must interpret CEQA as a whole to

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[17] Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

[18] E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.[19] Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck,* 198 Cal.App.4th at p. 959 (citations omitted).[20]

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[19] We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131) , or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

[20] Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta,* (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)[21]

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districts should be considered "state agencies" for purposes of the requirement to consult with "trustee agencies" as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere "local agencies" whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

[21] In *Schenck,* the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck,* 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district's published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district's published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay, supra,* 91 Cal.App.4th 1344, 1369-1371.)

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guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra,* 70 Cal.App.4th 482, 492.

CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is "sufficient as an informational document" is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

Respectfully submitted,

DATED: April 3, 2015

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CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015 Respectfully submitted,

Barbara Baird

Barbara Baird

PROOF OF SERVICE

I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

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SUPREME COURT COPY

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

SUPREME COURT
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After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

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[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

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[2] *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

[3] Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

[4] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

[5] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

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[6] CEQA does not require speculation. *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

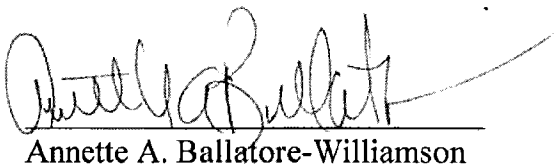
Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



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SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
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I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

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[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).

[6] *Id.*

[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).

[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule2201041l.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club*, *supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

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[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015

Catherine T. Redmond
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

( ) **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.

( ) **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.

Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

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APPENDIX D:
REVISIONS TO SECTION 5.6, ENERGY, OF THE DEIR

5.6 ENERGY

This section describes the potential energy impacts associated with the adoption and implementation of the proposed project. This section describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential energy impacts, and identifies proposed General Plan policies and feasible mitigation measures that could mitigate any potentially significant impacts.

5.6.1 Environmental Setting

Section 21100(b)(3) of the California Environmental Quality Act (CEQA) requires that an Environmental Impact Report (EIR) include a detailed statement setting for the mitigation measures proposed to minimize significant effects on the environment, including but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy. Appendix F of State CEQA Guidelines states that, to ensure that energy implications are considered in project decisions, the potential energy implications of a project shall be considered in an EIR, to the extent relevant and applicable to the project. Appendix F further states that a project's energy consumption and proposed conservation measures may be addressed, as relevant and applicable, in the project description, environmental setting, and impact analysis portions of technical sections, as well as through mitigation measures and alternatives.

In accordance with Appendices F and G of the State CEQA Guidelines, this EIR includes relevant information and analyses that address the energy implications of the proposed project. This section summarizes the proposed project's anticipated energy needs, impacts, and conservation measures. Information found herein, as well as related aspects of the proposed project's energy implications, are discussed in greater detail elsewhere in this EIR, including Sections 5.3, *Air Quality;* 5.8, *Greenhouse Gas Emissions*; and 5.16, *Transportation.*

5.6.1.1 REGULATORY BACKGROUND

Federal

Federal Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 was established in response to the 1973 oil crisis. The Act created the Strategic Petroleum Reserve, established vehicle fuel economy standards, and prohibited the export of U.S. crude oil (with a few limited exceptions). It also created Corporate Average Fuel Economy (CAFE) standards for passenger cars starting in model year 1978. The CAFE Standards are updated periodically to account for changes in vehicle technologies, driver behavior, and/or driving conditions.

The federal government issued new CAFE standards in 2012 for model years 2017 to 2025 that required a fleet average of 54.5 miles per gallon (MPG) for model year 2025. However, on March 30, 2020, the U.S. Environmental Protection Agency (USEPA) finalized updated CAFE and greenhouse gas (GHG) emissions standards for passenger cars and light trucks, covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021–2026. Under SAFE, the fuel economy standards will increase 1.5 percent per year compared to the 5 percent per year under the CAFE

standards established in 2012. Overall, SAFE requires a fleet average of 40.4 MPG for model year 2026 vehicles (85 Federal Register 24174 [April 30, 2020]).

On December 21, 2021, under direction of Executive Order (EO) 13990 issued by President Biden, the National Highway Traffic Safety Administration repealed SAFE Vehicles Rule Part One, which had preempted state and local laws related to fuel economy standards. In addition, on March 31, 2022, the National Highway Traffic Safety Administration finalized new fuel standards in response to EO 13990. Fuel efficiency under the standards proposed will increase 8 percent annually for model years 2024 to 2025 and 10 percent for model year 2026. Overall, the new CAFE standards require a fleet average of 49 MPG for passenger vehicles and light trucks for model year 2026, which would be a 10 MPG increase relative to model year 2021 (National Highway Traffic Safety Administration 2022).

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (Public Law 110-140) seeks to provide the nation with greater energy independence and security by increasing the production of clean renewable fuels; improving vehicle fuel economy; and increasing the efficiency of products, buildings, and vehicles. The Act sets increased CAFE standards; the Renewable Fuel Standard; appliance energy efficiency standards; building energy efficiency standards; and accelerated research and development tasks on renewable energy sources (e.g., solar energy, geothermal energy, and marine and hydrokinetic renewable energy technologies), carbon capture, and sequestration (USEPA 2022).

Energy Policy Act of 2005

Passed by Congress in July 2005, the Energy Policy Act includes a comprehensive set of provisions to address energy issues. This Act includes tax incentives for energy conservation improvements in commercial and residential buildings, fossil fuel production and clean coal facilities, and construction and operation of nuclear power plants, among other things. Subsidies are also included for geothermal, wind energy, and other alternative energy producers.

National Energy Policy

Established in 2001 by the National Energy Policy Development Group, the National Energy Policy is designed to help the private sector and state and local governments promote dependable, affordable, and environmentally sound production and distribution of energy for the future. Key issues addressed by the energy policy are energy conservation, repair and expansion of energy infrastructure, and ways of increasing energy supplies while protecting the environment.

Natural Gas Pipeline Safety Act of 1968

The Natural Gas Pipeline Safety Act of 1968 authorizes the U.S. Department of Transportation to regulate pipeline transportation of flammable, toxic, or corrosive natural gas and other gases as well as the transportation and storage of liquefied natural gas. The Pipeline and Hazardous Materials Safety Administration within the Department of Transportation develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.6 million-mile pipeline transportation system.

State

Warren-Alquist Act

Enacted in 1974, the Warren-Alquist Act created the California Energy Commission (CEC) in response to the energy crisis of the early 1970s and the state's unsustainable growing demand for energy resources. As discussed further below, the CEC's core responsibilities include advancing State energy policy, encouraging energy efficiency, certifying thermal power plants, investing in energy innovation, developing renewable energy, transforming transportation, and preparing for energy emergencies. The Warren-Alquist Act is updated annually to address current energy needs and issues, and its latest edition is from January 2023.

California Energy Commission

The CEC was created in 1974 as the State's principal energy planning organization in order to meet the energy challenges facing the state in response to the 1973 oil embargo. The CEC is charged with six basic responsibilities when designing State energy policy:

- Forecast statewide electricity needs.
- License power plants to meet those needs.
- Promote energy conservation and efficiency measures.
- Develop renewable energy resources and alternative energy technologies.
- Promote research, development, and demonstration.
- Plan for and direct the State's response to energy emergencies.

California Public Utilities Commission

In September 2008, the California Public Utilities Commission (CPUC) adopted the Long-Term Energy Efficiency Strategic Plan, which provides a framework for energy efficiency in California through the year 2020 and beyond. It articulates a long-term vision, as well as goals for each economic sector, identifying specific near-term, mid-term, and long-term strategies to assist in achieving these goals. This Plan sets forth the following four goals, known as Big Bold Energy Efficiency Strategies, to achieve significant reductions in energy demand (CPUC 2011):

- All new residential construction in California will be zero net energy (ZNE) by 2020;[1]
- All new commercial construction in California will be ZNE by 2030;
- Heating, ventilation, and air conditioning commonly referred to as "HVAC" will be transformed to ensure that its energy performance is optimal for California's climate; and
- All eligible low-income customers will be given the opportunity to participate in the low-income energy efficiency program by 2020.

[1] ZNE buildings are buildings in which the total amount of energy used on an annual basis is equal to or less than the amount of renewable energy created on the site.

With respect to the commercial sector, the Long-Term Energy Efficiency Strategic Plan notes that commercial buildings, which include schools, hospitals, and public buildings, consume more electricity than any other end-use sector in California. The commercial sector's five billion-plus square feet of space accounts for 38 percent of the state's power use and over 25 percent of natural gas consumption. Lighting, cooling, refrigeration, and ventilation account for 75 percent of all commercial electric use, while space heating, water heating, and cooking account for over 90 percent of gas use. In 2006, office, retail, and schools and colleges were in the top five facility types for electricity and gas consumption, accounting for approximately 10 percent of state's electricity and gas use (CPUC 2011).

The CPUC and CEC have adopted the following goals to achieve ZNE levels by 2030 in the commercial sector:

- **Goal 1**. New construction will increasingly embrace ZNE performance (including clean, distributed generation), reaching 100 percent penetration of new starts in 2030.
- **Goal 2.** 50 percent of existing buildings will be retrofit to ZNE by 2030 through achievement of deep levels of energy efficiency and with the addition of clean distributed generation.
- **Goal 3.** Transform the commercial lighting market through technological advancement and innovative utility initiatives.

Renewables Portfolio Standard

Senate Bills 1078, 107, X1-2, and Executive Order S-14-08

The California Renewables Portfolio Standard (RPS) Program was established in 2002 under Senate Bill (SB) 1078 (Sher) and 107 (Simitian). The RPS program required investor-owned utilities, electric service providers, and community choice aggregators to increase the use of eligible renewable energy resources to 33 percent of total procurement by 2020. Initially under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08 was signed in November 2008, which expanded the State's Renewable Energy Standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). The CPUC is required to provide quarterly progress reports on progress toward RPS goals. This has accelerated the development of renewable energy projects throughout the state. For year 2020, the three largest retail energy utilities provided an average of 43 percent of their supplies from renewable energy sources. Community choice aggregators provided an average of 41 percent of its supplies from renewable sources (CPUC 2021).

Senate Bill 350

Governor Jerry Brown signed SB 350 on October 7, 2015, which expanded the RPS by establishing a goal of 50 percent of the total electricity sold to retail customers in California per year to be from renewable sources by December 31, 2030. In addition, SB 350 included a goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also required the CPUC, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal. SB 350 also provided for the transformation of the California Independent System Operator (CAISO) into a regional organization to promote the development of regional

electricity transmission markets in the western states and to improve the access of consumers served by the CAISO to those markets, pursuant to a specified process.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, which replaces the SB 350 requirements, now requiring 50 precent renewable by 2026 and 60 percent by 2050. SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. The bill establishes an overall State policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resources shuffling to achieve the 100 percent carbon-free electricity target.

Senate Bill 1020

SB 1020 was signed into law on September 16, 2022. It requires renewable energy and zero-carbon resources to supply 90 percent of all retail electricity sales by 2035 and 95 percent by 2040. Additionally, SB 1020 requires all State agencies to procure 100 percent of electricity from renewable energy and zero-carbon resources by 2035.

Energy Efficiency

Appliance Efficiency Regulations

California's Appliance Efficiency Regulations contain energy performance, energy design, water performance, and water design standards for appliances (including refrigerators, ice makers, vending machines, freezers, water heaters, fans, boilers, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings) that are sold or offered for sale in California (California Code of Regulations [CCR] Title 20, Parts 1600–1608). These standards are updated regularly to allow consideration of new energy efficiency technologies and methods (CEC 2023a).

California Building Energy Code: Title 24, Part 6, Energy Efficiency Standards

Energy efficiency standards for new development were adopted by the California Energy Resource Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2022 (CCR Title 24, Part 6). Title 24, Part 6, *Building Energy Code* ("Energy Code") requires the design of building shells and building components to conserve energy. The standards are updated every 3 years and replace the preceding code cycle. The 2022 standards became effective and replaced the 2019 standards on January 1, 2023.

The Energy Code contains mandatory requirements, which are required for all new development and include standards covering space conditioning, water heating, cooking and furnace equipment, building insulation, lighting controls, electrical distribution, and solar readiness. In addition to the mandatory requirements, for a new development to demonstrate compliance with the Energy Code, it must demonstrate compliance with either the *Prescriptive Approach* or *Performance Approach*. The *Prescriptive Approach* contains various prescribed features, such as solar water heaters, solar panel arrays, and battery storage, depending on the building

occupancy types and location. For instance, the single-family and low-rise (three or fewer habitable stories) multifamily residential occupancy types would require a photovoltaic (solar) system but no battery storage under the prescriptive pathway, while high-rise (greater than three habitable stories) multifamily residential, grocery, office, financial institution, unleased tenant space, retail, school, warehouse, auditorium, convention center, hotel, motel, library, medical office building/clinic, restaurant, and theater occupancy types would require both solar and battery storage systems under the *Prescriptive Approach*.

Under the *Prescriptive Approach*, a new development's building design is called the "Standard Design Building," which represents the energy efficiency performance of that project should it include all prescribed features (e.g., solar, battery storage) with no additional energy efficiency features beyond what is required at minimum under the mandatory requirements and prescriptive pathway. A project may instead demonstrate compliance with the Energy Code using the *Performance Approach* without including prescriptive features like solar or battery storage; however, that building design must match or exceed the energy efficiency performance of the Standard Design Building—that is, what the building's energy efficiency performance would be if it were to include solar and battery storage. For example, if a project would be required to include solar and battery storage under the *Prescriptive Approach*, it can instead choose to comply with the *Performance Approach* and not include solar and battery storage so long as it can demonstrate that it would achieve the same energy efficiency performance as if solar and battery storage were included, as applicable.

California Building Code: Title 24, Part 11, Green Building Standards

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (CCR Title 24, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code (CBSC). It includes mandatory requirements for new residential and nonresidential buildings throughout California. CALGreen is intended to: 1) reduce GHG emissions from buildings; 2) promote environmentally responsible, cost-effective, healthier places to live and work; 3) reduce energy and water consumption; and 4) respond to the directives by the governor. The mandatory provisions of CALGreen became effective January 1, 2011, and were last updated in 2022. The 2022 CALGreen update, which was approved as part of the 2022 Energy Code, became effective on January 1, 2023, and provides updates to the residential and non-residential voluntary measures.

Overall, the Code reduces construction waste, makes buildings more efficient in the use of materials and energy, and reduces environmental impacts during and after construction. CALGreen contains requirements for construction site selection, stormwater control during construction, construction waste reduction, indoor water use reduction, materials selection, natural resource conservation, and site irrigation conservation, among other requirements. It provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. CALGreen also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency (CBSC 2022).

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR Section 1601–1608) were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. They contain energy performance, energy design, water performance, and water design standards for appliances (including refrigerators, ice makers, vending machines, freezers, water heaters, fans, boilers, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings) that are sold or offered for sale in California (CCR Title 20, Parts 1600–1608). These standards are updated regularly to allow consideration of new energy efficiency technologies and methods.

Off-Road Equipment and Transportation-Related Regulations

Assembly Bill 1493

California vehicle GHG emission standards were enacted under Assembly Bill (AB) 1493 (Pavley I). Pavley I is a clean-car standard that reduced GHG emissions from new passenger vehicles (i.e., light-duty auto to medium-duty vehicles) from 2009 through 2016 and was anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implemented the Pavley I Standards through a waiver granted to California by the USEPA. In 2012, the USEPA issued a Final Rulemaking that set even more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles. In January 2012, the California Air Resources Board (CARB) approved the Pavley Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combined the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions (CARB 2017).

Title 13, Chapter 9, Article 4.8, Section 2449

Section 2449 of the CCR, Title 13, Chapter 9, Article 4.8 was adopted on May 2, 2008, limiting non-essential idling of fleets to no more than five consecutive minutes at any location. This idling restriction applies to all vehicles in California with a diesel-fueled or alternative diesel-fueled off-road engine, unless a waiver provides sufficient justification that such idling is necessary.

Senate Bill 375

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the State's 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (i.e., it excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce vehicle miles traveled (VMT) and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPOs) in the state. The Association of Bay Area Governments (ABAG) is the MPO for the Bay Area region, which includes Contra Costa County. Pursuant to the recommendations of the Regional Transportation Advisory Committee (RTAC), CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

Executive Order N-79-20

On September 23, 2020, Executive Order N-79-20 was issued, which sets a time frame for the transition to zero-emissions (ZE) passenger vehicles and trucks in addition to off-road equipment. It directs CARB to develop and propose the following:

- Passenger vehicle and truck regulations requiring increasing volumes of new zero-emission vehicles (ZEV) sold in California toward the target of 100 percent of in-state sales by 2035.
- Medium- and heavy-duty vehicle regulations requiring increasing volumes of new ZE trucks and buses sold and operated in California toward the target of 100 percent of the fleet transitioning to ZEVs by 2045 everywhere feasible, and for all drayage trucks (i.e., short-haul transport, typically in an urban area) to be ZE by 2035.

On August 25, 2022, CARB adopted the Advanced Clean Cars II (ACC II) regulations that codify the EO goal of 100 percent of in-state sales of new passenger vehicles and trucks be ZE by 2035. Starting in year 2026, ACC II requires that 35 percent of new vehicles sold be ZE or plug-in hybrids.

Advanced Clean Fleets Regulation

In April 2023, CARB released the Advanced Clean Fleets (ACF) regulation to accelerate the transition to ZE medium- and heavy-duty vehicles (CARB 2023). In conjunction with the Advanced Clean Trucks (ACT) regulation, the ACF regulations help to ensure that medium- and heavy-duty ZEVs are brought to the market by requiring certain fleets to purchase ZEVs. The ACF ZEV phase-in approach, which provides initial focus where the best fleet electrification opportunities exist, sets clear targets for regulated fleets to make a full conversion to ZEVs and creates a catalyst to accelerate development of a heavy-duty public infrastructure network.

The ACF regulations cover four main elements:

- **Manufacturer sales mandate.** Manufacturers may sell only ZE medium- and heavy-duty vehicles starting in 2036.
- **Drayage fleets.** Beginning January 1, 2024, trucks must be registered in the CARB Online System to conduct drayage activities in California. Non-ZE "legacy" drayage trucks may register in the CARB Online System through December 31, 2023. Legacy drayage trucks can continue to operate through their minimum useful life. Beginning January 1, 2024, only ZE drayage trucks may register in the CARB Online System. All drayage trucks entering seaports and intermodal railyards would be required to be ZE by 2035.
- **High-priority and federal fleets.** High priority and federal fleets must comply with the Model Year Schedule or may elect to use the optional ZEV Milestones Option to phase ZEVs into their fleets:
    - ***Model Year Schedule:*** Fleets must purchase only ZEVs beginning 2024 and, starting January 1, 2025, must remove internal combustion engine vehicles at the end of their useful life as specified in the regulation.
    - ***ZEV Milestones Option (Optional):*** Instead of the Model Year Schedule, fleets may elect to meet ZEV targets as a percentage of the total fleet starting with vehicle types that are most suitable for electrification.

- **State and local agencies.** State and local government fleets, including city, county, special district, and State agency fleets, are required to ensure 50 percent of vehicle purchases are ZE beginning in 2024 and 100 percent are ZE by 2027. Small government fleets (those with 10 or fewer vehicles) and those in designated counties would start their ZEV purchase requirements beginning in 2027. Alternately, State and local government fleet owners may elect to meet ZEV targets using the ZEV Milestones Option. State and local government fleets may purchase either ZEVs or near-ZEVs, or a combination of ZEVs and near-ZEVs, until 2035. Starting in 2035, only ZEVs will meet the requirements.

The ACF regulations also establish requirements that transform the medium- and heavy-duty vehicle sector and demonstrate independent utility through achievement of the following objectives:

- Achieve criteria and GHG emissions reductions consistent with the goals identified in the State Implementation Plan (SIP) Strategy and Scoping Plan.
- Provide emissions reductions in disadvantaged communities (DAC), thereby supporting the implementation of AB 617 (Garcia, C., Chapter 136, Statutes of 2017).
- Support the goals of Executive Order N-79-20, which call for accelerated ZEV deployment with these targets:
    - 100 percent ZE drayage by 2035
    - 100 percent ZE trucks and buses where feasible by 2045
- Ensure requirements, such as ZEV deployment schedules and related infrastructure buildout, are technologically feasible, cost-effective, and support market conditions.
- Lead the transition away from petroleum fuels and towards electric drivetrains.
- Contribute towards achieving carbon neutrality in California pursuant to SB 100, and in accordance with Executive Order B-55-18.
- Mindfully set requirements to allow time for public ZE infrastructure buildout for smaller fleets or for regional haul applications who would be reliant on a regional network of public chargers.
- Ensure manufacturers and fleets work together to place ZEVs in service suitably and successfully as market expands.
- Establish a fair and level playing field among fleet owners.
- Ensure institutional capacity for CARB to manage, implement, and enforce requirements.

Energy Storage

California has set ambitious long-term goals for energy storage beyond 2026 to support its clean energy and climate goals. The State aims to reach 100 percent carbon-free electricity by 2045, which will require significant investment in renewable energy sources like wind and solar, as well as energy storage technologies, to balance the variability of these sources.

CAISO has a total energy storage capacity of more than 3,160 megawatts (MW) as of June 2022 (CAISO 2022). This includes both large-scale and distributed energy storage systems, such as batteries, pumped hydroelectric storage, and thermal storage. CAISO is responsible for managing the electricity grid for much of California, and it has set a target of adding 3,300 MW of additional energy storage capacity by 2024 to support the

integration of more renewable energy sources like wind and solar (CAISO 2022). As part of SB 100, load serving entities (LSEs) were required to procure no less than 1.3 gigawatts (GW) of energy storage capacity by 2020, and 3 GW by 2030. Additionally, the CPUC has established a target of 15 GW of energy storage capacity by 2030 (CPUC 2022).

The Integrated Resource Plan (IRP)

CAISO develops a coordinated grid management plan to integrate the generation and storage capacities of LSEs, called the Integrated Resource Plan (IRP). The IRP is a comprehensive planning document that outlines CAISO's forecasts for electricity demand, supply, and transmission needs over a 20-year planning horizon, as well as its strategies for integrating renewable energy resources and other grid services to meet those needs. The IRP is developed in collaboration with LSEs, regulators, and other stakeholders, and is updated periodically to reflect changes in the energy landscape and evolving policy goals. Overall, the IRP plays a critical role in ensuring the reliability and resilience of California's electricity grid as the state continues to transition to a cleaner and more sustainable energy system.

When an individual Battery Energy Storage (BES) facility or generation infrastructure (i.e., solar panels) comes online in California, it is typically included in the IRP through a process known as the Interconnection Queue. The Interconnection Queue is managed by the CAISO, which oversees the operation of the State's electricity grid.

The Interconnection Queue

The Interconnection Queue is an application process that functions as a waiting list of proposed electricity generation and storage projects that are seeking to connect to the grid. When a new BES facility or generation infrastructure is proposed, the developer submits an application to CAISO to request an interconnection to the grid. CAISO evaluates the application to ensure that the facility meets technical and operational requirements, such as voltage regulation and frequency response, and that it can be integrated effectively into the grid.

Once the BES facility or generation infrastructure is approved by CAISO, it is assigned a point of interconnection on the grid, and its output is added to the IRP as a resource that can provide electricity and other grid services, such as frequency regulation or ramping support. The facility is then dispatched by CAISO based on its bids into the day-ahead and real-time electricity markets, and its output is used to help balance supply and demand on the grid in real-time.

Overall, the Interconnection Queue is an important mechanism for integrating new BES facilities and other electricity resources into the California grid, and for ensuring that the grid remains reliable and resilient as the State continues to transition to a cleaner and more sustainable energy system.

Regional

Plan Bay Area 2050

The Metropolitan Transportation Commission (MTC) and ABAG adopted *Plan Bay Area 2050* on October 21, 2021 (ABAG/MTC 2021a). *Plan Bay Area 2050* provides transportation and environmental strategies to continue to meet the regional transportation-related GHG reduction goals of SB 375. Under the *Plan Bay Area 2050* strategies, just under half of all Bay Area households would live within one half-mile of frequent transit by 2050, with this share increasing to over 70 percent for households with low incomes. Transportation and environmental strategies that support active and shared modes, combined with a transit-supportive land use pattern, are forecasted to lower the share of Bay Area residents that drive to work alone from over 50 percent in 2015 to 36 percent in 2050. GHG emissions from transportation would decrease significantly as a result of these transportation and land use changes, and the Bay Area would meet the State mandate of a 19-percent reduction in per-capita emissions by 2035 — but only if all strategies are implemented (ABAG/MTC 2021a).

To achieve MTC's/ABAG's sustainable vision for the Bay Area, the *Plan Bay Area* land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities. An overarching goal of the regional plan is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle, VMT, and associated GHG emissions reductions. Several PDAs have been designated in the EIR Study Area (ABAG/MTC 2021b).

Bay Area Clean Air Plan

The Bay Area Air Quality Management District (BAAQMD) adopted the 2017 Clean Air Plan, Spare the Air, Cool the Climate on April 19, 2017. The 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use (BAAQMD 2017).

A comprehensive multipollutant control strategy has been developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, toxic air contaminants, and GHG from a full range of emission sources. These control measures cover the following sectors: (1) stationary (industrial) sources; (2) transportation; (3) energy; (4) agriculture; (5) natural and working lands; (6) waste management; (7) water; and (8) super-GHG pollutants. Overall, the proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of "super-GHGs" such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (i.e., gasoline, diesel, and natural gas).
    - Increase efficiency of the energy and transportation systems.
    - Reduce demand for vehicle travel and high-carbon goods and services.
- Decarbonize the energy system.
    - Make the electricity supply carbon-free.
    - Electrify the transportation and building sectors.

Local

Contra Costa County Congestion Management Program

The Contra Costa Transportation Authority (CCTA) is Contra Costa County's designated Congestion Management Agency (CMA). It is responsible for implementing programs to ensure traffic levels remain manageable. As the CMA, CCTA is in charge of coordinating land use, air quality, and transportation planning among local jurisdictions.

The Congestion Management Program (CMP) outlines transportation demand management efforts and a land use evaluation program – both of which are built on CCTA's Growth Management Program established by Measure J. The CMP strives to enhance sensitivity to the environment, improve air quality, reduce GHG emissions, and promote sustainable communities (CCTA 2021).

Contra Costa County Ordinance Code

Chapter 718-12, *Solar Energy Systems*, of the Contra Costa County Ordinance Code requires a building permit to install a solar energy system. The County has an expedited, streamlined permitting process that applies for small residential rooftop solar energy systems, as described in Section 718-14.004, *Review of Applications for Small Residential Rooftop Solar Energy Systems*.

Chapter 88-3, *Wind Energy Conversion Systems*, of the Contra Costa County Ordinance Code promotes the effective and efficient use of wind energy conversion systems, regulates their placement, and establishes safeguards to ensure public health, safety, and welfare.

Chapter 88-30, *Solar Energy Facilities*, of the Contra Costa County Ordinance Code regulates the establishment of commercial solar energy facilities.

Ordinance No. 2022-02, *All-Electric Ordinance (New Construction)*, amends the 2019 California Energy Code to require the following building types to be all-electric:

- Residential (including single-family and multi-family buildings)
- Detached Accessory Dwelling Units
- Hotel
- Office
- Retail

The County Ordinance Code includes other various directives pertaining to energy, including:

- Division 76, *Electrical Code*, adopts the 2022 California Electrical Code as the rules, regulations, and standards within the county as to all matters except as changes, additions, and deletions set forth in the County Ordinance Code.
- Division 74, *Building Code*, adopts the 2022 California Building Code, the 2022 California Residential Code, the 2022 California Existing Building Code, and the 2022 California Energy Code as amended by the changes, additions, and deletions set forth in the County Ordinance Code. This includes local amendments regarding electric vehicle charging and space design for different types of new constructions.

5.6.1.2 EXISTING CONDITIONS

Energy Providers

Two energy providers, Marin Clean Energy (MCE) and Pacific Gas and Electric Company (PG&E), serve the EIR Study Area. Both entities provide electrical services to the unincorporated county. PG&E is the sole provider for natural gas services. PG&E provides distribution of electrical services to the county, while MCE provides the electrical commodity for its customers. MCE works in conjunction with PG&E to provide electricity to consumers through the use of PG&E's distribution infrastructure and network. Both utilities are regulated by CPUC.

MCE

As of October 2023, the majority of Contra Costa County residents (i.e., residents in Concord, Danville, Martinez, Moraga, Oakley, Pinole, Pittsburg, Pleasant Hill, San Ramon, Walnut Creek, Lafayette, Richmond, San Pablo, El Cerrito, and the unincorporated areas) are buying electricity from MCE, a not-for-profit clean energy provider (Contra Costa 2023). On March 24, 2020, the Board of Supervisors voted to go Deep Green 100 percent renewable (i.e., all power which customers buy comes from 100 percent non-polluting wind and solar power) with MCE for the majority of the County's accounts (MCE 2020).

Customers also have the option of selecting MCE's Light Green, which provides 60 percent renewable electricity (MCE 2023). Conversely, customers have the option to opt out of MCE renewable energy sources and receive their energy service from PG&E. PG&E is responsible for maintaining transmission lines, handling customer billing, and responding to new service requests and emergencies. MCE determines the power source or electric generation, while PG&E continues to deliver the electricity, maintain power lines, provide repairs, and send customers a monthly bill within the MCE service area.

PG&E

PG&E is a publicly traded utility company that generates, purchases, and transmits energy under contract with the CPUC. Its service territory is 70,000 square miles in area, roughly extending north to south from Eureka to Bakersfield, and east to west from the Sierra Nevada range to the Pacific Ocean.

In 2021, roughly half of PG&E's energy generated came from renewable resources including biopower, geothermal, small hydroelectric, solar, and wind power. PG&E's portfolio consists of 7 percent natural gas, 39 percent non-emitting nuclear generation, 4 percent large hydroelectric facilities, and 50 percent eligible renewable energies, which includes small hydroelectric and wind (PG&E 2023c).

Electricity

The electricity distribution system of PG&E consists of 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines (PG&E 2023a). PG&E owns and maintains above and below ground networks of electric and gas transmission and distribution facilities throughout the unincorporated county.

PG&E electricity is generated by a combination of sources such as nuclear power plants and hydro-electric dams, as well as newer sources of energy, such as wind turbines and photovoltaic plants or "solar farms." "The Grid," or bulk electric grid, is a network of high-voltage transmission lines, linked to power plants within the PG&E system. The distribution system, made up of lower voltage secondary lines, is at the street and neighborhood level, and consists of overhead or underground distribution lines, transformers, and individual service "drops" that connect to the individual customer.

Natural Gas

PG&E gas transmission pipeline systems serve approximately 4.5 million gas customers in northern and central California (PG&E 2023a). The system is operated under an inspection and monitoring program. The system operates in real time on a 24-hour basis, and includes leak inspections, surveys, and patrols of the pipelines. PG&E also adopted the Pipeline 2020 program, which aims to modernize critical pipeline infrastructure, expand the use of automatic or remotely operated shut-off valves, catalyze development of next-generation inspection technologies, develop industry-leading best practices, and enhance public safety partnerships with local communities, public officials, and first responders. Total natural gas consumption in PG&E's service area was 4,493,020,712 kilo-BTU (KBTU) in 2021 (CEC 2023b).

Electricity and Natural Gas

Electricity is quantified using kilowatts (kW) and kilowatt-hours (kWh). A kW is a measure of 1,000 watts of electrical power and a kWh is a measure of electrical energy equivalent to a power consumption of 1,000 watts for one hour. The kWh is commonly used as a billing unit for energy delivered to consumers by electric utilities. According to the CEC's "Tracking Progress" regarding statewide energy demand, total electric energy usage in California was 277,764 gigawatt hours in 2021 (CEC 2021b). A gigawatt is equal to one million kilowatts.

Natural gas is measured in therms. A therm is a measurement of the amount of heat energy in natural gas, equal to 100,000 British thermal units (BTUs). The volumetric billing unit used for natural gas delivered to customers is typically expressed in hundreds of cubic feet (Ccf)—approximately 0.01 therm per Ccf—or thousands of cubic feet (Mcf)—approximately 10.37 therms per Mcf (USEIA 2023).

The existing electricity and natural gas demand in Contra Costa County is shown in Table 5.6-1, *Estimated Existing Electricity and Natural Gas Demand.*

Table 5.6-1 Estimated Existing Electricity and Natural Gas Demand

Land Use	Electricity Usage (kWh per year)	Natural Gas Usage (Therms per year)
Residential	293,561,300	30,100,640
Nonresidential	~~626,049,910~~ 229,243,970	13,784,410
Total	**~~919,611,210~~ 522,805,270**	**43,885,050**

Source: Natural gas and electricity use for residential and nonresidential land uses in the county were modeled based on data provided by PG&E and MCE as part of the proposed CAAP (Appendix 5.8-1).
Note: Electricity total makes use of a five-year (2016–2020) annual electricity consumption average based on data provided by PG&E and MCE.

Propane

Liquefied petroleum gas (LPG), or propane, is a mixture of hydrocarbon gases predominantly composed of propane and butane and is used as an alternative source of fuel. Propane is commonly used for residential and commercial heating, cooking, transportation, agriculture, industrial processes, power generation, refrigeration, and air conditioning. Within Contra Costa County, propane suppliers include Suburban Propane, AmeriGas, US Alloys, Pacific States Petroleum, and Allied Propane Services, which generally supply propane for residential uses. Nonresidential propane consumption is not a substantial contribution to propane consumption in the unincorporated county.

The existing propane demand in Contra Costa County is shown in Table 5.6-2, *Estimated Existing Propane Demand.*

Table 5.6-2 Estimated Existing Propane Demand

Land Use	Propane Usage (gallons per year)	Propane Usage (MMBTU per year)
Residential	1,021,340	92,942
Total	**1,021,340**	**92,942**

Source: Activity data sourced as part of the proposed CAAP (see Appendix 5.3-1 & Appendix 5.8-1).
Note: Only residential propane demand was evaluated as part of the proposed CAAP.

Transportation Energy

California is among the top producers of petroleum in the country, with crude oil pipelines throughout the state connecting to oil refineries in the Los Angeles, San Francisco Bay, and Central Valley regions. In addition to producing petroleum, California is also one of the top consumers of fuel for transportation. California's transportation sector accounted for approximately 35 percent of California's total energy demand in 2020, amounting to approximately 2,355.5 trillion BTUs (USEIA 2020a). In addition, in 2020, California's transportation sector consumed approximately 433 million barrels of petroleum fuels (USEIA 2020b).

According to the CEC, California's 2021 fuel sales were approximately 13,818 million gallons of gasoline and 3,744 million gallons of diesel (CEC 2022). In Contra Costa County, approximately 374 million gallons of gasoline and 28 million gallons of diesel fuel were sold in 2021 (CEC 2022).

Alternative fuels for the transportation sector, such as hydrogen, biodiesel, and electricity, are used to reduce the demand of petroleum. Use of these fuels is encouraged through statewide regulations and plans, including the Low Carbon Fuel Standard (LCFS) and SB 32. In particular, use of electricity within the transportation sector has become more prominent. Electric and plug-in hybrid vehicles may rely directly on electricity from

the power grid. In addition, emerging technology such as fuel cells are currently being explored to use electricity generated from the vehicle to power motors. California currently has 14,132 electric vehicle charging stations, with approximately 37,970 charging ports across all station locations (USDE 2023).

Table 5.6-3*, Existing Transportation-Related Annual Fuel Usage,* shows the fuel usage associated with VMT currently generated in the EIR Study Area under existing baseline conditions based on fuel usage data obtained from EMFAC2021, Version 1.0.1, and VMT data provided by Fehr and Peers (see Appendix 5.16-1, *Transportation Data,* of this Draft EIR). VMT is based on vehicle trips beginning and ending in the county and from external/internal trips (i.e., trips that either begin or end in the county).

Table 5.6-3 Existing Transportation-Related Annual Fuel Usage

	Gas		Diesel		Compressed Natural Gas		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
Existing Baseline	1,055,664,330	46,151,714	62,129,682	7,412,023	1,070,505	213,066	18,046,572	6,503,224

Source: EMFAC2021, version 1.0.1.
Note: VMT based on daily VMT provided by Fehr and Peers. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008).

5.6.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

E-1 Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

E-2 Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

E-3 Require or result in the relocation or construction of new or expanded energy facilities, the construction or relocation of which could cause significant environmental effects.

5.6.3 Programs, Plans, and Policies

5.6.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to energy impacts. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Policy LU-P3.7:** Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.

- **Action LU-A4.1:** Amend the County Ordinance Code to include requirements for Low-Impact Development, use of low-carbon concrete, water and energy conservation, reclaimed water, renewable energy use, green building, and other measures that reduce the environmental impacts of development, based on the best available science.

Transportation Element

- **Policy TR-P1.3:** Ensure emerging transportation technologies and travel options, such as autonomous and ZEV's and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.
- ***Policy TR-P1.4:*** *Reduce single-occupant vehicle usage and VMT by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, ~~at a minimum using strategies defined in the~~ TDM Ordinance, and other best practices), and support for public transit.*
- **Policy TR-P1.11:** Support transitioning all on-road vehicles, including personal vehicles and business, government, and public transit fleets, to electric power from renewable sources or other ~~zero-~~emission-free fuels.
- ***Policy TR-P1.13:*** *Require designs for new parking facilities to incorporate ZEV charging/fueling infrastructure and maximize opportunities for adaptive reuse.*
- **Policy TR-P2.3:** ~~Require~~ Provide or require new projects to install~~ation of or provide~~ energy-efficient street lighting to improve public safety and comfort in urbanized areas. Prioritize installation in Impacted Communities, particularly at parks, transit stops, alleyways, bike and pedestrian paths, trails, and other ~~appropriate~~ high-need areas, consistent with community preferences.
- **Policy TR-P4.7:** Encourage walkability and safety by streamlining implementation of traffic-calming measures through the Neighborhood Traffic Management Program.
- **Policy TR-P5.2:** Coordinate with Caltrans to provide safe and comfortable highway interchange crossings for people of all ages and abilities who walk, bike, or use micromobility.
- **Policy TR-P5.7:** Encourage walking, bicycling, and micromobility as the travel modes of choice for short to medium-length trips, such as trips to schools, parks, transit stops, local shopping areas, and neighborhood services.

Conservation, Open Space, and Working Lands Element

- ***Policy COS-P7.1:*** *Require new development to reduce ~~potable~~ water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water, where available.*

- **Goal COS-14:** Increased generation of and reliance on renewable, sustainable, and ~~zero-~~carbon-free energy and reduced energy use.
  - **Policy COS-P14.1:** Implement Climate Action and Adaptation Plan strategies to improve energy efficiency and conservation, promote carbon-free energy sources, and reduce energy-related GHG emissions.

- **Policy COS-P14.2:** Partner with State and regional ~~and State~~ agencies (e.g., California Public Utilities Commission, California Energy Commission, and ABAG/MTC) to support energy efficiency and renewable energy planning efforts.
- **Policy COS-P14.3:** Support distributed electricity generation, including development of microgrids, renewable energy sources, storage capacity, and associated technologies. Encourage these throughout urban areas, and in nonurban areas when significant environmental impacts can be avoided or successfully mitigated.
- **Policy COS-P14.5:** Support development of energy recovery projects (e.g., methane recovery from landfills and wastewater treatment plants).
- **Policy COS-P14.6:** Support efforts to convert existing buildings to be low-carbon or carbon-neutral.
- **Policy COS-P14.7:** Encourage installation of battery storage systems in new and existing buildings, especially buildings with solar energy systems and buildings that provide essential community services.
- ***Policy COS-P14.8:*** *Design and construct new County facilities to be zero net energy to the extent feasible.*
- **Policy COS-P14.9:** Work with energy service providers and the Bay Area Regional Energy Network to encourage property owners to participate in weatherization, education, rate incentive, and other programs and measures to improve energy efficiency in existing buildings.
- ~~**Policy COS-P14.10:** Require replacement and new water heaters and space heating and cooling to be electric if the building electric panel has sufficient capacity in accordance with Bay Area Air Quality Management District Regulation 9, Rule 4, and Regulation 9, Rule 6.~~
- **Action COS-A14.2:** Amend County Ordinance Code Division 88, Special Land Uses, to consolidate Chapters 88-3 and 88-30 governing wind energy conversion systems and solar energy facilities, respectively, into a new renewable energy chapter, with added provisions related to microgrids, community solar projects, and battery energy storage systems. Simultaneously review the boundaries of the Solar Energy Generation Combining District to determine whether opportunities exist for increasing solar energy generation without encroaching upon HCP/NCCP priority acquisition areas, aesthetically sensitive areas, or other lands that are inappropriate for solar energy development.
- **Action COS-A14.3:** Amend County Ordinance Code Chapter 88-3 – Wind Energy Conversion Systems to require that decommissioned wind farms be returned to a condition consistent with the natural environment in the area at the time of decommissioning, rather than a return to pre-project condition. The following issues must be specifically addressed:
  - Unnecessary and poorly constructed roads that are sources of erosion.
  - Remaining turbine foundations/footings and underground conduit.
  - Abandoned equipment yards, turbine components, and other debris.
- **Action COS-A14.4:** ~~Consider adopting~~Adopt new or modified reach codes that exceed the California Building Standards Code, as the State updates the Building Code every three years, to require ~~the~~ use of low~~er~~-carbon intensive energy sources, ~~to~~ achieve higher ~~feasible~~ levels of energy ~~conservation and efficiency~~performance, and ~~to~~ achieve lower ~~feasible~~ levels of GHG emissions.
- **Action COS-A14.5:** Maintain, update, and publicize County ordinances and programs~~, and enforce the County Ordinance Code Title 7 – Building Regulations amendment~~ requiring new residential

buildings, hotels, offices, and retail to be more energy efficient, with low levels of GHG emissions~~all-electric~~. Evaluate the feasibility of including other building types as appropriate.

- **Action COS-A14.6:** Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy.
- **Action COS-A14.9:** Ensure County-led and supported retrofit programs incentivize and prioritize conversion of buildings built before 1980 and emphasize assistance to owners of properties that are home to very low-, low-, and moderate- income residents or located in Impacted Communities, as permitted by available funding.
- **Action COS-A14.10:** Support legislative efforts to establish a green bank able to equitably finance sustainability projects, including renewable energy, energy efficiency, and green infrastructure, for residential and commercial customers.

Health and Safety Element

- ***Policy HS-P1.8:*** *Require new or expanded commercial and industrial projects ~~exceeding~~ resulting in 25,000 square feet or more of gross habitable floor area, such as warehouses and other large enclosed buildings, to be near-zero-emission~~s (NZE)~~ operations, including the facilities themselves and the associated fleets. Require all necessary measures, such as the following, to achieve ~~NZE~~ near-zero emissions:*

  a) Reduce on-site energy consumption and increase on-site energy generation and energy storage.

  b) Provide adequate on-site ~~ZE~~ zero-emission-vehicle ~~capable~~ parking for all anticipated truck traffic to prevent idling and off-site queuing.

  c) Provide electrified loading docks with receptacles allowing plug-in of refrigerated trailers.

  d) Use heavy-duty trucks that are model year 2014 or later and expedite a transition to ~~ZE~~ zero-emission trucks by establishing a clear timeline for electrification of trucks as they become commercially available. Ensure contracts with motor carriers include air quality incentives or requirements, such as providing incentives to fleets that meet United States Environmental Protection Agency (EPA) SmartWay standards or requiring use of ~~ZE~~ zero-emission or ~~near~~ ~~NZE~~ near-zero-emission trucks.

  e) Use a "clean fleet" of delivery vehicles as they become commercially available, but no later than 2025.

  f) Use ~~ZE~~ zero-emission yard equipment, such as forklifts, pallet trucks and jacks, and stackers.

  g) Implement practices to control and remove fugitive dust and other contaminants from paved areas.

  Uses with fewer than five vehicles domiciled on-site are exempt from this policy.

- **Policy HS-P3.2:** Facilitate carbon-neutral development projects and communities that support a circular economy, ~~net-~~zero-emission modes of transportation, reliable and renewable energy resources, energy-efficient buildings, zero waste, water efficiency and conservation, green infrastructure, soil conservation, and a system of natural and working lands that support natural carbon sequestration and climate resilience.

5.6.3.2 PROPOSED CLIMATE ACTION AND ADAPTATION PLAN STRATEGIES AND ACTIONS

The following proposed Climate Action and Adaptation Plan (CAAP) strategies and actions pertain to energy:

Clean and Efficient Built Environment (BE)

Strategy BE-1: Require and incentivize new buildings or additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

Strategy BE-1 Actions:

- Continue adopting new or modified reach codes and consider future updates that exceed the California Building Standards Code as the State updates the Building Code every three years, to require the use of low-carbon intensive energy sources, to achieve higher levels of energy performance, and to achieve lower levels of GHG emissions.
- ~~Maintain, update, publicize, and enforce the~~ Publicize County ordinances and programs ~~Ordinance Code Title 7 – Building Regulations amendment~~ requiring new residential buildings, hotels, offices, and retail to be ~~all-electric~~ more energy efficient, with lower levels of GHG emissions. Evaluate the feasibility of including other building types as appropriate.
- Design and construct new County facilities to be zero net energy to the extent feasible.
- Study the feasibility of establishing a low-carbon concrete requirement for all new construction and retrofit activities and consider additional strategies to reduce embedded carbon in construction materials. The intent is to determine what the County can and should do to support or exceed State requirements for net-zero emissions for cement use by 2045.
- Promote ~~additional~~ sustainable building strategies and designs, including small and "tiny" homes, to project applicants as site appropriate.
- Consider requiring ~~additional~~ sustainable features as a condition of approval, including reuse of materials to minimize embedded carbon.

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated county, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-~~neutral~~ free fuels.

Strategy BE-2 Actions:

- Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy.
- ~~Require replacement and new water heaters and space heating and cooling systems to be electric if the building electric panel has sufficient capacity in accordance with BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6~~
- Create a detailed County roadmap to convert existing homes and businesses to use low-carbon or ~~zero-~~carbon-free appliances. The roadmap should include steps to support converting buildings to rely on low-carbon or ~~zero-~~carbon-free energy using an equitable framework that minimizes the risk of displacement or significant disruptions to existing tenants.

- Ensure County-led and supported retrofit programs incentivize and prioritize conversion of buildings built before 1980 and emphasize assistance to owners of properties that are home to very low-, low-, and moderate- income residents and/or located in Impacted Communities, as permitted by available funding.
- In partnership with MCE and BayREN, continue to support voluntary home and business energy efficiency retrofits, including all-electric measures.
- Facilitate participation by homes and businesses in demand response programs.
- Continue to conduct energy and water tracking activities, audits, and upgrades of County facilities, including conversion of feasible County facilities to all-electric space and water heating.
- Implement requirements for cool roofs and light-colored, non-reflective permeable paving materials as part of retrofit, repair, and replacement activities, using recycled materials or other materials with low embedded carbon as feasible and as established by the Building Standards Code.

Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

Strategy BE-3 Actions:

- Require new commercial parking lots with 50 or more spaces to mitigate heat gain through installation of shade trees, solar arrays, or other emerging cooling technologies. Prioritize the use of solar arrays where feasible and appropriate.
- Work with MCE to increase enrollment, especially in the Deep Green tier.
- Continue to enroll all eligible, non-solar-equipped County facility electricity accounts in MCE territory in the Deep Green tier.
- Pursue implementation of recommendations of the 2018 Renewable Resource Potential Study.
- Evaluate the least-conflict feasible locations for stand-alone battery storage systems and modify land use regulations to enable such use in these locations.

No Waste Contra Costa (NW)

Strategy NW-4: Reduce emissions from landfill gas.

Strategy NW-4 Actions:

- Encourage efforts at Acme, Keller Canyon, and West Contra Costa landfills to install or enhance existing methane capture technology and associated monitoring systems with a goal of increasing the methane capture rate to the greatest extent feasible.
- Explore opportunities for partnering with agricultural and industrial operations to generate energy from methane gas generated by their ongoing activities.
- Support landfill operators in efforts to transition away from landfill gas flaring.

Reduce Water Use and Increase Drought Resilience (DR)

Strategy DR-1: Reduce indoor and outdoor water use.

Strategy DR-1 Actions:

- Require new development to reduce ~~potable~~ water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water, where available.
- Require homes and businesses to install water-efficient fixtures at time of retrofit activities, in accordance with the California Building Standards Code.
- Continue to enforce the Water Efficient Landscaping Ordinance and encourage the use of native and drought-tolerant landscaping for exempt residential and commercial landscapes through partnership with local and regional water agencies and other organizations.
- Partner with water and wastewater service providers, Groundwater Sustainability Agencies, irrigation districts, and private well owners to increase participation in water conservation programs countywide.
- ~~Identify~~ Evaluate opportunities for graywater use in public spaces and implement them as feasible.
- Promote the installation of composting toilets at appropriate County facilities in locations without wastewater service.

Strategy DR-2: Ensure sustainable and diverse water supplies.

Strategy DR-2 Actions:

- Require new development to demonstrate the availability of a safe, sanitary, and environmentally sound water delivery and wastewater treatment systems with adequate capacity.
- Require the use of permeable surfaces for new or reconstructed hardscaped areas where feasible.
- Work with water suppliers to expand recycled water systems as feasible, including considering additional treatment to allow for additional recycled water uses.

Clean Transportation Network (TR)

Strategy TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit to travel within, to, and from the county.

Strategy TR-1 Actions:

- Prioritize expansion of bicycle, micromobility, and pedestrian infrastructure (e.g., Class IV separated bikeways) to address the significant latent demand for these active transportation modes.
- Develop and promote mobility alternatives to single-occupancy vehicles, including but not limited to public transit, micromobility, carbon-free rideshare strategies, and nonmotorized modes.
- Implement programs to encourage transit use, bicycling, walking, telecommuting, and use of alternative vehicle fuels by County employees.

- Reduce single-occupant vehicle usage and VMT, by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, and other best practices), and support for public transit.
- Plan, design, construct, and maintain facilities for walking, bicycling, and rolling to serve people of all ages, abilities, and income levels, including children, seniors, families, and people with limited mobility.
- Partner with CCTA and neighboring jurisdictions to build out the countywide bicycle and pedestrian network, prioritizing completion of the Low-Stress Countywide Bicycle Network and pedestrian safety improvement projects in the County's Pedestrian Priority Areas, as described in the Countywide Bicycle and Pedestrian Plan.
- Require transportation infrastructure serving new development to be designed using best practices, contemplating existing and planned land uses, roadways, bicycle and pedestrian facilities, transit facilities, and connections to adjoining areas.
- Create connections between unincorporated communities and neighborhoods in unincorporated areas and adjacent jurisdictions to improve multimodal access to local destinations, such as schools, parks, shopping, health services, and workplaces.
- Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report and Action Plan; Active Transportation Plan; and equity-focused plans, programs, and policies.
- Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities.
- ~~Work with CCTA to fill in gaps in the countywide Low Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bike facilities.~~ Coordinate with Caltrans, CCTA, the Regional Transportation Planning Committees, and neighboring jurisdictions to plan, design, and implement Complete Streets concepts on Routes of Regional Significance.
- Support efforts to expand the service area and frequency of regional transit agencies, and reduced fares for students, seniors, and low-income residents on systems, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT. Encourage programs that support "last mile" transportation connection and options.
- Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance.
- Maintain in place and enforce a Transportation Demand Management (TDM) Ordinance that reflects best practices, and, at a minimum, conforms to Contra Costa Transportation Authority's adopted model TDM ordinance or resolution.
- Secure additional funding for the maintenance and expansion of bicycle and pedestrian infrastructure improvements. Support efforts to obtain additional funding to maintain and expand public transit operations and infrastructure improvements.

- Support CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions.
- Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.
- Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.

Strategy TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

Strategy TR-2 Actions:

- Require new County vehicles to be zero emission to the extent a viable vehicle is available on the market, that charging or zero-emission fueling equipment is conveniently located where the vehicle will be stored, and as required by the Advanced Clean Fleet regulations, with the goal that all County vehicles will be zero-emission by 2035.
- Continue adopting new or modified reach codes and consider future updates that exceed the California Building Standards Code as the State updates the Building Code, including the Green Building Code, to require zero-emission charging infrastructure in new multifamily and nonresidential buildings. Explore expanding it to include new single-family homes.
- Install electric vehicle charging equipment and other infrastructure needed to support the transition to a zero-emission County fleet at County facilities. Consider the appropriate locations, number, and capacity of infrastructure to facilitate the transition of the County fleet to zero-emission vehicles.
- Work with property owners and other potential partners to pursue installation of zero-emission vehicle charging stations in and near multifamily dwelling units.
- Update off-street parking ordinance to include a requirement for zero-emission vehicle charging infrastructure. Consider including incentives for developers to exceed minimum requirements (i.e., density bonus).
- Increase installation of electric vehicle charging stations for all vehicle types, including bicycles and scooters, at public facilities, emphasizing increased installation in Impacted Communities.
- In partnership with regional agencies, explore providing subsidies for households making less than the area median income to purchase or lease zero-emission vehicles and associated infrastructure.
- Pursue fees and regulatory efforts to convert transportation network company (TNC), taxi, and similar car-hire services to zero-emission vehicles.
- Work with BAAQMD and other regional agencies to convert off-road equipment to zero-emission clean fuels.
- Work with contractors, fleet operations, logistics companies, and other operators of heavy-duty vehicles to accelerate the transition to zero-emission heavy-duty vehicles.

- In cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available, work ~~Work~~ with Public Works to pursue the use of renewable natural gas (sourced from recovered organic waste) for transportation fuel, electricity, or heating applications ~~in cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available~~.
- Coordinate with CCTA and other local and regional agencies to ~~Support~~ implement~~ation of~~ the Contra Costa County Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements.

5.6.4 Environmental Impacts

5.6.4.1 METHODOLOGY

To determine whether the proposed project would result in wasteful, inefficient, or unnecessary consumption of energy resources, this analysis uses the guidance provided in Appendix F of the CEQA Guidelines as well as the analytical precedent set by *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168).

According to Appendix F of the CEQA Guidelines, the goal of conserving energy is translated to include decreasing overall per capita energy consumption; decreasing reliance on fossil fuels such as coal, natural gas, and oil; and increasing reliance on renewable energy sources. In *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168), the Appellate Court concluded that the analysis of wasteful, inefficient, and unnecessary energy consumption was not adequate because it did not consider whether additional renewable energy features could be added to the project.

The proposed project would be considered to result in a potentially significant impact if it would result in wasteful, inefficient, or unnecessary consumption of energy resources. Considering the guidance provided by Appendix F of the CEQA Guidelines and the Appellate Court decision in *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168), the proposed project would be considered to result in wasteful, inefficient, or unnecessary consumption of energy resources if it would conflict with the following energy conservation goals:

- Decreasing overall per capita energy consumption;
- Decreasing reliance on fossil fuels such as coal, natural gas, or oil; and
- Increasing reliance on renewable energy sources.

The following is a summary of the assumptions used for this energy analysis:

- **On-Road Transportation.** Fuel use was based on Origin-Destination Method VMT provided by Fehr and Peers in the unincorporated county (see Section 5.16, *Transportation*). The VMT provided includes the full trip length for land uses in the county (origin-destination approach) and 50 percent of the trip length for external-internal/internal-external trips, consistent with the recommendations of CARB's Regional Targets Advisory Committee.

- **Energy (Natural Gas and Electricity).** Emissions associated with natural gas and electricity use for residential land uses in the county were modeled based on data provided by PG&E and MCE as part of the CAAP ~~Update~~ (Appendix 5.3-1 to this Draft EIR). Propane use was approximated for residential use only as part of CAAP ~~Update~~. Forecasts are adjusted for increases in population in the county based on the energy forecast with State actions conducted for the CAAP ~~Update~~.

Impact 5.6-1: Implementation of the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

Proposed General Plan

Short-Term Construction Impacts

Development projects constructed under the proposed General Plan would create temporary demands for electricity. Natural gas is not generally required to power construction equipment, and therefore is not anticipated during construction phases. Electricity use would fluctuate according to the phase of construction. Additionally, it is anticipated that most electric-powered construction equipment would be hand tools (e.g., power drills, table saws, compressors) and lighting, which would result in minimal electricity usage during construction activities.

Construction of development projects facilitated by the proposed General Plan would also temporarily increase demands for energy associated with transportation. Transportation energy use depends on the type and number of trips, VMT, fuel efficiency of vehicles, and travel mode. Energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that would use diesel fuel or gasoline. The use of energy resources by these vehicles would fluctuate according to the phase of construction and would be temporary. It is anticipated that most off-road construction equipment, such as those used during demolition and grading, would be gas or diesel powered. In addition, all operation of construction equipment would cease on completion of project construction.

Furthermore, the construction contractors would be required to minimize nonessential idling of construction equipment during construction in accordance with the CCR Title 13, Chapter 9, Article 4.8, Section 2449. Such required practices would limit wasteful and unnecessary energy consumption. Also, future projects within the EIR Study Area would be similar to projects currently in development within Contra Costa County. Overall, there would be no unusual project characteristics anticipated that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in other parts of California. Therefore, short-term construction activities that occur as a result of implementation of the proposed General Plan would not result in inefficient, wasteful, or unnecessary fuel consumption.

Long-Term Impacts During Operation

Operation of potential future development accommodated under the proposed General Plan would create additional demands for electricity and natural gas compared to existing conditions. Operational use of electricity and natural gas would include heating, cooling, and ventilation of buildings; water heating; operation of

electrical systems; use of on-site equipment and appliances; lighting; and charging electric vehicles. Land uses accommodated under the proposed General Plan would also result in additional demands for transportation fuels (e.g., gasoline, diesel, compressed natural gas, and electricity) associated with on-road vehicles.

Decreasing Overall per Capita Energy Consumption

Building Electricity

Electrical service to the county is provided by PG&E and MCE through connections to existing off-site electrical lines and new on-site infrastructure. As shown in Table 5.6-4, *Year 2045 Forecast Electricity Consumption*, by horizon year 2045, electricity use in the EIR Study Area is estimated to increase by 47,697,580 kWh/year, or approximately ~~59~~ percent, from existing conditions. As a result, the per service population electricity consumption is estimated to decrease from ~~4,319~~ 2,456 kWh per person per year in existing baseline to ~~3,360~~ 1,982 kWh per person per year in 2045, or a reduction of approximately ~~959~~ 474 kWh per person annually.

Table 5.6-4 Year 2045 Forecast Electricity Consumption

Area	Electricity Usage, kWh per year (Subtotal)		
	Existing Baseline[1]	Year 2045 Forecast[2]	Net Change
Residential	293,561,300	328,353,050	34,791,750
Nonresidential	~~626,049,910~~ 229,243,970	~~638,955,740~~ 242,149,800	12,905,830
Total	**~~919,611,210~~ 522,805,270**	**~~967,308,790~~ 570,502,850**	**47,697,580**
Service Population	212,910	287,870	74,960
Per Service Population Annual Consumption	**~~4,319~~ 2,456**	**~~3,360~~ 1,982**	**~~-959~~ -474**

[1] Electricity usage is provided by PG&E and MCE.
[2] Residential and nonresidential energy forecasts are adjusted for increases in housing in the EIR Study Area and account for reductions due to increases in energy efficiency from compliance with the Building Energy Efficiency Standards and CALGreen.

As previously discussed, all new development facilitated by the proposed General Plan would be required to demonstrate compliance with the current Energy Code and CALGreen standards in effect at the time the individual development applications are submitted and can therefore be expected to be more energy-efficient than the use being replaced, resulting in reductions in electricity consumption on a per dwelling unit and per square foot basis when compared to existing development. It should be noted that it is unknown how much more energy-efficient future iterations of the Energy Code and CALGreen standards would be in 2045 compared to existing conditions as those code updates are released on a 3-year cycle.

Moreover, the proposed General Plan Policies COS-P7.1, COS-P14.7, COS-P14.8, HS-P1.8, and HS-P3.2 would serve to improve energy efficiency and reduce energy consumption in new development facilitated by the proposed General Plan. As a result of compliance with Title 24 energy efficiency standards and implementation of the above proposed General Plan policies and actions, per service population building electricity consumption is expected to decrease in 2045 compared to existing conditions.

Building Natural Gas and Propane

As shown in Table 5.6-5, *Year 2045 Forecast Natural Gas and Propane Consumption*, existing natural gas use and propane use in the EIR Study Area totals 43,885,050 therms and 92,942 million British thermal units (MMBTU)

annually. By 2045, natural gas use in the EIR Study Area would increase by 6,972,060 therms annually, or approximately 16 percent, from existing conditions to a total of 50,857,110 therms per year. Future development is unlikely to require propane in more rural areas of the county, especially due to the County's all-electric requirements for new construction. Therefore propane use in the EIR Study Area is anticipated to remain the same, for a total of 92,942 MMBTU per year.

As a result, the per service population natural gas consumption is estimated to decrease from 206 therms per person per year in existing baseline to 177 therms per person per year in 2045. Propane is also estimated to decrease from 0.44 MMBTU per person per year to 0.32 MMBTU per person per year in 2045.

Table 5.6-5 Year 2045 Forecast Natural Gas and Propane Consumption

Area	Natural Gas Usage, therms per year		
	Existing Baseline[1]	Year 2045 Forecast[2]	Net Change
Residential	30,100,640	35,500,210	5,399,570
Nonresidential	13,784,410	15,356,900	1,572,490
Total	**43,885,050**	**50,857,110**	**6,972,060**
Service Population	212,910	287,870	74,960
Per Service Population Annual Consumption	**206**	**177**	**-29**
	Propane Usage, MMBTU per year[3]		
Residential	92,942	92,942	0
Service Population	212,910	287,870	74,960
Per Service Population Annual Consumption	0.44	0.32	-0.12

1 Natural gas usage data provided by PG&E.
2 Residential and nonresidential energy forecasts are adjusted for increases in housing and employment, respectively, in the EIR Study Area and account for reductions due to increases in energy efficiency from compliance with the Building Energy Efficiency Standards and CALGreen.
3 Propane use is approximated for residential uses only.

Similar to electricity consumption, all new development facilitated by the proposed General Plan would be required to demonstrate compliance with the current CBSC and CALGreen and would result in reductions in heating fuel (i.e., natural gas or propane) consumption on a per dwelling unit and per square foot basis when compared to existing development in the county. As stated previously, the proposed General Plan Policies COS-P7.1, COS-P14.7, COS-P14.8, HS-P1.8, and HS-P3.2 would serve to improve energy efficiency and reduce energy consumption in new development facilitated by the proposed General Plan. As a result, per service population heating fuel consumption is expected to decrease in 2045 compared to existing baseline conditions.

Transportation Energy

The growth accommodated under the proposed General Plan would consume transportation energy from the use of motor vehicles (e.g., gasoline, diesel, compressed natural gas, and electricity). Table 5.6-6, *Operation-Related Annual Fuel Usage: Net Change from Existing,* shows the net change in VMT, fuel usage, and fuel efficiency under forecast year 2045 proposed General Plan conditions from existing baseline year conditions.

As shown in Table 5.6-6, when compared to existing baseline year conditions, the proposed General Plan and CAAP would result in a decrease in ~~VMT~~ fuel usage for gasoline-, compressed natural gas-, and diesel-powered vehicles, but not for electric-powered vehicles. The decrease in fuel usage for gasoline-powered vehicles and

large increase in VMT and fuel usage for electric-powered vehicles are primarily based on the assumption in EMFAC that a greater mix of light-duty automobiles would be electric-powered in future years based on regulatory (e.g., Advanced Clean Cars) and consumer trends. Furthermore, per service population VMT generation would decrease by an estimated 722 VMT/SP from baseline conditions.

Table 5.6-6 Operation-Related Annual Fuel Usage: Net Change from Existing

Fuel Type	Existing Baseline Year	Forecast Year 2045 (with CAAP)	Net Change from Existing Baseline
Gasoline			
VMT[1]	1,055,664,330	~~198,793,298~~ 185,288,137	~~-856,871,032~~ -870,376,193
Gallons	~~49,151,714~~ 46,151,714	~~6,219,583~~ 5,797,051	~~-39,932,132~~ -40,354,663
Miles Per Gallon	22.8~~9~~7	31.96	9.09
Diesel			
VMT[1]	~~67,129,682~~ 62,129,682	~~19,693,685~~ 15,558,054	~~-42,435,997~~ -46,571,628
Gallons	7,412,023	~~2,129,844~~ 1,682,582	~~-5,282,178~~ -5,729,441
Miles Per Gallon	8.38	9.25	0.86
Compressed Natural Gas			
VMT[1]	1,070,505	~~551,190~~ 432,925	~~-519,316~~ -637,581
Gallons	213,066	~~95,605~~ 75,091	~~-117,461~~ -137,975
Miles Per Gallon	5.02	5.77	0.74
Electricity			
VMT[1]	18,046,572	~~1,110,350,001~~ 1,128,109,058	~~1,092,303,429~~ 1,110,062,486
kWh	6,503,224	~~539,203,303~~ 547,827,378	~~532,700,078~~ 541,324,154
Miles Per kWh	2.78	2.06	-0.72
Total VMT	1,136,911,090	~~1,329,388,174~~ 1,329,388,174	192,477,084
Service Population (SP)	212,910	287,870	74,960
VMT/SP	5,340	~~4,618~~ 4,618	-722

Source: EMFAC2021 Version 1.0.2.
Notes:
[1] Based on daily VMT provided by Fehr and Peers. VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology (CARB 2008).

The overall VMT as shown in the table would be primarily attributable to the overall growth associated with the proposed General Plan compared to existing conditions. As discussed in Section 5.14, *Population and Housing*, implementation of the proposed General Plan would exceed current regional projections for housing by 26 percent and population by 18 percent. However, it is important to note that regional projections used were from *Plan Bay Area 2040* and not the updated *Plan Bay Area 2050*, which does not differentiate between Contra Costa County as a whole and only the unincorporated portion of the county.

As identified in Section 5.16, *Transportation*, the proposed General Plan Land Use Element includes goals, policies, and actions to minimize VMT and therefore reduce emissions from automobiles. Please see the impact discussion in Section 5.16 for a complete list of these goals, policies, and actions. Additionally, fuel efficiency of vehicles under year 2045 conditions would improve compared to existing baseline year conditions. The improvement in fuel efficiency would be attributable to regulatory compliance (e.g., CAFE standards), resulting in new cars that are more fuel efficient and the attrition of older, less fuel-efficient vehicles. The CAFE standards are not directly applicable to residents or land use development projects, but to car manufacturers. Thus, Contra Costa County and its residents do not have direct control in determining the fuel efficiency of vehicles manufactured and that are made available. However, compliance with the CAFE standards by car manufacturers would ensure that vehicles produced in future years have greater fuel efficiency and would

generally result in an overall benefit of reducing fuel usage by providing the population of the county more fuel-efficient vehicle options.

While the demand in electricity would increase under the proposed General Plan, in conjunction with the regulatory (i.e., Renewables Portfolio Standard, SB 350, and SB 100) and general trend toward increasing the supply and production of energy from renewable sources, it is anticipated that a greater share of electricity used to power electric vehicles would be from renewable sources in future years (e.g., individual photovoltaic systems, purchased electricity from PG&E, and/or purchased electricity from MCE that is generated from renewable sources). In addition to regulatory compliance that would contribute to more fuel-efficient vehicles and less demand in fuels, the proposed General Plan includes policies that will contribute to minimizing overall VMT, and thus associated fuel usage (see Section 5.16, *Transportation*). In combination with improvements in fuel economy standards through 2045, the proposed General Plan would result in a decrease in transportation energy consumption. As a result, the proposed General Plan would result in an overall decrease in energy consumption through 2045.

Decreasing Reliance on Fossil Fuels

The proposed General Plan would be considered to conflict with this criterion if it did not take steps to decrease the reliance on fossil fuels. As discussed in Section 5.8, *Greenhouse Gas Emissions*, individual development projects accommodated by the proposed General Plan would be required to comply with the CBSC that is current at the time of their building application submittal. As the current CBSC is the 2022 CBSC, individual development projects going through the application process today would result in greater energy efficiency than the current performance of existing structures in the EIR Study Area. In addition, the 2022 CBSC currently includes provisions for development projects to include rooftop photovoltaic systems and BES infrastructure or demonstrate energy efficiency performance equivalent to including photovoltaic and BES features.

In addition to improvements in energy efficiency and on-site renewable energy generation and energy storage requirements, SB 100 requires that LSEs incrementally increase their energy procurement sources to include eligible renewable and carbon-free sources. By January 1, 2046, all LSEs in California are required to source 100 percent of their in-state electricity sales from renewable and carbon-free sources. As a result, individual development projects accommodated by the proposed General Plan would improve their energy efficiency through compliance with the CBSC current at the time of their building application submittal and LSEs would supply electricity that is increasingly sourced from carbon-free sources.

Moreover, consistent with Executive Order N-79-20 and CARB's Advanced Clean Cars II Regulation, which require that 100 percent of new passenger vehicles sold in-state are ZE (i.e., battery electric, hybrid plug-in electric, and fuel cell electric vehicles) by 2035, vehicles utilized by future residents and employees accommodated by the proposed General Plan are expected to consist more of EVs than what is experienced under existing conditions. In addition, the proposed General Plan includes policies that are intended to reduce the use of nonrenewable energy. Specifically, Policies COS-P14.7, COS-P14.8, HS-P1.8, and HS-P3.2 encourage the reduction of nonrenewable energy use and the utilization of new energy sources and building electrification. As a result, the proposed General Plan would incrementally decrease reliance on fossil fuel energy resources through 2045.

Increasing Reliance on Renewable Energy

As previously discussed, the 2022 CBSC currently requires a variety of development projects that don't meet specific exceptions or exemptions to include rooftop photovoltaic systems and BES infrastructure or otherwise match or exceed the energy efficiency performance experienced by including photovoltaic and BES systems, as applicable. In addition, it is anticipated that each new Code cycle for the CBSC will improve on the last one by requiring higher performance for energy efficiency and incorporating additional requirements for on-site renewable energy and EV charging infrastructure. Future development projects accommodated by the proposed General Plan would therefore result in a net increase from existing conditions in on-site photovoltaic electricity generation and EV charging stations and associated infrastructure, further supporting and accelerating the adoption of EVs and the use of renewable energy in future years.

Similarly, LSEs that serve future development projects accommodated by the proposed General Plan, such as PG&E and MCE, would be required to incrementally increase their energy procurement sources to include eligible renewable and carbon-free sources through 2045 under SB 100. As a result, electricity consumed by individual development projects under the proposed General Plan, as well as existing structures in the county, would rely more on renewable and carbon-free sources for electricity in future years than is experienced under existing conditions.

Moreover, the proposed General Plan includes various policies that are intended to support the use of renewable energy beyond compliance with the CBSC, including creating a walkable urban environment to encourage future residents and employees in the county to use active modes of transportation instead of motorized vehicles.

The following proposed General Plan policies focus on minimizing VMT through land use and transportation planning efforts that work in conjunction, including:

- **Policy TR-P1.4:** Reduce single-occupant vehicle usage and VMT by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, ~~at a minimum using strategies defined in the~~ TDM Ordinance, and other best practices), and support for public transit.
- **Policy TR-P4.7:** Encourage walkability and safety by streamlining implementation of traffic-calming measures through the Neighborhood Traffic Management Program.
- **Policy TR-P5.2:** Coordinate with Caltrans to provide safe and comfortable highway interchange crossings for people of all ages and abilities who walk, bike, or use micromobility.
- **Policy TR-P5.7:** Encourage walking, bicycling, and micromobility as the travel modes of choice for short to medium-length trips, such as trips to schools, parks, transit stops, local shopping areas, and neighborhood services.
- **Policy TR-P5.10:** Require generous parking for bicycles and other mobility devices at key destinations, such as shopping centers, parks, schools, ~~workplaces~~employment centers, transit stations, and multiple-family housing. This parking should be conveniently located near entrances, include charging infrastructure, and accommodate cargo bikes when appropriate for the land use.

5. Environmental Analysis
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Summary

Compliance with federal, State, and local regulations (e.g., Energy Code, CALGreen, Renewables Portfolio Standard, and CAFE standards) would increase building energy efficiency and vehicle fuel efficiency. Compliance would also reduce building energy demand and transportation-related fuel usage in the future. Additionally, the proposed General Plan includes policies related to land use and transportation planning, energy efficiency, promotion of housing near public and active transit, and renewable energy generation that will contribute to minimizing building and transportation-related energy demands overall. As stated, development that could occur under the proposed General Plan would reduce the per capita transportation energy consumption, decrease reliance on fossil fuels, and increase reliance on renewable energy sources.

Implementation of policies under the proposed General Plan, in conjunction with and complementary to regulatory requirements, would ensure that energy demand associated with growth under the proposed General Plan would decrease overall energy consumption, decrease reliance on fossil fuels, and increase reliance on renewable energy. As such, the energy consumption under the proposed General Plan would not be considered inefficient, wasteful, or unnecessary. Therefore, energy impacts associated with implementation and operation of land uses accommodated under the proposed General Plan would be less than significant.

Proposed CAAP

The proposed CAAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. Because there is no specific land use component associated with the proposed CAAP, its implementation would not directly result in energy impacts.

Furthermore, the proposed CAAP would help reduce GHG emissions and energy demand generated by existing and proposed land uses in the EIR Study Area. For example, proposed CAAP transportation strategies that reduce VMT (e.g., Strategy TR-1) would result in a reduction in transportation-related fuel usage. Likewise, the proposed CAAP also promotes building energy-efficiency improvements (e.g., Strategies BE-1 and BE-2), increasing water efficiency (e.g., Strategy DR-1 and DR-2), and reducing energy demand through renewable energy sources (e.g., Strategy BE-3) to minimize energy sector emissions. In addition, the proposed CAAP supports the East Bay Energy Watch, which is a partnership between PG&E and local governments in the East Bay region to conduct energy efficiency outreach to residents and businesses, retrofit existing government facilities to improve energy efficiency, and provide training to agency staff. Thus, implementation of the proposed CAAP would result in beneficial impacts to energy consumption. Overall, implementation of the proposed CAAP would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.6-1 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.6-1 would be less than significant.

Impact 5.6-2: Implementation of the proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Proposed General Plan

The state's electricity grid is transitioning to renewable energy under California's RPS Program. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. In general, California has RPS requirements of 33 percent renewable energy by 2020 (SB X1-2), 40 percent by 2024 (SB 350), 50 percent by 2026 (SB 100), 60 percent by 2030 (SB 100), and 100 percent by 2045 (SB 100). SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. Additionally, SB 1020 requires all State agencies to procure 100 percent of electricity from renewable energy and zero-carbon resources by 2035.

The statewide RPS requirements do not directly apply to individual development projects, but to utilities and energy providers such as PG&E and MCE, whose compliance with RPS requirements would contribute to the State's objective of transitioning to renewable energy. In addition, the County Board of Supervisors voted to go Deep Green 100 percent renewable (i.e., all power which customers buy comes from 100 percent non-polluting wind and solar power) with MCE for the majority of the County's accounts. Even if customers in the county were to opt-out of the Deep Green program, and therefore receive all their electricity from PG&E, 33 percent of PG&E's electricity has been generated from renewable energy since 2017 (PG&E 2023b). By 2030, PG&E is set to meet the State's new 60 percent renewable energy mandate set forth in SB 100.

The land uses accommodated under the proposed General Plan would be required to comply with the current and future iterations of the Building Energy Efficiency Standards and CALGreen. Furthermore, as described for Impact Discussion 5.6-1, the proposed General Plan includes policies that would support the statewide goal of transitioning the electricity grid to renewable sources. The net increase in energy demand associated with implementation of the proposed General Plan would be within the service capabilities of MCE and PG&E and would not impede their ability to implement California's renewable energy goals. Therefore, implementation of the proposed General Plan would not conflict with or obstruct implementation of California's Renewables Portfolio Standard program, and the impact would be less than significant.

Proposed CAAP

The proposed CAAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. As discussed under Impact Discussion 5.6-1, the proposed CAAP transportation strategies would reduce VMT (e.g., Strategy TR-1) to aid in the reduction in transportation-related fuel usage. Likewise, the proposed CAAP also promotes building energy-efficiency improvements (e.g., Strategies BE-1 and BE-2), increasing water efficiency (e.g., Strategy DR-1 and DR-2), and reducing energy demand through renewable energy sources (e.g., Strategy BE-3) to minimize energy sector emissions. Furthermore, the proposed CAAP supports the East Bay Energy Watch, which is a partnership between PG&E and local governments in the East Bay region to conduct energy efficiency outreach to residents and businesses,

retrofit existing government facilities to improve energy efficiency, and provide training to agency staff. Therefore, the proposed CAAP would complement the statewide goal of transitioning the electricity grid to renewable sources. Implementation of the proposed CAAP would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.6-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.6-2 would be less than significant.

Impact 5.6-3: Implementation of the proposed project would not require or result in the relocation or construction of new or expanded energy facilities, the construction or relocation of which could cause significant environmental effects.

Proposed General Plan

The proposed General Plan would accommodate future growth in the EIR Study Area that would require new or expanded energy facilities; however, the proposed General Plan would not directly result in the construction of new or expanded energy facilities that would not otherwise be reviewed and mitigated to reduce potentially significant environmental effects. As discussed in Section 5.6.1.1, *Regulatory Background*, the IRP is the principal planning document that identifies CAISO's forecasts for electricity demand, supply, and transmission needs over a 20-year planning horizon, as well as its strategies for integrating renewable energy resources and other grid services to meet those needs. These forecasts account for the expected growth in population and development in corresponding LSE's service areas, such as the population and development envisioned under the proposed General Plan within PG&E and MCE's service area.

The IRP is developed in collaboration with LSEs, regulators, and other stakeholders, and is updated periodically to reflect changes in the energy landscape and evolving policy goals (CEC 2020). Overall, the IRP plays a critical role in ensuring the reliability and resilience of California's electricity grid as the state continues to transition to a cleaner and more sustainable energy system. When an LSE identifies that new or expanded energy facilities are needed to accommodate the population and development growth in its service area, those proposed improvements are reviewed to identify consistency with local, State, and federal regulatory compliance as well as potential environmental effects that may result. For on-site systems, such as rooftop solar, the review would be conducted by the applicable lead agency as part of that individual development project. For energy infrastructure improvements that involve the construction of new or expansion of existing transmission lines, generation systems, or BES facilities separate from an individual development project, the review would be conducted by the CPUC and/or CEC depending on the type of facility. The CEC typically acts as a CEQA lead or responsible agency for energy infrastructure improvements involving generation or BES systems, whereas the CPUC typically acts as a CEQA lead or responsible agency for improvements involving transmission lines or other distribution infrastructure.

Once the new or expanded energy facility is reviewed and approved, incorporating any necessary and appropriate mitigation, it is assigned a point of interconnection on the grid, and its output is added to the IRP as a resource that can provide electricity and other grid services, such as frequency regulation or ramping support. The facility is then dispatched by CAISO based on its bids into the day-ahead and real-time electricity markets, and its output is used to help balance supply and demand on the grid in real-time. CAISO operates a wholesale electricity market in which LSEs can participate by offering to buy or sell electricity and other grid services, such as demand response or energy storage. This market helps to ensure that the electricity system operates efficiently and reliably by providing economic incentives for electricity providers to use their resources effectively.

In addition to the IRP, which principally governs the planning efforts for new and expanded electricity and natural gas facilities, the CPUC in December 2022 adopted a new framework to comprehensively review utility natural gas infrastructure investments in order to help the State transition away from natural-gas-fueled technologies and avoid stranded assets in the gas system. The new framework requires utilities to seek CPUC approval of natural gas infrastructure projects of $75 million or more or those with significant air quality impacts. The new framework is intended to capture natural gas projects likely to have the most substantial community and environmental impacts and to require demonstrate project compliance with CEQA (CPUC 2022). Therefore, while the proposed General Plan may result in increased energy resource demand by facilitating population and development growth in the EIR Study Area, and subsequently in PG&E and MCE's service area, any new or expanded facilities needed as a result of meeting that increased demand would undergo its own review to mitigate potentially significant environmental effects and demonstrate compliance with regulatory requirements. As such, the proposed General Plan would not result in new or expanded energy facilities which may cause significant environmental effects. This impact would be less than significant.

Proposed CAAP

The proposed CAAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. Because there is no specific land use component associated with the proposed CAAP, its implementation would not directly result in relocation or construction of new or expanded energy facilities.

As discussed under Impact Discussion 5.6-1, the proposed CAAP promotes building energy-efficiency improvements (e.g., Strategies BE-1 through BE-2) and reducing energy demand through renewable energy sources (e.g., Strategy BE-3) to minimize energy sector emissions. Furthermore, the proposed CAAP supports the East Bay Energy Watch, which is a partnership between PG&E and local governments in the East Bay region to conduct energy efficiency outreach to residents and businesses, retrofit existing government facilities to improve energy efficiency, and provide training to agency staff. Therefore, implementation of the proposed CAAP would not directly result in new or expanded energy facilities which may cause significant environmental effects and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.6-3 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.6-3 would be less than significant.

5.6.5 Cumulative Impacts

All development projects within the vicinity of the EIR Study Area are within the service areas of MCE and PG&E. These projects would result in a long-term increase in operational energy demand for electricity and natural gas use associated with population and housing growth. In addition, construction activities would require the use of energy for purposes such as the operation of construction equipment and tools, and construction of development projects may overlap. However, all projects developed within the MCE and PG&E service area would implement the requirements of the Energy Code (CCR, Title 24, Part 6) and the California Green Building Code (CCR, Title 24, Part 11). Furthermore, new buildings would use new energy-efficient appliances and equipment, pursuant to the Appliance Efficiency Regulations.

Future housing development would also increase annual fuel consumption and VMT within the county. However, vehicles would be subject to the CAFE standards for vehicular fuel efficiency, and average corporate fuel economy continues to increase as a result of State and federal laws, including the Advanced Clean Cars II standards. Furthermore, as described in Impact Discussion 5.6-2, the proposed General Plan includes policies that would contribute toward minimizing inefficient, wasteful, or unnecessary transportation energy consumption. These policies, as well as the other proposed General Plan policies listed in Impact Discussion 5.6-1, would ensure compliance with State, regional, and local plans for renewable energy. Therefore, the proposed project would not result in a cumulatively considerable impact on energy consumption.

5.6.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.6.7 Mitigation Measures

No mitigation measures are required.

5.6.8 Level of Significance After Mitigation

Impacts would be less than significant.

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APPENDIX E:
REVISIONS TO SECTION 5.8, GREENHOUSE GAS EMISSIONS, OF THE DEIR

5.8 GREENHOUSE GAS EMISSIONS

This section evaluates the potential for the adoption and implementation of the proposed project to impact greenhouse gas (GHG) emissions in a local and regional context. Because no single project is large enough to result in a measurable increase in global concentrations of GHG, climate change impacts of a project are considered on a cumulative basis based on the GHG emissions reduction goals identified in the California Air Resources Board's (CARB) 2022 Scoping Plan. GHG emissions modeling is based on emissions inventory, targets, and forecast in the Climate Action and Adaptation Plan (CAAP) included in Appendix 5.8-1, *Climate Action and Adaptation Plan*, of this Draft Environmental Impact Report (EIR).

5.8.1 Environmental Setting

5.8.1.1 TERMINOLOGY

The following are definitions for terms used throughout this section.

- **Greenhouse gases (GHG).** Gases in the atmosphere that absorb infrared light, thereby retaining heat in the atmosphere and contributing to a greenhouse effect.
- **Global warming potential (GWP).** Metric used to describe how much heat a molecule of a GHG absorbs relative to a molecule of carbon dioxide (CO_2) over a given period of time (20, 100, and 500 years). CO_2 has a GWP of 1.
- **Carbon dioxide-equivalent (CO_2e).** The standard unit to measure the amount of GHGs in terms of the amount of CO_2 that would cause the same amount of warming. CO_2e is based on the GWP ratios between the various GHGs relative to CO_2.
- **$MTCO_2e$.** Metric ton of CO_2e.
- **$MMTCO_2e$.** Million metric tons of CO_2e.

5.8.1.2 GREENHOUSE GASES AND CLIMATE CHANGE

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHGs, to the atmosphere. The primary source of these GHGs is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs—water vapor, carbon dioxide (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed in the 20th and 21st centuries. Other GHGs identified by the IPCC that contributes to global warming to a lesser extent are nitrous oxide (N_2O), sulfur hexafluoride (SF_6),

hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons (IPCC 2001).[1,2] The major GHGs applicable to the proposed project are briefly described.

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (i.e., oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (i.e., sequestered) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH_4)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in landfills and water treatment facilities.
- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during the combustion of fossil fuels and solid waste.

GHGs are dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Some GHGs have stronger greenhouse effects than others. These are referred to as high GWP gases. The GWP of GHG emissions are shown in Table 5.8-1, *GHG Emissions and Their Relative Global Warming Potential Compared to CO_2*. The GWP is used to convert GHGs to CO_2-equivalence (CO_2e) to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. For example, under the IPCC Fifth Assessment Report (AR5) GWP values for CH_4, 10 MT of CH_4 would be equivalent to 280 MT of CO_2.

Table 5.8-1 GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Fourth Assessment Report Global Warming Potential Relative to CO_2[1]	Fifth Assessment Report Global Warming Potential Relative to CO_2[1]	Sixth Assessment Report Global Warming Potential Relative to CO_2[1]
Carbon Dioxide (CO_2)	1	1	1
Methane (CH_4)[2]	25	28	30
Nitrous Oxide (N_2O)	298	265	273

Source: IPCC 2007, 2013, and 2022.
Notes: The IPCC published updated GWP values in its Sixth Assessment Report (AR6) that reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO_2. However, GWP values identified in AR5 are used by the 2022 Scoping Plan for long-term emissions forecasting. Therefore, this analysis utilizes AR5 GWP values consistent with the current Scoping Plan.
1 Based on 100-year time horizon of the GWP of the air pollutant compared to CO_2.
2 The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

1 Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals); however, water vapor is not considered a pollutant because it is considered part of the feedback loop rather than a primary cause of change.

2 Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. The share of black carbon emissions from transportation is dropping rapidly and is expected to continue to do so between now and 2030 as a result of California's air quality programs. The remaining black carbon emissions will come largely from woodstoves/fireplaces, off-road applications, and industrial/commercial combustion (CARB 2022). However, State and national GHG inventories do not include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHGs in the atmosphere remained relatively constant. During the 20th century, scientists observed a rapid change in the climate and the quantity of climate change pollutants in the Earth's atmosphere that is attributable to human activities.

The recent IPCC Sixth Assessment Report (AR6) summarizes the latest scientific consensus on climate change. It finds that atmospheric concentrations of CO_2 have increased by 50 percent since the Industrial Revolution and continue to increase at a rate of two parts per million each year. By the 2030s, and no later than 2040, the world will exceed 1.5°C warming (CARB 2022b). These recent changes in the quantity and concentration of climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants (CAT 2006). In the past, gradual changes in the Earth's temperature changed the distribution of species, availability of water, and other conditions. Human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but within a human lifetime (IPCC 2007).

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are hard to predict. Projections of climate change depend heavily on future human activity. Therefore, climate models are based on different emission scenarios that account for historical trends in emissions and on observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty. For example, there are varying degrees of certainty on the magnitude of the trends for:

- Warmer and fewer cold days and nights over most land areas.
- Warmer and more frequent hot days and nights over most land areas.
- An increase in the frequency of warm spells and heat waves over most land areas.
- An increase in frequency of heavy precipitation events (or proportion of total rainfall from heavy falls) over most areas.
- Larger areas affected by drought.
- Intense tropical cyclone activity increases.
- Increased incidence of extreme high sea level (excluding tsunamis).

Potential Climate Change Impacts for California

There is at least a greater than 50 percent likelihood that global warming will reach or exceed 1.5°C in the near-term, even for the very low GHG emissions scenario (IPCC 2022). Climate change is already impacting California and will continue to affect it for the foreseeable future. For example, the average temperature in most areas of California is already 1°F higher than historical levels, and some areas have seen average increases in excess of 2°F (CalOES 2020). The California Fourth Climate Change Assessment identifies the following climate change impacts under a business-as-usual (BAU) scenario, in which no new actions are taken to curb GHG emissions:

- Annual average daily high temperatures in California are expected to rise by 2.7°F by 2040, 5.8°F by 2070, and 8.8°F by 2100 compared to observed and modeled historical conditions. These changes are statewide averages. Heat waves are projected to become longer, more intense, and more frequent.
- Warming temperatures are expected to increase soil moisture loss and lead to drier seasonal conditions. Summer dryness may become prolonged, with soil drying beginning earlier in the spring and lasting longer into the fall and winter rainy season.
- High heat increases the risk of death from cardiovascular, respiratory, cerebrovascular, and other diseases.
- Droughts are likely to become more frequent and persistent through 2100.[3]
- Climate change is projected to increase the strength of the most intense precipitation and storm events affecting California.
- Mountain ranges in California are already seeing a reduction in the percentage of precipitation falling as snow. Snowpack levels are projected to decline significantly by 2100 due to reduced snowfall and faster snowmelt. California's water storage system is designed with the expectation that snow will stay frozen for many months, and that as it melts, it will be stored in a series of reservoirs and dams, many of which are used to generate electricity. Changing waterfall patterns therefore impact both water supply and electricity supply.
- Marine layer clouds are projected to decrease, though more research is needed to better understand their sensitivity to climate change.
- Extreme wildfires (i.e., fires larger than 10,000 hectares or 24,710 acres) are expected to occur 50 percent more frequently. The maximum area burned statewide may increase 178 percent by the end of the century. Drought and reduced water supplies can increase wildfire risk.
- Exposure to wildfire smoke is linked to increased incidence of respiratory illness.
- Sea-level rise is expected to continue to increase erosion of beaches, cliffs, and bluffs (CalOES 2020).

Global climate change risks to California are shown in Table 5.8-2, *Summary of GHG Emissions Risks to California*, and include impacts to public health, water resources, agriculture, coastal sea level, forest and biological resources, and energy.

[3] Overall, California has become drier over time, with five of the eight years of severe to extreme drought occurring between 2007 and 2016, and with unprecedented dry years in 2014 and 2015 (OEHHA 2018). Statewide precipitation has become increasingly variable from year to year, with the driest consecutive four years occurring from 2012 to 2015 (OEHHA 2018).

Table 5.8-2 Summary of GHG Emissions Risks to California

Impact Category	Potential Risk
Public Health Impacts	Heat waves will be more frequent, hotter, and longer Fewer extremely cold nights Poor air quality made worse Higher temperatures increase ground-level ozone levels Deaths due to extreme heat
Water Resources Impacts	Decreasing Sierra Nevada snowpack Challenges in securing adequate water supply Potential reduction in hydropower Loss of winter recreation
Agricultural Impacts	Increasing temperature Increasing threats from pests and pathogens Expanded ranges of agricultural weeds Declining productivity Irregular blooms and harvests
Coastal Sea Level Impacts	Accelerated sea-level rise Increasing coastal floods Shrinking beaches Worsened impacts on infrastructure
Forest and Biological Resource Impacts	Increased risk and severity of wildfires Lengthening of the wildfire season Movement of forest areas Conversion of forest to grassland Declining forest productivity Increasing threats from pests and pathogens Shifting vegetation and species distribution Altered timing of migration and mating habits Loss of sensitive or slow-moving species
Energy Demand Impacts	Potential reduction in hydropower Increased energy demand

Sources: CEC 2006, 2009; CCCC 2012; CNRA 2014; CalEOS 2020

5.8.1.3 REGULATORY BACKGROUND

Federal

The U.S. Environmental Protection Agency (USEPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The USEPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not impose any emission reduction requirements but allowed the USEPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation (USEPA 2009).

To regulate GHGs from passenger vehicles, the USEPA was required to issue an endangerment finding (USEPA 2023). The finding identified emissions of six key GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three are applicable to the proposed project's GHG emissions inventory because they constitute the majority of GHG emissions and, according to guidance by the Bay Area Air Quality Management District (BAAQMD), are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory.

US Mandatory Report Rule for GHGs (2009)

In response to the endangerment finding, the USEPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (e.g., large stationary sources) to report GHG emissions data. Facilities that emit 25,000 MT or more of CO_2e per year are required to submit an annual report.

Update to Corporate Average Fuel Economy Standards (2017 to 2026)

The federal government issued new Corporate Average Fuel Economy (CAFE) standards in 2012 for vehicle model years 2017 to 2025, requiring a fleet average of 54.5 miles per gallon (MPG) in 2025. However, on March 30, 2020, the USEPA finalized updated CAFE and GHG emissions standards for passenger cars and light trucks, covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021 to 2026. Under SAFE, the fuel economy standards will increase 1.5 percent per year compared to the 5 percent per year under the CAFE standards established in 2012. Overall, SAFE requires a fleet average of 40.4 MPG for model year 2026 vehicles (85 Federal Register 24174 (April 30, 2020)).

On December 21, 2021, under the direction of Executive Order (EO) 13990 issued by President Biden, the National Highway Traffic Safety Administration (NHTSA) repealed SAFE Vehicles Rule Part One, which had preempted state and local laws related to fuel economy standards. In addition, the NHTSA announced new proposed fuel standards on March 31, 2022. Fuel efficiency under the new standards proposed will increase 8 percent annually for model years 2024 to 2025 and 10 percent for model year 2026. Overall, the new CAFE standards require a fleet average of 49 MPG for passenger vehicles and light trucks for model year 2026, which would be a 10 MPG increase relative to model year 2021 (NHTSA 2022).

State

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in EO S-03-05, EO B-30-15, EO B-55-18, Assembly Bill (AB) 32, AB 1279, Senate Bill (SB) 32, and SB 375.

Executive Order S-03-05

EO S-03-05 was signed June 1, 2005, and set the following GHG reduction targets for the State:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

Assembly Bill 32, the Global Warming Solutions Act (2006)

AB 32 was passed by the California State legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in EO S-03-05. CARB prepared the 2008 Scoping Plan to outline a plan to achieve the GHG emissions reduction targets of AB 32.

Executive Order B-30-15

EO B-30-15, signed April 29, 2015, set a goal of reducing GHG emissions in the state to 40 percent of 1990 levels by year 2030. EO B-30-15 also directed CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the State and requires State agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in EO S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, *Safeguarding California*, in order to ensure climate change is accounted for in State planning and investment decisions.

Senate Bill 32 and Assembly Bill 197

In September 2016, Governor Brown signed SB 32 and AB 197 into law, making the EO goal for year 2030 into a statewide mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires CARB to prioritize direct emissions reductions rather than the market-based cap-and-trade program for large stationary, mobile, and other sources.

Executive Order B-55-18

EO B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." EO B-55-18 directs CARB to work with relevant State agencies to ensure future scoping plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other State goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Assembly Bill 1279

AB 1279, signed by Governor Newsom in September 2022, codifies the carbon neutrality targets of EO B-55-18 for year 2045 and sets a new legislative target for year 2045 of 85 percent below 1990 levels for anthropogenic GHG emissions. CARB was required to update the Scoping Plan to identify and recommend measures to achieve the net-zero and GHG emissions-reduction goals.

2022 Climate Change Scoping Plan

CARB adopted the *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) on December 15, 2022, which lays out a path to achieve carbon neutrality by 2045 or earlier and to reduce the state's anthropogenic GHG emissions (CARB 2022b). The Scoping Plan was updated to address the carbon neutrality goals of EO B-55-18 and the ambitious GHG reduction target as directed by AB 1279. Previous scoping plans focused on

specific GHG reduction targets for industrial, energy, and transportation sectors—to meet 1990 levels by 2020, and then the more aggressive 40 percent below that for the 2030 target. This Plan expands on earlier scoping plans with a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. Carbon neutrality takes it one step further by expanding actions to capture and store carbon, including through natural and working lands and mechanical technologies, while drastically reducing anthropogenic sources of carbon pollution at the same time.

The path forward was informed by the recent IPCC AR6; the measures would achieve 85 percent below 1990 levels by 2045 in accordance AB 1279. CARB's 2022 Scoping Plan identifies strategies as shown in Table 5.8-3, *Priority Strategies for Local Government Climate Action Plans*, that would be most impactful at the local level for ensuring substantial process towards the State's carbon neutrality goals.

Table 5.8-3 Priority Strategies for Local Government Climate Action Plans

Priority Area	Priority Strategies
Transportation Electrification	Convert local government fleets to zero-emission vehicles (ZEV) and provide electric vehicle (EV) charging at public sites.
	Create a jurisdiction-specific ZEV ecosystem to support deployment of ZEVs statewide (such as building standards that exceed State building codes, permit streamlining, infrastructure siting, consumer education, preferential parking policies, and ZEV readiness plans).
Vehicle Miles Traveled (VMT) Reduction	Reduce or eliminate minimum parking standards.
	Implement complete streets policies and investments, consistent with general plan circulation element requirements.
	Increase access to public transit by increasing density of development near transit, improving transit service by increasing service frequency, creating bus priority lanes, reducing or eliminating fares, microtransit, and other approaches.
	Increase public access to clean mobility options by planning for and investing in electric shuttles, bike share, car share, and walking.
	Implement parking pricing or transportation demand management pricing strategies.
	Amend zoning or development codes to enable mixed-use, walkable, transit-oriented, and compact infill development (such as increasing allowable density of the neighborhood).
	Preserve natural and working lands by implementing land use policies that guide development toward infill areas and do not convert "greenfield" land to urban uses (e.g., green belts, strategic conservation easements).
Building Decarbonization	Adopt all-electric new construction reach codes for residential and commercial uses.
	Adopt policies and incentive programs to implement energy efficiency retrofits for existing buildings, such as weatherization, lighting upgrades, and replacing energy-intensive appliances and equipment with more efficient systems (such as Energy Star-rated equipment and equipment controllers).
	Adopt policies and incentive programs to electrify all appliances and equipment in existing buildings such as appliance rebates, existing building reach codes, or time of sale electrification ordinances.
	Facilitate deployment of renewable energy production and distribution and energy storage on privately owned land uses (e.g., permit streamlining, information sharing).
	Deploy renewable energy production and energy storage directly in new public projects and on existing public facilities (e.g., solar photovoltaic systems on rooftops of municipal buildings and on canopies in public parking lots, battery storage systems in municipal buildings).

Source: CARB 2022b

Residential and mixed-use development projects including the following key project attributes would accommodate growth in a manner consistent with State GHG reduction and equity prioritization goals. This is the first approach the State recommends for qualitatively determining whether a proposed residential or mixed-use residential development would align with the State's climate goals while simultaneously advancing fair housing.

Key residential and mixed-use project attributes that reduce GHGs:

- Transportation Electrification
  - Provide EV charging infrastructure that, at a minimum, meets the most ambitious voluntary standards in the California Green Building Standards Code at the time of project approval.

- VMT Reduction
  - Is located on infill sites that are surrounded by existing urban uses and reuses or redevelops previously undeveloped or underutilized land that is presently served by existing utilities and essential public services (e.g., transit, streets, water, and sewer).
  - Does not result in the loss or conversion of the state's natural and working lands.
  - Consists of transit-supportive densities (minimum of 20 residential dwelling units/acre), or is in proximity to existing transit stops (within a half mile), or satisfies more detailed and stringent criteria specified in the region's Sustainable Communities Strategy (SCS).
  - Reduces parking requirements by:
    - Eliminating parking requirements or including maximum allowable parking ratios (i.e., the ratio of parking spaces to residential units or square feet); or
    - Providing residential parking supply at a ratio of <1 parking space per dwelling unit; or
    - For multifamily residential development, requiring parking costs to be unbundled from costs to rent or own a residential unit.
  - At least 20 percent of the units are affordable to lower-income residents.
  - Result in no net loss of existing affordable units.

- Building Decarbonization
  - Use all electric appliances without any natural gas connections and does not use propane or other fossil fuels for space heating, water heating, or indoor cooking.

The second approach to project-level alignment with State climate goals is net zero GHG emissions, especially for new residential development. The third approach to demonstrating project-level alignment with State climate goals is to align with GHG thresholds of significance, which many local air quality management (AQMDs) and air pollution control districts (APCDs) have developed or adopted (CARB 2022b).

Senate Bill 375

SB 375, the Sustainable Communities and Climate Protection Act, was adopted in 2008 to connect the GHG emissions reduction targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (i.e., excluding emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPO). The Metropolitan Transportation Commission (MTC) is the MPO for the Bay Area region, which includes Contra Costa County. Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

2017 Update to the SB 375 Targets

CARB is required to update the targets for the MPOs every eight years. In June 2017, CARB released updated targets and technical methodology, and then released another update in February 2018, which became effective in October 2018. CARB adopted the updated targets and methodology on March 22, 2018. All SCSs adopted after October 1, 2018, are subject to these new targets. The updated targets consider the need to further reduce VMT, as identified in the 2017 Scoping Plan Update, while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. The updated SB 375 targets are in units of percentage per capita reduction in GHG emissions from automobiles and light trucks compared to 2005. This excludes reductions anticipated from implementation of State technology and fuels strategies and any potential future State strategies such as statewide road user pricing. The updated targets call for greater per-capita GHG emission reductions from SB 375 than were currently in place, which for 2035 translates into updated targets that either match or exceed the emission reduction levels in the MPOs' currently adopted SCSs. CARB's updated targets result in an additional reduction of over 8 $MMTCO_2e$ in 2035 compared to the prior targets (CARB 2018).

Transportation Sector Specific Regulations

Advanced Clean Fleets and Advanced Clean Trucks

CARB adopted the Advanced Clean Fleets (ACF) regulation in 2023 to accelerate the transition to zero-emission medium- and heavy-duty vehicles. In conjunction with the Advanced Clean Trucks (ACT) regulation, the ACF regulations helps to ensure that medium- and heavy-duty ZEVs are brought to the market, by requiring certain fleets to purchase ZEVs. The ACF ZEV phase-in approach provides initial focus where the best fleet electrification opportunities exist, sets clear targets for regulated fleets to make a full conversion to ZEVs, and creates a catalyst to accelerate development of a heavy-duty public charging infrastructure network.

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and was anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the

USEPA. In 2012, the USEPA issued a Final Rulemaking that set even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 light-duty vehicles. (See also the previous discussion in federal regulations under "*Update to Corporate Average Fuel Economy Standards [2017 to 2026]*.")

In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of ZEVs into a single package of standards. Under California's Advanced Clean Car program, by 2025 new automobiles will emit 34 percent less GHG emissions and 75 percent less smog-forming emissions.

Executive Order S-01-07

On January 18, 2007, the State set a new low carbon fuel standard (LCFS) for transportation fuels sold in the state. EO S-01-07 set a declining standard for GHG emissions measured in CO_2e gram per unit of fuel energy sold in California. The LCFS required a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applied to refiners, blenders, producers, and importers of transportation fuels, and used market-based mechanisms to allow these providers to choose the most economically feasible methods for reducing emissions during the "fuel cycle."

Executive Order B-16-2012

On March 23, 2012, the State directed CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate ZEVs in major metropolitan areas, including infrastructure to support them (e.g., EV charging stations). EO B-16-2012 also directed the number of ZEVs in California's State vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are ZE by 2015 and at least 25 percent by 2020. The EO also established a target for the transportation sector of reducing GHG emissions to 80 percent below 1990 levels.

Executive Order N-79-20

On September 23, 2020, Governor Newsom signed EO N-79-20, establishing a goal that 100 percent of in-state sales of new passenger cars and trucks will be ZE by 2035. Additionally, the fleet goals for trucks are that 100 percent of drayage trucks are ZE by 2035, and 100 percent of medium- and heavy-duty vehicles in the state are ZE by 2045, where feasible. The EO's goal for the State is to transition to 100 percent ZE off-road vehicles and equipment by 2035, where feasible.

Renewables Portfolio: Carbon Neutrality Regulations

Senate Bills 1078, 107, and X1-2 and Executive Order S-14-08

A major component of California's Renewable Energy Program is the renewables portfolio standard established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. EO S-14-08, signed in November 2008, expanded the State's renewable energy standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011

(SB X1-2). Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production decreases indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

Senate Bill 350

SB 350 (de Leon) was signed into law in September 2015 and establishes tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100. Under SB 100, the RPS for public-owned facilities and retail sellers consists of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill establishes an overall State policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Senate Bill 1020

SB 1020 was signed into law on September 16, 2022. SB 1020 provides interim RPS targets (90 percent renewable energy by 2035 and 95 percent renewable energy by 2040) and requires renewable energy and zero-carbon resources to reach 100 percent clean electricity by 2045.

Energy Efficiency Regulations

California Building Code: Building Energy Efficiency Standards

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for the consideration and possible incorporation of new energy efficiency technologies and methods.

CEC adopted the 2022 Building Energy Efficiency Standards on August 11, 2021, and they went into effect on January 1, 2023. The 2022 standards encourage efficient electric heat pumps, establish electric-ready requirements for new homes, expand solar photovoltaic and battery storage standards, strengthen ventilation standards, among other approaches. The 2022 standards require mixed-fuel single-family homes to be electric-ready to accommodate replacement of gas appliances with electric appliances. In addition, the new standards include prescriptive photovoltaic system and battery requirements for high-rise, multi-family buildings (i.e., more than three stories) and noncommercial buildings such as hotels, offices, medical offices, restaurants, retail stores, schools, warehouses, theaters, and convention centers (CEC 2021).

California Building Code: CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.[4] The mandatory provisions of CALGreen became effective January 1, 2011, and were last updated in 2022. The 2022 CALGreen standards became effective on January 1, 2023.

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR Sections 1601–1608) were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. Though these regulations are now often viewed as "business as usual," they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand.

Solid Waste Diversion Regulations

Assembly Bill 939: Integrated Waste Management Act of 1989

California's Integrated Waste Management Act of 1989 (AB 939, Public Resources Code Section 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the Act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

Assembly Bill 341

AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multi-family residential land uses. Section 5.408 of CALGreen also requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

Assembly Bill 1327

The California Solid Waste Reuse and Recycling Access Act (AB 1327, Public Resources Code Section 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The Act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.

[4] The green building standards became mandatory in the 2010 edition of the Code.

Assembly Bill 1826

In October 2014, Governor Brown signed AB 1826, requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses and multi-family residential dwellings with five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed with food waste.

Water Efficiency Regulations

Senate Bill X7-7

The 20x2020 Water Conservation Plan was issued by the California Department of Water Resources (DWR) in 2010 pursuant to SB 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed "SBX7-7." SBX7-7 mandated urban water conservation and authorized DWR to prepare a plan implementing urban water conservation requirements, which DWR did through the 20x2020 Water Conservation Plan. In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 required urban water providers to adopt a water conservation target of a 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

Assembly Bill 1881: Water Conservation in Landscaping Act

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or an equivalent. AB 1881 also requires CEC to consult with DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves, to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Short-Lived Climate Pollutant Reduction Strategy

On September 19, 2016, the Governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and methane. Black carbon is the light-absorbing component of fine particulate matter produced during the incomplete combustion of fuels. SB 1383 required CARB, no later than January 1, 2018, to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The bill also established targets for reducing organic waste in landfills. On March 14, 2017, CARB adopted the Short-Lived Climate Pollutant Reduction Strategy, which identifies the State's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower than in the early 1960s, despite the tripling of diesel fuel use (CARB 2017a). In-use on-road rules were expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020.

Regional

Plan Bay Area: Strategy for a Sustainable Region

MTC and the Association of Bay Area Governments (ABAG) adopted Plan Bay Area 2050 on October 21, 2021 (ABAG/MTC 2021). Plan Bay Area 2050 provides transportation and environmental strategies to continue to meet the regional transportation-related GHG reduction goals of SB 375. Under the Plan Bay Area 2050 strategies, just under half of all Bay Area households would live within one half-mile of frequent transit by 2050, with this share increasing to over 70 percent for households with low incomes. Transportation and environmental strategies that support active and shared modes, combined with a transit-supportive land use pattern, are forecasted to lower the share of Bay Area residents that drive to work alone from over 50 percent in 2015 to 36 percent in 2050. GHG emissions from transportation would decrease significantly as a result of these transportation and land use changes, and the Bay Area would meet the State mandate of a 19-percent reduction in per-capita emissions by 2035 — but only if all strategies are implemented (ABAG/MTC 2021).

To achieve this sustainable vision for the Bay Area, the Plan Bay Area land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities. An overarching goal of the regional plan is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle, VMT, and associated GHG emissions reductions. Parts of the EIR Study Area lie within identified PDAs (MTC 2023).

Bay Area Clean Air Plan

BAAQMD adopted the 2017 *Clean Air Plan, Spare the Air, Cool the Climate* (Clean Air Plan) on April 19, 2017. The 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.

A comprehensive multipollutant control strategy has been developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, toxic air contaminants, and GHG from a full range of emission sources. These control measures cover the following sectors: (1) stationary (industrial) sources; (2) transportation; (3) energy; (4) agriculture; (5) natural and working lands; (6) waste management; (7) water; and (8) super-GHG pollutants. Overall, the proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of "super-GHGs," such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (i.e., gasoline, diesel, and natural gas).
  - Increase efficiency of the energy and transportation systems.
  - Reduce demand for vehicle travel and high-carbon goods and services.
- Decarbonize the energy system.
  - Make the electricity supply carbon-free.
  - Electrify the transportation and building sectors.

Bay Area Commuter Benefits Program

Under Air District Regulation 14, Model Source Emissions Reduction Measures, Rule 1, Bay Area Commuter Benefits Program, employers with 50 or more full-time employees within the BAAQMD are required to register and offer commuter benefits to employees. In partnership with BAAQMD and MTC, the Rule's purpose is to improve air quality, reduce GHG emissions, and decrease the Bay Area's traffic congestion by encouraging employees to use alternative commute modes, such as transit, vanpool, carpool, bicycling, and walking. The benefits program allows employees to choose from one of four commuter benefit options, including a pre-tax benefit, employer-provided subsidy, employer-provided transit, and alternative commute benefit.

Local

Contra Costa County Congestion Management Program

The Contra Costa Transportation Authority (CCTA) is Contra Costa County's designated Congestion Management Agency (CMA). It is responsible for implementing programs to ensure traffic levels remain manageable. As the CMA, CCTA is in charge of coordinating land use, air quality, and transportation planning among local jurisdictions.

The Congestion Management Program (CMP) outlines transportation demand management efforts and a land use evaluation program – both of which are built on CCTA's Growth Management Program established by Measure J. The CMP strives to enhance sensitivity to the environment, improve air quality, reduce GHG emissions, and promote sustainable communities (CCTA 2021).

Contra Costa County Climate Emergency Resolution

In September 2020 the Board of Supervisors adopted Resolution No. 2020/256 declaring a climate emergency that threatens the long-term economic and social well-being, health, safety, and security of the county. The resolution demands accelerated actions on the climate crisis and calls on local and regional partners to join together to address climate change.

Contra Costa County Ordinance Code

Ordinance No. 2022-02, All-Electric Ordinance (New Construction), amends the 2019 California Energy Code to require the following building types to be all-electric:

- Residential (including single-family and multi-family buildings)
- Detached Accessory Dwelling Units
- Hotel
- Office
- Retail

Contra Costa County Commuter Benefit Program

The County provides full-time or part-time (over 20 hours per week) employees commuter benefits to cover work related, public transportation expenses such as ferry, train and bus fees, and parking expenses.

5.8.1.4 EXISTING CONDITIONS

California's GHG Sources and Relative Contribution

In 2022, the statewide GHG emissions inventory was updated for 2000 to 2020 emissions using the GWPs in IPCC's AR4, and reported that California produced 369.2 $MMTCO_2e$ GHG emissions in 2020 (CARB 2022a), which was 35.3 $MMTCO_2e$ lower than 2019 levels and 61.8 $MMTCO_2e$ below the 2020 GHG Limit of 431 $MMTCO_2e$. The 2019 to 2020 decrease in emissions is likely due in large part to the impacts of the COVID-19 pandemic. However, since the peak level in 2004, California's GHG emissions have generally followed a decreasing trend. In 2014, statewide GHG emissions dropped below the 2020 GHG Limit and have remained below the Limit since that time. Per capita GHG emissions in California have dropped from a 2001 peak of 13.8 metric tons per person to 9.3 metric tons per person in 2020, a 33-percent decrease (CARB 2022a).

California's transportation sector remains the largest generator of GHG emissions, producing 37 percent of the state's total emissions in 2020. Industrial sector emissions made up 20 percent and electric power generation made up 16 percent of the state's emissions inventory. Other major sectors of GHG emissions include commercial and residential (4 percent), agriculture and forestry (8.6 percent), high-GWP gases (5.8 percent), and recycling and waste (2 percent) (CARB 2022a).

Transportation emissions continued to decline for the past three consecutive years with the rise of fuel efficiency for the passenger vehicle fleet and an increase in battery electric vehicles. The deployment of renewable and less carbon-intensive resources and higher energy efficiency standards have facilitated the continuing decline in fossil fuel electricity generation. The industrial sector trend has been relatively flat in recent years but saw a decrease of 7.1 $MMTCO_2e$ in 2020. Commercial and residential emissions saw a decrease of 1.7 $MMTCO_2e$. Emissions from high-GWP gases have continued to increase as they replace ozone depleting substance (ODS) that are being phased out under the 1987 Montreal Protocol. Emissions from other sectors have remained relatively constant in recent years. Overall trends in the inventory also continue to demonstrate that the carbon intensity of California's economy (i.e., the amount of carbon pollution per million dollars of gross domestic product [GDP]) is declining. From 2000 to 2020, the carbon intensity of California's economy decreased by 49 percent while the GDP increased by 56 percent (CARB 2022a).

Existing Community-wide GHG Emissions

The existing land uses in the EIR Study Area consist of single- and multi-family residences and retail, office, commercial, industrial, and institutional uses. Operation of these land uses generates GHG emissions from natural gas used for energy, heating, and cooking; electricity usage; vehicle trips for employees and residents; area sources such as landscaping equipment and consumer cleaning products; water demand; waste generation; and solid waste generation.[5] Table 5.8-4, *Unincorporated Contra Costa County 2005 and Existing GHG Emissions Inventory*, shows the emissions associated with existing land uses in the EIR Study Area.

Table 5.8-4 Unincorporated Contra Costa County 2005 and Existing GHG Emissions Inventory

Sector	2005 ($MTCO_2e$/year)	Existing ($MTCO_2e$/year)	Percentage of Total
On-Road Transportation	628,200	464,040	~~44%~~ 47%
Residential Energy	294,930	191,780	~~18%~~ 19%
Nonresidential Energy	118,740	~~159,520~~ 85,390	~~15%~~ 9%
Solid Waste/Landfills	243,940	220,760	~~21%~~ 22%
Agriculture	33,350	36,130	~~3%~~ 4%
Off-road Equipment	34,160	54,010	5%
Water and Wastewater	8,080	4,870	<1%
BART	1,040	190	<1%
Land Use and Sequestration	-70,860	-70,860	-7%
Total Community Emissions	**1,291,580**	**~~1,060,440~~ 986,310**	**100%**

Source: Proposed CAAP (see Appendix 5.8-1 to this Draft EIR).

5.8.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

GHG-1 Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

GHG-2 Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

BAAQMD's *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans* contains instructions on how to evaluate, measure, and mitigate GHG impacts generated from land use development projects and plans. For purposes of this analysis, Contra Costa County is using BAAQMD's current GHG plan-level significance thresholds to evaluate the proposed project's potential impacts related to GHG emissions.

[5] Emissions from water demand and wastewater are emissions associated with electricity used to supply, treat, and distribute water.

5.8.2.1 GREENHOUSE GAS EMISSION IMPACTS

BAAQMD, in its Justification Report: *CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans* (GHG Justification Report 2022), recommends the use of one of two plan-level criteria to determine the GHG emission impact resulting from a proposed plan. If a proposed plan cannot demonstrate consistency with the BAAQMD-recommended Criterion A or Criterion B, that plan would result in a potentially significant impact related to GHG emissions.

A. The plan must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b); or

B. The plan must meet the State's goals to reduce emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045.

5.8.2.2 CONTRA COSTA COUNTY CLIMATE ACTION PLAN

CEQA Guidelines Section 15183.5(b), *Tiering and Streamlining the Analysis of Greenhouse Gas Emissions*, allows for lead agencies to analyze and mitigate the significant effects of GHG emissions at a programmatic level. Pursuant to CEQA Guidelines Section 15183.5(b), later project-specific environmental documents may tier from and/or incorporate by reference the GHG reduction plan so long as it includes the following plan elements:

- Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
- Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable;
- Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area;
- Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
- Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;
- Be adopted in a public process following environmental review.

The proposed CAAP is an update to the County's 2015 CAP. The proposed CAAP provides an updated baseline emissions inventory and forecast for the unincorporated areas, which aligns the County's GHG reduction efforts with State-recommended targets of AB 1279. The proposed CAAP demonstrates consistency with BAAQMD's significance criteria of meeting the State's goals to reduce emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045; demonstrates consistency with Appendix C "*Guidance for Greenhouse Gas Reduction Strategies*" of BAAQMD's CEQA Guidelines; and meets all of the criteria listed above from CEQA Guidelines Section 15183.5(b). The proposed CAAP is a component of the proposed project and is utilized for establishing the significance criteria for the unincorporated county. Additionally, once adopted, the

proposed CAAP may be used for streamlined GHG analyses for future individual development projects, consistent with the proposed project and with the provisions contained in CEQA Guidelines Section 15183.5.

5.8.2.3 CONSISTENCY WITH STATEWIDE GHG REDUCTION TARGETS

The proposed General Plan and CAAP forecast growth in the EIR Study Area through year 2045; therefore, this EIR analyzes the potential for the proposed project to conflict with statewide GHG reduction goals identified in the CARB 2022 Scoping Plan that are applicable to local governments. This includes AB 1279, which requires an 85 percent reduction in GHG emissions by 2045 to stabilize CO_2e emissions and avoid the most catastrophic impacts of climate change, as well as to make substantial progress toward carbon neutrality.[6]

The proposed CAAP outlines strategies and GHG reduction measures to achieve the SB 32 target for year 2030 and the long-range target of AB 1279 for year 2045. The proposed CAAP covers GHG emissions reductions through the proposed General Plan's 2045 horizon year. The targets of the proposed CAAP are consistent with the statewide GHG emissions reduction goals of AB 1279. Based on the proposed CAAP, a trajectory consistent with the State's GHG emissions targets for the proposed project in year 2030 and year 2045 would be:[7]

- Year 2030 (40 percent below the 1990 levels): 658,700 $MTCO_2e$.
- Year 2045 (85 percent below the 1990 levels): 164,680 $MTCO_2e$.

The proposed CAAP is intended to meet the CEQA Guidelines Section 15183.5 plan requirements for CEQA streamlining for development projects consistent with the proposed CAAP and General Plan in unincorporated Contra Costa County.

5.8.2.4 MASS EMISSIONS AND HEALTH EFFECTS

On December 24, 2018, in *Sierra Club et al. v. County of Fresno et al.* (Friant Ranch), the California Supreme Court determined that the EIR for the proposed Friant Ranch project failed to adequately analyze the project's air quality impacts on human health. The EIR prepared for the project, which involved a master planned retirement community in Fresno County, showed that project-related mass emissions would exceed the San Joaquin Valley Air Pollution Control District's regional significance thresholds. In its findings, the California Supreme Court affirmed the holding of the Court of Appeal that EIRs for projects must not only identify impacts to human health, but also provide an "analysis of the correlation between the project's emissions and human health impacts" related to each criterion air pollutant that exceeds the regional significance thresholds or explain why

[6] The 2022 Scoping Plan includes statewide measures to achieve the State's carbon neutrality goals under EO B-55-18, such as carbon dioxide removal (CDR), that are not applicable to local governments. Carbon neutrality goals are a "no impact" level and not a "less than significant" impact level for climate change effects. There are presently no reliable means of forecasting how future technological developments related to CDR may affect future emissions in a planning jurisdiction. Therefore, carbon neutrality targets are not directly applicable to local governments and CEQA projects to mitigate GHG emissions impacts of a proposed project. Moreover, AB 1279 GHG reduction targets for 2045 are in line with the scientifically established levels needed in the U.S. to limit global warming below 1.5 to 2.0 degrees Celsius, the warming threshold at which scientists say there will likely be major climate disruptions such as super droughts and rising sea levels. For these reasons, the targets of AB 1279 are applicable to the EIR. However, the proposed CAAP includes measures that align with the State's carbon neutrality goals under AB 1279, EO B-55-18, and SB 32.

[7] Unincorporated Contra Costa County GHG emissions in 2005 were 1,291,580 $MTCO_2e$, translating to a 1990 GHG emissions level of 1,097,840 $MTCO_2e$ (see Appendix 5.8-1 to this Draft EIR). The 2030 target for SB 32 is a 40 percent reduction from 1990 levels, which equates to 658,700 $MTCO_2e$.

it could not make such a connection. In general, the ruling focuses on the correlation of emissions of toxic air contaminants and criteria air pollutants and their impact to human health.

In 2009, the USEPA issued an endangerment finding for six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in order to regulate GHG emissions from passenger vehicles. The endangerment finding is based on evidence that shows an increase in mortality and morbidity associated with increases in average temperatures, which increase the likelihood of heatwaves and ozone levels. The effects of climate change are summarized in Table 5.8-2. Though identified effects such as sea-level rise and increased extreme weather can indirectly impact human health, neither the USEPA nor CARB has established ambient air quality standards for GHG emissions. The State's GHG reduction strategy outlines a path to avoid the most catastrophic effects of climate change. Yet the State's GHG reduction goals and strategies are based on the State's path toward reducing statewide cumulative GHGs as outlined in AB 32, SB 32, and AB 1279.

As mentioned above, the two significance thresholds that the County uses to analyze GHG impacts are based on achieving the statewide GHG reduction goals (GHG-1) and relying on consistency with policies or plans adopted to reduce GHG emissions (GHG-2). Further, because no single project is large enough to result in a measurable increase in global concentration of GHG emissions, climate change impacts of a project are considered on a cumulative basis. Without federal ambient air quality standards for GHG emissions, and given the cumulative nature of GHG emissions and the County's significance thresholds, which are tied to reducing the State's cumulative GHG emissions, it is not feasible at this time to connect the project's specific GHG emissions to the potential health impacts of climate change.

5.8.3 Programs, Plans, and Policies

5.8.3.1 PROPOSED GENERAL PLAN GOALS, POLICIES, AND ACTIONS

The following goals, policies, and actions from the proposed General Plan are applicable to GHG emissions. Italicized goals, policies, and actions reduce environmental impacts associated with the proposed project.

Land Use Element

- **Policy LU-P3.3:** Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.
- **Policy LU-P3.7:** Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.
- **Action LU-A4.1:** Amend the County Ordinance Code to include requirements for Low Impact Development, the use of low-carbon concrete, water and energy conservation, reclaimed water, renewable energy use, green building, and other measures that reduce the environmental impacts of development, based on the best available science.

Transportation Element

- **Policy TR-P1.3:** Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.
- ***Policy TR-P1.4:*** *Reduce single-occupant vehicle usage and VMT by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, ~~at a minimum using strategies defined in the~~ TDM Ordinance, and other best practices), and support for public transit.*
- **Policy TR-P1.11:** Support transitioning all on-road vehicles, including personal vehicles and business, government, and public transit fleets, to electric power from renewable sources or other ~~zero-~~emission~~-free~~ fuels.
- **Policy TR-P1.12:** Continue to improve ZEV ~~(including electric bicycle)~~ charging/fueling infrastructure within new development and public rights-of-way, incorporating new technologies whenever possible.
- ***Policy TR-P1.13:*** *Require designs for new parking facilities to incorporate ZEV charging/fueling infrastructure and maximize opportunities for adaptive reuse.*
- **Action TR-A1.4:** Implement programs to encourage transit use, bicycling, walking, telecommuting, and use of alternative vehicle fuels by County employees.
- **Action TR-A1.11:** Coordinate with CCTA and other local and regional agencies to implement the Contra Costa Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements.
- **Action TR-A1.12:** Update the County Ordinance Code as necessary to support advances in ZEV charging/fueling infrastructure~~, including for medium- and heavy-duty vehicles~~.
- **Policy TR-P6.5:** Work with railroads to preserve non-operational contiguous railroad rights-of-way, and highly encourage construction of grade-separated railroad crossings along active lines to support current and future rail operations and ensure the long-term viability of these rail corridors. When no longer in operation, maintain options for future use of the corridors for trails or other public purposes.
- **Policy TR-P7.7:** Embrace emerging aviation-related technologies, such as drones, electric-powered aviation, and vertical takeoff and landing aircraft, to promote economic development and support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.

Conservation, Open Space, and Working Lands Element

- **Policy COS-P14.1:** Implement Climate Action and Adaptation Plan strategies to improve energy efficiency and conservation, promote carbon-free energy sources, and reduce energy-related GHG emissions.

Health and Safety Element

- **Policy HS-P3.1:** Prioritize implementation of the Contra Costa County Climate Action and Adaptation Plan to reduce GHG emissions from community-wide sources and adapt to changing climate conditions.
- **Policy HS-P3.3:** *Require new development projects using the Contra Costa County Climate Action and Adaptation Plan to streamline their environmental review of GHG emissions, as permitted by CEQA Guidelines Section 15183.5, to demonstrate consistency with the Climate Action and Adaptation Plan and incorporate applicable GHG -reduction and climate change adaptation measures.*

5.8.3.2 PROPOSED CLIMATE ACTION AND ADAPTATION PLAN STRATEGIES AND ACTIONS

The following proposed CAAP strategies and actions pertain to GHG emissions:

Clean and Efficient Built Environment (BE)

Strategy BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

Strategy BE-1 Actions:

- Continue adopting new or modified reach codes and consider future updates that exceed the California Building Standards Code as the State updates the Building Code every three years, to require the use of low-carbon intensive energy sources, to achieve higher levels of energy performance, and to achieve lower levels of GHG emissions.
- ~~Maintain, update, publicize, and enforce the~~ Publicize County ~~Ordinance Code Title 7 – Building Regulations amendment~~ ordinances and programs requiring new residential buildings, hotels, offices, and retail to be ~~all-electric~~ more energy efficient, with low levels of GHG emissions. Evaluate the feasibility of including other building types as appropriate.
- Study the feasibility of establishing a low-carbon concrete requirement for all new construction and retrofit activities and consider additional strategies to reduce embedded carbon in construction materials. The intent is to determine what the County can and should do to support or exceed State requirements for net-zero emissions for cement use by 2045. ~~(HS-A3.2)~~
- Consider requiring additional sustainable features as a condition of approval, including reuse of materials to minimize embedded carbon.

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated County, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-~~neutral~~ free fuels.

Strategy BE-2 Actions:

- Create a County policy or program to facilitate making existing residential and nonresidential buildings more energy-efficient and powered by carbon-free energy. ~~(COS-A14.6)~~

- ~~Require replacement and new water heaters and space heating and cooling systems to be electric if the building electric panel has sufficient capacity in accordance with BAAQMD Regulation 9, Rule 4, and Regulation 9, Rule 6. (COS-P14.10)~~
- Implement requirements for cool roofs and light-colored, nonreflective permeable paving materials as part of retrofit, repair, and replacement activities, using recycled materials or other materials with low embedded carbon as feasible and as established by the Building Standards Code.

Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

Strategy BE-3 Actions:

- Require new commercial parking lots with 50 or more spaces to mitigate heat gain through installation of shade trees, solar arrays, or other emerging cooling technologies. Prioritize the use of solar arrays where feasible and appropriate. ~~(HS-P8.3)~~
- Work with MCE to increase enrollment, especially in the Deep Green tier.
- Continue to enroll all eligible, non-solar-equipped County facility electricity accounts in MCE territory in the Deep Green tier.

No Waste Contra Costa (NW)

Strategy NW-1: Increase composting of organic waste.

Strategy NW-1 Actions:

- Ensure, through franchise agreements and other relationships with waste haulers, a source-separated organics collection service for all residential and commercial customers in County-controlled collection franchise areas.
- Require that new and expanded landfill operations significantly reduce GHG emissions to meet or exceed State targets to the extent feasible, and work toward carbon-neutral landfills.
- Work with wastewater providers to explore the use of organic waste as feedstock for anaerobic digesters to produce biogas that can generate electricity or fuel.
- Require local restaurants, grocery stores, and other edible food generators that handle large quantities of food to partner with food rescue organizations to divert edible food that would be otherwise disposed in landfills for distribution to those in need, in accordance with SB 1383.
- Procure compost or other products made from recovered organic waste in accordance with the County's Recovered Organic Waste Product and Recycled Paper Procurement Policy.

Strategy NW-2: Reduce waste from County operations.

Strategy NW-2 Actions:

- ~~Establish a~~ Continue source-separated organics collection service at all County-owned facilities that includes recovering food waste (scraps) and food-soiled paper.

- Conduct waste audits of County facilities, including assessing the volume and composition of all waste streams, to identify challenges with waste activities and develop educational or operational changes to address issues and reduce waste generation.
- Obtain material for capital projects from local and low-carbon sources to the greatest extent feasible, including allocating additional funds to allow for such materials, and integrate appropriate standards into the County's Environmentally Preferable Purchasing (EPP) policy.

Strategy NW-3: Increase community-wide recycling and waste minimization programs.

Strategy NW-3 Actions:

- Create a source-reduction program in partnership with regional agencies to promote rethinking, refusing, reducing, reusing, and regenerating of materials.

Strategy NW-4: Reduce emissions from landfill gas.

Strategy NW-4 Actions:

- Encourage efforts at Acme, Keller Canyon, and West Contra Costa landfills to install or enhance existing methane capture technology and associated monitoring systems with a goal of increasing the methane capture rate to the greatest extent feasible.

Reduce Water Use and Increase Drought Resilience (DR)

Strategy DR-1: Reduce indoor and outdoor water use.

Strategy DR-1 Actions:

- Require new development to reduce ~~potable~~ water consumption through use of water-efficient devices and technology, drought-tolerant landscaping strategies, and treated recycled water, where available.
- Require homes and businesses to install water-efficient fixtures at time of retrofit activities, in accordance with the California Building Standards Code.
- Continue to enforce the Model Water Efficient Landscaping Ordinance and encourage the use of native and drought-tolerant landscaping for exempt residential and commercial landscapes through partnership with local and regional water agencies and other organizations.
- Partner with water and wastewater service providers, Groundwater Sustainability Agencies, irrigation districts, and private well owners to increase participation in water conservation programs countywide. ~~(COS-P7.2)~~
- Encourage the installation of graywater and rainwater catchment systems, particularly for new construction, as feasible for wastewater infrastructure. Reduce regulatory barriers for these systems and explore creating incentives for installing these systems in new and existing buildings.
- ~~Identify~~ Evaluate opportunities for graywater use in public spaces and implement them as feasible.
- Promote the installation of composting toilets at appropriate County facilities in locations without wastewater service.

Strategy DR-2: Ensure sustainable and diverse water supplies.

Strategy DR-2 Actions:

- Work with water suppliers to expand recycled water systems as feasible, including considering additional treatment to allow for additional recycled water uses.

Clean Transportation Network (TR)

Strategy TR-1: Improve the viability of walking, biking, zero-carbon commuting, and using public transit for travel within, to, and from the county.

Strategy TR-1 Actions:

- Prioritize expansion of bicycle, micromobility, and pedestrian infrastructure (e.g., Class IV separated bikeways) to address the significant latent demand for these active transportation modes.
- Develop and promote mobility alternatives to single-occupancy vehicles, including but not limited to public transit, micromobility, carbon-free rideshare strategies, and nonmotorized modes.
- Implement programs to encourage transit use, bicycling, walking, telecommuting, and use of alternative vehicle fuels by County employees.
- Reduce single-occupant vehicle usage and VMT, by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, and other best practices), and support for public transit.
- Plan, design, construct, and maintain facilities for walking, bicycling, and rolling to serve people of all ages, abilities, and income levels, including children, seniors, families, and people with limited mobility.
- Partner with CCTA and neighboring jurisdictions to build out the countywide bicycle and pedestrian network, prioritizing completion of the Low-Stress Countywide Bicycle Network and pedestrian safety improvement projects in the County's Pedestrian Priority Areas, as described in the Countywide Bicycle and Pedestrian Plan.
- Require transportation infrastructure serving new development to be designed using best practices, contemplating existing and planned land uses, roadways, bicycle and pedestrian facilities, transit facilities, and connections to adjoining areas.
- Create connections between unincorporated communities and neighborhoods in unincorporated areas and adjacent jurisdictions to improve multimodal access to local destinations, such as schools, parks, shopping, health services, and workplaces.
- Track over time projects that add pedestrian and bicycle facilities to document the County's implementation of the County Road Improvement and Preservation Program (CRIPP); Complete Streets checklist; Vision Zero Report and Action Plan; Active Transportation Plan; and equity-focused plans, programs, and policies.
- Improve the safety and comfort of bicycle, pedestrian, and public transit facilities using best practices to encourage more people to use such facilities.

- ~~Work with CCTA to fill gaps in the countywide Low-Stress Bike Network, as outlined in the 2018 Countywide Bicycle and Pedestrian Plan. Prioritize providing access for Impacted Communities and constructing protected bicycle facilities.~~
- In collaboration with key partners, support efforts to establish or join a shared mobility program that provides access to conventional bicycle, e-bikes, and other micromobility modes, prioritizing access for low-income residents who do not have bicycles. Support efforts to establish and/or maintain bike repair programs.
- Support efforts to expand the service area and frequency of regional transit agencies, and reduced fares for students, seniors, and low-income residents on systems, including AC Transit, BART, Capitol Corridor, County Connection, Tri Delta Transit, the San Francisco Bay Ferry, and WestCAT. Encourage programs that support "last mile" transportation connection and options.
- Maximize development of jobs and affordable housing near high-quality transit service to support a jobs-housing balance.
- Maintain in place and enforce a Transportation Demand Management (TDM) Ordinance that reflects best practices, and, at a minimum, conforms to Contra Costa Transportation Authority's adopted model TDM ordinance or resolution.
- Support CCTA to develop and implement methods for tracking EV and e-bike charging and availability across jurisdictions.
- Support CCTA and regional transit agencies in providing "last mile" transportation connections and options.
- Encourage and support increased regional integration of transit systems to promote more equitable fare structures, fare integration, easier transfers, including coordinated transfers between different transit systems and reduced wait times, improved information sharing, and generally a more seamless and modern system.
- Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.

Strategy TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

Strategy TR-2 Actions:

- Require new County vehicles to be zero emission to the extent a viable vehicle is available on the market, that charging or zero-emission fueling equipment is conveniently located where the vehicle will be stored, and as required by the Advanced Clean Fleet regulations, with the goal that all County vehicles will be zero-emission by 2035.
- Continue adopting new or modified reach codes and consider future updates that exceed the California Building Standards Code as the State updates the Building Code, including the Green Building Code, to require zero-emission charging infrastructure in new multifamily and nonresidential buildings. Explore expanding it to include new single-family homes.

- Install electric vehicle charging equipment and other infrastructure needed to support the transition to a zero-emission County fleet at County facilities. Consider the appropriate locations, number, and capacity of infrastructure to facilitate the transition of the County fleet to zero-emission vehicles.
- Provide incentives for zero-emission vehicles in partnership with MCE, BAAQMD, and other agencies.
- Work with property owners and other potential partners to pursue installation of zero-emission vehicle charging stations in and near multifamily dwelling units.
- Update off-street parking ordinance to include a requirement for zero-emission vehicle charging infrastructure. Consider including incentives for developers to exceed minimum requirements (i.e., density bonus).
- Increase installation of electric vehicle charging stations for all vehicle types, including bicycles and scooters, at public facilities, emphasizing increased installation in Impacted Communities.
- In partnership with regional agencies, explore providing subsidies for households making less than the area median income to purchase or lease zero-emission vehicles and associated infrastructure.
- Pursue fees and regulatory efforts to convert transportation network company (TNC), taxi, and similar car-hire services to zero-emission vehicles.
- Explore opportunities for implementing electric vehicle sharing programs.
- Work with BAAQMD and other regional agencies to convert off-road equipment to zero-emission clean fuels.
- Work with contractors, fleet operations, logistics companies, and other operators of heavy-duty vehicles to accelerate the transition to zero-emission heavy-duty vehicles.
- In cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available, work ~~Work~~ with Public Works to pursue the use of renewable natural gas (sourced from recovered organic waste) for transportation fuel, electricity, or heating applications ~~in cases where battery-electric, hybrid-electric, and sustainably sourced hydrogen fuel-cell sources are not available~~.
- Encourage efforts to maximize EV charging during solar peak hours.
- Support implementation of the Contra Costa County Electric Vehicle Readiness Blueprint.
- Coordinate with CCTA and other local and regional agencies to implement the Contra Costa County Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements.

Resilient Communities and Natural Infrastructure (NI)

Strategy NI-4: Sequester carbon on natural and working lands in Contra Costa County

Strategy NI-4 Actions:

- Pursue implementation of recommendations from carbon sequestration feasibility study, Healthy Lands, Healthy People.
- Continue to support and work with key partners to maintain existing and establish new pilot programs for carbon sequestration on agricultural land.

- Coordinate with farming groups, ranchers, the Contra Costa Resource Conservation District, and the University of California Cooperative Extension to identify and promote varieties of feedstock, livestock, and crops that are resilient to rising temperatures and changing precipitation patterns and that increase carbon sequestration.
- Explore ways to increase carbon sequestration on County-owned ~~facilities~~ properties.
- Partner with regional landowners and agencies to establish carbon sequestration programs and incentives.
- Consider the development of carbon offset protocols and guidance ~~for use by carbon sequestration program~~ to provide technical support to applicants and County permitting staff to promote appropriate natural sequestration on natural and developed lands.
- Explore the potential for the public to support tree planting and maintenance of existing trees.
- Establish a mechanism to support expanded tree planting and maintenance activities, particularly in areas with few trees.
- Support protection, restoration, and enhancement of creeks, wetlands, marshes, sloughs, and tidelands, and emphasize the role of these features in climate change resilience, air and water quality, and wildlife habitat.
- Inventory wetlands, floodplains, marshlands, natural watercourses, riparian corridors, and adjacent lands that could potentially support climate adaptation (e.g., through flood management, filtration, or other beneficial ecosystem services) and mitigation (e.g., carbon sequestration).
- Encourage and support conservation of natural lands outside the urban limit line in the unincorporated county.
- Require that any mitigation of air quality impacts occur on-site to the extent feasible to provide the greatest benefit to ~~local~~ residents in unincorporated communities. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible or from sources that would improve air quality in an Impacted Community. If the project site is within or adjacent to an Impacted Community, require offsets or mitigation within that community unless determined infeasible by the County.

5.8.4 Environmental Impacts

5.8.4.1 METHODOLOGY

This GHG evaluation was prepared in accordance with the requirements of CEQA to determine if significant GHG impacts are likely to occur in conjunction with future development in the EIR Study Area. The GHG emissions inventory and forecast is based on data compiled for the proposed CAAP and is included as Appendix 5.8-1 to the Draft EIR. The GHG emissions inventory was compiled using the following protocols:

- **Local Government Operations Protocol.** The County operations GHG inventory relies on the *Local Government Operations Protocol* (LGOP), which was first developed in 2008 and updated in 2010. The LGOP is a tool for accounting and reporting GHG emissions of local government (municipal) operations and is

used throughout California and the United States. The LGOP includes guidance from several existing programs as well as the State's mandatory GHG reporting regulations.

- **U.S. Community Protocol.** The community-wide GHG inventory uses the *United States Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions* (U.S. Community Protocol), which was first developed in 2012 and last updated in 2019. The California Governor's Office of Planning and Research encourages cities and counties in California to follow the U.S. Community Protocol for community-wide GHG emissions.
- **Global Protocol.** The *Global Protocol for Community-Scale Greenhouse Gas Inventories* (Global Protocol) was first developed in 2014 and is intended for preparing international community-scale GHG inventories. It is largely consistent with the U.S. Community Protocol, although it contains additional guidance and resources to support a wider range of activities in other countries. This protocol is used to assess GHG emissions from sources that are not covered in the U.S. Community Protocol.

Sectors

- **On-Road Transportation** includes GHG emissions created by driving on-road vehicles in the unincorporated county, including passenger and freight vehicles, based on data from CARB.
- **Residential Energy** includes GHG emissions attributed to the use of electricity and natural gas and other home heating fuels in residential buildings, based on data from Pacific Gas & Electric Company (PG&E) and Marin Clean Energy (MCE).
- **Solid Waste** includes the GHG emissions released from trash collected in the EIR Study Area based on data from CalRecycle, as well as collective annual emissions from waste already in place at the Acme, Keller Canyon, and West Contra Costa Landfills.
- **Off-Road Equipment** includes GHG emissions from equipment that does not provide on-road transportation (excluding agricultural equipment), such as tractors for construction or equipment used for landscape maintenance.
- **Agriculture** includes GHG emissions from various agricultural activities, including agricultural equipment, crop cultivation and harvesting, and livestock operations.
- **Bay Area Rapid Transit (BART)** includes GHG emissions associated with the operation of BART for unincorporated county residents.
- **Water and Wastewater** accounts for the electricity used to transport every gallon of water or wastewater to and from unincorporated county residents and businesses as well as direct emissions resulting from processing of wastewater material.
- **Land Use and Sequestration** includes GHG emissions absorbed and stored in trees and soils on locally controlled lands as part of healthy ecosystems and released into the atmosphere from development of previously undeveloped land.

Industrial sources of emissions that require a permit from BAAQMD are not included in the community inventory. However, due to the 15/15 Rule, natural gas and electricity use data for industrial land uses may also be aggregated with the nonresidential land uses in the data provided by PG&E. Life-cycle emissions are not included in this analysis because not enough information is available, and therefore they would be speculative.

Black carbon emissions are not included in the GHG analysis because CARB does not include this short-lived climate pollutant in the State's GHG emissions inventory, treating it separately.

GHG Emissions Factors

Table 5.8-5, *Existing GHG Emission Factors,* shows the emissions factors for the baseline year. Some sectors, including agriculture and off-road emissions, are calculated using formulae or models and do not have specific emission factors.

Table 5.8-5 Existing GHG Emission Factors

Sector	$MTCO_2e$ / Unit	Baseline Year Rate	Source
PG&E electricity	kWh	0.000108	PG&E
Direct access electricity	kWh	0.000187	California Energy Commission
MCE	kWh	0.000045	MCE
Natural gas	therm	~~0.005311~~ 0.005310	US Community Protocol
Propane	gallons	~~0.005844~~ 0.005845	US Community Protocol
Kerosene	gallon	~~0.010569~~ 0.010417	US Community Protocol
Wood	MMBTU	~~0.095624~~ 0.095664	US Community Protocol
On-road vehicles	VMT	0.000408	CARB EMFAC2021
BART	passenger mile	0.000013	BART
Solid waste (municipal solid waste)	ton	0.261659	CalRecycle
Solid waste (alternative daily cover)	ton	~~0.245693~~ 0.245383	CalRecycle

Source: Draft EIR Appendix 5.8-1, proposed CAAP.

GHG Emissions Forecast

The forecast assumes that each person in the EIR Study Area will continue to contribute the same amount of GHG emissions to the community total as they did in the baseline year, so the amount of GHG emissions changes proportionally to the projected change in community demographics.

Impact 5.8-1: Implementation of the proposed project is not projected to result in emissions that would exceed the unincorporated county's GHG reduction target established under SB 32 and progress toward the State's carbon neutrality goal. [Threshold GHG-1]

Proposed General Plan

Future potential development under the proposed General Plan would contribute to global climate change through direct and indirect emissions of GHGs from land uses within the unincorporated county. However, a general plan is a long-range policy document that does not directly result in development without additional approvals. Before any development can occur in the unincorporated county, it must be analyzed for consistency with the General Plan, zoning requirements, and other applicable local and State requirements; comply with the requirements of CEQA; and obtain all necessary clearances and permits from regulatory agencies.

Horizon Year 2045 Emissions Compared to Existing Conditions

The projected development under the proposed General Plan is not linked to a specific development time frame but is assumed over a 20-year project horizon through 2045. Implementation of the proposed General Plan by the horizon year of 2045 would result in a net increase in service population of 74,969 in the EIR Study Area. Table 5.8-6, *Contra Costa County GHG Emissions Business-as-Usual Forecast*, provides a comparison of the change in GHG emissions in the EIR Study Area between the CEQA baseline (2019) and the proposed General Plan horizon year (2045) conditions.

As shown in Table 5.8-6, the increase in residential units and population associated with the proposed General Plan results in an increase in on-road transportation, residential and nonresidential building energy use, solid waste, off-road equipment, water and wastewater, and BART.

Table 5.8-6 Contra Costa County GHG Emissions Business-as-Usual Forecast

Category	Contra Costa County GHG Emissions ($MTCO_2e$/Year)		
	Existing	Year 2030	Year 2045
On-road transportation	464,040	542,020	605,080
Residential energy	191,780	217,710	259,380
Nonresidential energy	~~159,520~~ 85,390	~~167,720~~ 93,590	~~180,200~~ 106,070
Solid waste	220,760	229,450	260,490
Agriculture	36,130	34,770	33,410
Off-road equipment	54,010	69,520	76,100
Water and wastewater	4,870	5,530	6,590
BART	190	220	260
Land use and sequestration	-70,860	-67,580	-58,890
Total Community Emissions (BAU)	**~~1,060,440~~ 986,310**	**~~1,199,360~~ 1,125,230**	**~~1,362,620~~ 1,288,490**
Reductions from State Actions	NA	~~-185,520~~ -163,370	~~-483,340~~ -411,480
Total Community Emissions with State Actions	NA	**~~1,013,840~~ 961,860**	**~~879,280~~ 877,010**
SB 32 (2030) and AB 1279 (2045) Targets	NA	658,700	164,680
Achieves Target?	**NA**	**No**	**No**

Source: Draft EIR Appendix 5.8-1, 2024 CAAP ~~Update~~.
Notes: The 2045 forecast includes State actions to reduce GHG emissions. Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC ~~Fifth~~ Sixth Assessment Report (AR~~5~~6). BAU = business as usual.

Table 5.8-6 accounts for reductions from State measures that have been adopted to reduce GHG emissions, including:

- The RPS requires increases in renewable electricity supplies.
- The Clean Car Standards require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels.
- The updated Title 24 Building Energy Efficiency Standards require new buildings to achieve increased energy efficiency targets.
- The LCFS mandates reduced carbon intensity of fuels used in off-road equipment.

- The short-lived climate pollutants law (SB 1383) proposes a comprehensive strategy to reduce methane and other emissions of short-lived GHGs through regulations on dairy operations and urban landfills, including higher diversion rates of food waste from landfills.

As shown in Table 5.8-6, after accounting for reductions from State actions, projected development in 2045 that would be accommodated under the proposed General Plan would result in a net decrease of ~~181,160~~ 109,209 $MTCO_2e$ GHG emissions from existing conditions. The primary reason for the decrease in overall community-wide GHG emissions, despite an increase in service population, is a result of regulations adopted to reduce GHG emissions and turnover of California's on-road vehicle fleets. Consequently, implementation of the proposed General Plan would not result in a substantial increase in GHG emissions because there would be a decrease in emissions from existing conditions (CEQA baseline). However, without additional local GHG reduction strategies, Contra Costa County would not achieve consistency with the GHG reduction goals of AB 1279 (i.e., 85 percent reduction below 1990 levels by 2045).

Local GHG Reduction Measures

The proposed General Plan directs implementation of the proposed CAAP. The proposed CAAP draws on strategies from the 2015 CAP, with new strategies to address current State regulations and local issues of concern. Contra Costa County has implemented the following GHG reduction measures identified in the 2015 CAP to reduce GHG emissions in the EIR Study Area:

- To increase the number of carbon neutral buildings, the Board of Supervisors adopted the All-Electric Ordinance (Ordinance No. 2022-02) to require new construction of residential, detached accessory dwelling units (ADU), hotel, office, and retail building types to be all-electric. As of June 2022, 67 single-family or duplex projects and 40 ADU projects received permits in alignment with the all-electric ordinance. Current new construction and major renovations of County facilities include LED lighting and heat pump technology, and the County enrolled in MCE's Strategic Energy Management Program to increase energy efficiency in County facilities. Additionally, 42 projects within the unincorporated area utilized the Bay Area Regional Energy Network program, which provides rebates to single-family homeowners for energy efficiency improvements.
- To replace fossil fuel electricity with renewable electricity, the majority of residential accounts in the unincorporated area are enrolled in MCE for an estimated 43,690 metric tons of CO_2e reduced. Around 70 percent of the County's electricity usage is associated with MCE's Deep Green account, which provides electricity from 100 percent renewable energy.
- The County has developed a carbon sequestration feasibility study through a grant from the California Department of Conservation. The study, *Healthy Lands, Healthy People,* will identify strategies to store carbon in various land uses across the county, such as agriculture, parks and open space, conservation lands, and towns and cities (Contra Costa 2022a).
- The County has also enhanced the accessibility and connectivity of active transportation options with the adoption of the Active Transportation Plan and 2022 Capital Road Improvement & Preservation Program (CRIPP) (Contra Costa 2022b). The CRIPP lays out funded transportation projects in the county that provide safe, efficient, and reliable transportation. Currently, there are 33 actively funded projects.

- The County is working to implement projects at over 25 sites to facilitate the transition to an all-electric County fleet. MCE has also established numerous EV charging ports over the years, including 33 EV charging port installations in year 2022.

The proposed CAAP identifies GHG emissions reductions targets for the EIR Study Area that would ensure consistency with the State GHG reduction goals of AB 1279 and substantial progress toward the State's carbon neutrality goals. In addition, the proposed CAAP includes additional GHG reduction measures to achieve the State's carbon neutrality goals identified in the 2022 Scoping Plan. Table 5.8-7, *Proposed CAAP Local GHG Reduction Strategies*, shows the local GHG reduction measures and reductions associated with the local measures in the proposed CAAP in 2045 that would help achieve those reductions.

Table 5.8-7 Proposed CAAP Local GHG Reduction Strategies

Local GHG Reduction Strategies	2045 GHG Reductions (MTCO2e)
BE-1 Construct new low-carbon or carbon neutral buildings.	~~10,710~~ 10,970
BE-2 Convert existing buildings to carbon-neutral and low-carbon buildings.	~~177,830~~ 156,150
NW-1 Compost Organic Waste.	4,000
NW-2 Reduce County operations waste.	1,620
NW-3 Recycling and waste minimization.	2,530
NW-4 Reduce landfill gas emissions.	61,410
DR-1 Reduce indoor and outdoor water use.	1,440
TR-1 Improve the viability of walking, biking, zero-carbon commuting, and public transit.	40,370
TR-2 Increase use of ZEVs.	~~332,850~~ 343,890
NI-4 Sequester carbon.	88,910
Total GHG Reductions from Proposed CAAP Strategies	**~~721,670~~ 711,290**

Source: Draft EIR Appendix 5.8-1, proposed CAAP.
Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC's AR~~5~~6.

Table 5.8-8, *Contra Costa County 2045 GHG Emissions Reduction Target Analysis with the Proposed CAAP*, shows that with the additional local measures identified in the proposed CAAP, the unincorporated county would achieve the AB 1279 GHG reduction targets for year 2045. With implementation of the proposed CAAP, Contra Costa County would achieve an 85-percent decrease in GHG emissions in the unincorporated areas of the county by 2045 from 1990 levels, and would make substantial progress toward the State's carbon neutrality goals. Therefore, the proposed General Plan, which includes implementation of the proposed CAAP, would not result in a substantial increase in the magnitude of GHG emissions and would be consistent with the GHG reduction goals identified under AB 1279.

Table 5.8-8 Contra Costa County 2045 GHG Emissions Reduction Target Analysis with the Proposed CAAP

Scenario	2045 GHG Emissions ($MTCO_2e$/Year)
Total Community Emissions (BAU)	~~**1,362,620**~~ **1,288,490**
GHG Reductions from State Actions	~~-483,340~~ -411,480
GHG Reductions from Existing Local Actions	-2,590
GHG Reductions from Proposed CAAP GHG Reduction Strategies	~~-721,670~~ -711,290
Total Community Emissions with State & Local Actions & ~~Local~~ CAAP GHG Reduction Strategies	~~**157,610**~~ **163,130**
AB 1279 Target	164,680
Achieves Target	**Yes**

Source: Draft EIR Appendix 5.8-1, proposed CAAP.
Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC's AR5~~5~~6.

Additionally, implementation of the following proposed General Plan policies and actions would also minimize energy and mobile-source emissions in the unincorporated areas.

- **Policy LU-P3.3:** Encourage extremely high-density, mixed-use development that combines employment, housing, and services near major transit facilities. Such development should be planned and designed to encourage walking, micromobility, and transit use; shorter commutes; and reduced dependency on single-occupant vehicles.
- **Policy LU-P3.7:** Welcome development that supports the countywide goal of reducing VMT, thus reducing greenhouse gas emissions, to meet climate change targets. Require projects that do not support the County's VMT-reduction goals to incorporate necessary changes (e.g., design, land use mix) to ensure they support those goals.
- **Policy TR-P1.3:** Ensure emerging transportation technologies and travel options, such as autonomous and ZEVs and transportation network companies, support the County's goals for reducing emissions, adapting to climate change, improving public safety, and increasing equitable mobility.
- **Policy TR-P1.4:** Reduce single-occupant vehicle usage and VMT by significantly enhancing the availability and safety of other travel modes through infrastructure investment, policy support (Vision Zero, ~~at a minimum using strategies defined in the~~ TDM Ordinance, and other best practices), and support for public transit.
- **Policy TR-P1.11:** Support transitioning all on-road vehicles, including personal vehicles and business, government, and public transit fleets, to electric power from renewable sources or other ~~zero-~~emission-free fuels.
- **Policy TR-P1.12:** Continue to improve ZEV ~~(including electric bicycle)~~ charging/fueling infrastructure within new development and public rights-of-way, incorporating new technologies whenever possible.
- **Policy TR-P1.13:** Require designs for new parking facilities to incorporate ZEV charging/fueling infrastructure and maximize opportunities for adaptive reuse.
- **Action TR-A1.4:** Implement programs to encourage transit use, bicycling, walking, telecommuting, and use of alternative vehicle fuels by County employees.

- **Action TR-A1.11:** Coordinate with CCTA and other local and regional agencies to implement the Contra Costa Electric Vehicle Readiness Blueprint and related policies and apply best practices in ZEV charging/fueling infrastructure requirements.
- **Action TR-A1.12:** Update the County Ordinance Code as necessary to support advances in ZEV charging/fueling infrastructure~~, including for medium- and heavy-duty vehicles~~.
- **Policy COS-P14.1:** Implement Climate Action and Adaptation Plan strategies to improve energy efficiency and conservation, promote carbon-free energy sources, and reduce energy-related GHG emissions.

Individual development projects facilitated by the proposed General Plan would experience emission reductions from implementation of State measures and strategies to reduce statewide GHG emissions, such as the LCFS mandate or RPS requirements. The above proposed General Plan policies and actions would serve to further support potential GHG reductions for individual development projects facilitated by the proposed General Plan. Furthermore, individual projects would be required to demonstrate consistency with the proposed CAAP by preparing a CAAP Consistency Checklist, identify specific GHG emissions reduction strategies from the proposed CAAP that are applicable to the project, and demonstrate how the project will implement these strategies to ensure that the project's emissions are consistent with the community-wide emissions forecast contained herein.

In summary, implementation of the proposed General Plan would result in a net decrease in emissions from existing conditions. Additionally, with implementation of the proposed CAAP, emissions from existing and planned development in the EIR Study Area would achieve the GHG reduction goals identified under AB 1279 for year 2045, which is consistent with the thresholds identified by BAAQMD in their CEQA Guidelines. Therefore, growth within the county associated with the proposed General Plan would not have a cumulatively considerable impact on GHG emissions and this impact would be less than significant.

Proposed CAAP

The proposed CAAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. Because there is no specific land use component associated with the proposed CAAP, its implementation would not directly result in the generation of GHG emissions.

In addition, the proposed General Plan directs implementation of the proposed CAAP, recognizing that the County's climate action planning efforts must be updated more regularly to be responsive to the changing regulations, guidance, technology, best practices, and science. For instance, the proposed CAAP transportation strategies that reduce VMT (e.g., Strategy TR-1) would result in a reduction in GHG emissions from the transportation sector. Likewise, the proposed CAAP also promotes building energy-efficiency improvements (e.g., Strategies BE-1 and BE-2), increasing water efficiency (e.g., Strategy DR-1 and DR-2) and reducing energy demand through renewable energy sources (e.g., Strategy BE-3) to minimize energy sector emissions. Furthermore, the proposed CAAP supports the East Bay Energy Watch, which is a partnership between PG&E and local governments in the East Bay region to conduct energy efficiency outreach to residents and businesses, retrofit existing government facilities to improve energy efficiency, and provide training to agency staff. Thus,

implementation of the proposed CAAP would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.8-1 would be less than significant.

Mitigation Measures

With implementation of the proposed CAAP, no mitigation measures would be required.

Level of Significance After Mitigation: Impact 5.8-1 would be less than significant.

Impact 5.8-2: Implementation of the proposed project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions. [Threshold GHG-2])

Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan and ABAG's/MTC's *Plan Bay Area 2050*. A consistency analysis with these plans is presented below.

Proposed General Plan

CARB Scoping Plan

The CARB Scoping Plan is applicable to State agencies but is not directly applicable to cities, counties, and individual projects (i.e., the Scoping Plan does not require local jurisdictions to adopt its policies, programs, or regulations to reduce GHG emissions). However, new regulations adopted by the State agencies from the Scoping Plan result in GHG emissions reductions at the local level. So local jurisdictions benefit from reductions in transportation emissions rates, increases in water efficiency in the building and landscape codes, and other statewide actions that affect a local jurisdiction's emissions inventory from the top down. Statewide strategies to reduce GHG emissions include the LCFS and changes in the CAFE standards. Additionally, local jurisdictions are encouraged to prepare local GHG reduction plans to align local GHG reductions with the State GHG reduction targets identified in the Scoping Plan.

Development projects under the proposed General Plan would be required to adhere to the programs and regulations identified by the Scoping Plan and implemented by State, regional, and local agencies to achieve the statewide GHG reduction goals of AB 32, SB 32, and AB 1279. Future development projects would be required to comply with these State GHG emissions reduction measures because they are statewide strategies. For example, new buildings under the proposed General Plan would be required to meet the CALGreen and Building Energy Efficiency Standards in effect at the time when applying for building permits. Furthermore, the proposed General Plan includes policies that minimize GHG emissions and therefore help achieve GHG reduction goals.

Moreover, the proposed General Plan directs implementation of the proposed CAAP. As described under Impact 5.8-2, the proposed CAAP aligns the GHG reduction goals for the unincorporated areas for existing and new development with AB 1279 and the carbon neutrality goals identified in the 2022 Scoping Plan. Therefore, the proposed General Plan would result in a net benefit because implementation of the proposed

CAAP would align future development in the county with the policies and objectives identified by CARB. Implementation of the proposed General Plan would not obstruct implementation of the CARB Scoping Plan, and impacts would be less than significant.

ABAG/MTC's Plan Bay Area

Plan Bay Area 2050 is the Bay Area's regional transportation plan to achieve the passenger vehicle emissions reductions identified under SB 375. Plan Bay Area 2050 is the current SCS for the Bay Area, adopted October 21, 2021 (ABAG/MTC 2021). In addition to significant transit and roadway performance investments to encourage focused growth, Plan Bay Area 2050 directs funding to neighborhood active transportation and complete streets projects, climate initiatives, lifeline transportation and access initiatives, safety programs, and PDA planning (ABAG/MTC 2021). In Contra Costa County, a number of PDAs and Transit Priority Areas have been designated in the EIR Study Area, as shown on Figure 5.16-1, *Priority Development Areas and Transit Priority Areas*, in Section 5.16 of this Draft EIR (MTC 2023a, MTC 2023b).

While Plan Bay Area 2050 does not override local land use control, it provides guidance to the local jurisdictions such as Contra Costa County on how future development can be consistent with the State's GHG and VMT reduction goals. This includes constructing more infill development in downtowns and centers in close proximity to jobs and services.

As further discussed in Section 5.14, *Population and Housing*, the proposed General Plan would exceed current regional projections for housing and population. However, it is important to note that regional projections used were from Play Bay Area 2040, which does not differentiate between Contra Costa County as a whole and the unincorporated portion of the county. In addition, the proposed General Plan includes policies and actions that would limit development in certain areas and control the growth within the EIR Study Area. All potential future development would be required to comply with any required site-specific infrastructure improvements and to pay any project-specific impact fees.

The proposed Land Use Element includes policies to encourage high-density, mixed-use development to create shorter commutes and reduced dependency on single-occupant vehicles (see Land Use and Planning Impact 5.11-2). The proposed Growth Management Element also establishes goals, policies, and actions intended to manage and mitigate impacts of future growth within the unincorporated county. Furthermore, future development projects that could result in significant VMT impacts are required to include Transportation Demand Management (TDM) strategies and physical measures to reduce VMT (see Section 5.16, *Transportation*).

Overall, the proposed General Plan would be consistent with the goals of Plan Bay Area 2050 in concentrating new development in locations where there is existing infrastructure and transit. Therefore, the proposed General Plan would not conflict with the land use concept plan in Plan Bay Area 2050 and impacts would be less than significant.

Proposed CAAP

The proposed CAAP is a policy document that provides strategies for reducing GHG emissions and adapting to changing climate conditions; it does not involve any land use changes that would result in indirect growth or change in building density or intensity. Furthermore, as discussed under Impact Discussion 5.8-1,

implementation of the proposed CAAP would result in beneficial GHG emissions impacts by contributing to reducing VMT, increasing energy and water use efficiency, and increasing renewable energy use. Therefore, the proposed CAAP would be complementary to statewide and regional plans to reduce GHG and would not interfere with or obstruct the implementation of the CARB Scoping Plan or Plan Bay Area 2050. Implementation of the proposed CAAP would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions and impacts would be less than significant.

Level of Significance Before Mitigation: Impact 5.8-2 would be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation: Impact 5.8-2 would be less than significant.

5.8.5 Cumulative Impacts

Project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Therefore, impacts identified under Impact 5.8-1 and Impact 5.8-2 are not project-specific impacts to global warming, but the proposed project's contribution to this cumulative impact. As discussed above, the EIR Study Area would experience a reduction in GHG emissions from existing conditions despite the anticipated population and employment growth. Additionally, with implementation of the proposed CAAP, Contra Costa County would achieve the local GHG reduction targets that align with SB 32 and AB 1279 and substantial progress with the State's carbon neutrality targets. Consequently, the proposed project's cumulative contribution to global climate change impacts are less than cumulatively considerable.

5.8.6 Level of Significance Before Mitigation

After implementation of regulatory requirements and standard conditions of approval, all impacts would be less than significant.

5.8.7 Mitigation Measures

No mitigation measures are required.

5.8.8 Level of Significance After Mitigation

Impacts would be less than significant.

5.8.9 References

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APPENDIX F:
REVISED APPENDIX 5.8-1, *CLIMATE ACTION AND ADAPTATION PLAN* OF THE DEIR

GHG Inventory

The following sections present the results of the community-wide and County operations GHG inventories for the years 2005, 2013, 2017, and 2019.

Total community-wide emissions declined 24~~18~~ percent from 2005 to 2019.

COMMUNITY INVENTORY

The community-wide GHG inventory assessed GHG emissions from the following 11 categories of activities, known as sectors.



- **Transportation** is GHG emissions created by driving on-road vehicles in the unincorporated county, including passenger and freight vehicles.



- **Residential energy** is GHG emissions attributed to the use of electricity, natural gas, and other home heating fuels in residential buildings.



- **Nonresidential energy** is GHG emissions attributed to the use of electricity and natural gas in nonresidential buildings.



- **Solid waste** is the GHG emissions released from trash collected in the unincorporated areas of Contra Costa County, as well as collective annual emissions from waste already in place at the Acme, Keller Canyon, and West Contra Costa Landfills.



- **Agriculture** is GHG emissions from various agricultural activities in the unincorporated county, including agricultural equipment, crop cultivation and harvesting, fertilizer application, and livestock operations.



- **Off-road equipment** is GHG emissions from equipment that does not provide on-road transportation (excluding agricultural equipment), such as tractors for construction, ~~or~~ equipment used for landscape

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maintenance, commercial and industrial equipment, and outdoor recreational equipment.

- **Water and wastewater** accounts for the electricity used to transport and process water and wastewater used or generated by unincorporated county residents and businesses, as well as direct emissions resulting from wastewater treatment activities.



- **Bay Area Rapid Transit (BART)** is GHG emissions associated with the operation of BART for unincorporated county residents.



- **Land use and sequestration** is GHG emissions absorbed and stored in trees and soils on locally controlled lands as part of healthy ecosystems and released into the atmosphere from development of previously undeveloped land.



- **Stationary sources** are emissions from fuel use at major industrial facilities, permitted by State and regional air quality authorities. These emissions are informational and are not counted as part of the community total.



- **Wildfire** includes emissions released as a result of wildfires. These emissions are informational and are not counted as part of the community total.



- **Direct access electricity** is electricity purchased directly from an Electric Service Provider (ESP) rather than an investor-owned utility company or Community Choice Energy provider such as MCE, generally to power large industrial, commercial, and institutional facilities.



~~The community-wide emissions inventory also records emissions released via wildfire and stationary sources such as oil refineries.~~ Emissions from stationary sources, wildfire, and direct access electricity ~~These emissions~~ are reported for informational purposes but are not formally counted as part of the unincorporated county's GHG emissions.

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Contra Costa County is home to large industrial facilities whose operations have generated significant GHG emissions and/or products that create GHGs, such as gasoline for internal combustion engines. Most of those facilities were constructed before land use permits from the County were required. If these facilities apply for new land use permits, the County can impose new operational requirements in some circumstances. An example of this is applications the County received in 2020 from two refineries to process renewable fuels.

There are several factors outside of the County's control that influence the operations and related emissions and energy use at these facilities. The County has therefore elected to exclude the direct emissions and energy use at these facilities from consideration of the County's GHG reduction goals for the following reasons:

- These facilities are regulated primarily through the Federal Energy Regulatory Commission and the California Energy Commission (CEC) and are subject to air quality and emissions standards set forth by the USEPA, CARB, and BAAQMD.
- The energy used at some of these facilities fluctuates from year to year, depending on the demand for resources and the availability of other electricity-generating sources, such as hydropower or renewable resources. This makes it difficult to accurately forecast the energy use at these facilities.
- The County has limited jurisdictional authority to reduce GHG emissions from these sources because they are subject to cap-and-trade regulations set forth by CARB.
- The approach to excluding energy from sources that are outside of the County's jurisdictional control is consistent with the *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*.
- The resultant jurisdictional inventory more accurately reflects the energy use from nonresidential customers in unincorporated Contra Costa County and allows the County to focus on actions that are within its control.

Large industrial customers frequently purchase direct access electricity. Direct access customers can purchase electricity from any Electric Service Provider (ESP) operating in the state. Different EPSs will rely on different power sources with different proportions of fossil and renewable energy to produce electricity. The California Public Utilities Commission (CPUC) regulates the sale of direct access electricity in California, and the identities of direct access customers and the specific ESPs from which they purchase electricity are not made

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available to the public. Given the County's limited ability to monitor and regulate the sale and use of direct access electricity, as well as historical inconsistences in how direct access electricity use is reported, direct access emissions are reported for informational purposes only.

Table 3 and **Figure 7** show the community-wide GHG emissions for the unincorporated county during the four inventory years. Total community-wide emissions declined 18 percent from 2005 to 2019. **Table 4** shows the proportion of GHG emissions from each sector for the unincorporated county for the four inventory years.

TABLE 3. ABSOLUTE ANNUAL GHG EMISSIONS, 2005 TO 2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Transportation (excluding BART)	628,200	651,130	571,650	464,040	-26%
Energy - Residential	294,930	280,870	212,420	191,780	-35%
Energy - Nonresidential	118,740	125,350	98,850[1]	85,390	-28%
Solid waste	243,940	224,570	223,100	220,760	-10%
Agriculture	33,350	39,300	44,880	36,130	8%
Off-road equipment	34,160	36,290	42,840	54,010	58%
Water and wastewater	8,080	7,400	4,400	4,870	-40%
BART	1,040	1,320	1,440	190	-82%
Land use and sequestration	-70,860	-70,860	-70,860	-70,860	0%
Total Annual $MTCO_2e$	**1,291,580**	**1,295,370**	**1,128,720**	**986,310**	**-24%**
Informational Items					
Stationary sources	13,983,030	11,956,000	11,232,290	10,867,670	-22%
Wildfire	14,270	66,080	0[2]	10,100	N/A[3]
Direct access electricity	0[4]	0[4]	0[4]	74,130	N/A

Note: All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

[1] Estimates of nonresidential electricity use in 2013 are used in 2017 to account for a lack of available data in 2017.

[2] No wildfires were recorded in the unincorporated county in 2017.

[3] Overall change between 2005 and 2019 for wildfire is not calculated because of the high degree of year-to-year variability.

[4] PG&E did not provide direct access electricity use data in these years.

The transportation sector has consistently been the largest source of GHG emissions in the unincorporated county, accounting for between 47~~6~~ and 51~~3~~ percent of total community-wide GHG emissions (excluding informational items). Residential and nonresidential energy combined are the second-largest source of emissions, comprising 28 to 32 percent of community-wide emissions. Of the energy-related emissions, approximately 70 percent come from residential buildings and 30 from nonresidential buildings. In both building types, most emissions are associated with natural gas use. Solid waste is the third-largest source of emissions, accounting for between 17 and 22 percent of the community-wide total. ~~Residential energy and solid waste are the second- and third-largest sources of GHG emissions, followed by nonresidential energy.~~ Agriculture GHG emissions account for between 3 and 4 percent, and off-road equipment accounts for between 3 and 5 percent. GHG emissions from the water and wastewater and BART sectors are each 1 percent or less.

The sectors that experienced the largest decrease in annual GHG emissions between 2005 and 2019 were BART (82 percent), water and wastewater (40 percent), residential energy (35 percent), nonresidential energy (28 percent), and transportation (26 percent). Collectively, emissions from energy use declined 33 percent over this time period. ~~Emissions reductions also occurred in the solid waste sector (10 percent), and the nonresidential energy sector (8 percent).~~ These changes are primarily due to an increase in renewable and carbon-free electricity, the County joining MCE in 2017 (which provides more electricity from renewable and carbon-free sources than PG&E), and better resource-efficiency practices by community members. Emissions reductions also occurred in the solid waste sector (10 percent). Three~~wo~~ sectors nonresidential energy, off-road equipment, and agriculture saw increases in their emissions from 2005 to 2019.

> The transportation sector has consistently been the largest source of GHG emissions in unincorporated Contra Costa County. The sectors that experienced the largest decrease in annual GHG emissions between 2005 and 2019 were BART, water and wastewater, residential energy, and transportation.

Between 2005 and 2019, offroad emissions increased by 58 percent. Increases in offroad emissions are due to increased emissions from agricultural and other types of commercial and industrial equipment. Agricultural emissions increased due to changes in crop activity and livestock population. Detailed summaries of changes in GHG emissions by sector appear in **Appendix B.**

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Per-person GHG emissions

Along with the "absolute" GHG emission levels discussed previously, the project team assessed the per-person GHG emissions from the unincorporated county. The team calculates per-person GHG emissions by taking the absolute GHG emissions in **Table 3** and dividing them by the number of residents in the unincorporated county for that inventory year. **Table 5** and **Figure 8** show the per-person emissions for the inventory years for the unincorporated county.

Overall, per-person emissions declined 32~~27~~ percent from 2005 to 2019. Because the population of the unincorporated county grew during this time, most sectors saw their per-person emissions decline. Even for sectors that had increases in their absolute emissions, such as Agriculture, population growth resulted in a decline in per-person emissions. Only per-capita off-road equipment emissions increased between 2005 and 2019. ~~The two sectors that saw an increase in per-person emissions were Off-road equipment, and Nonresidential energy, although the per-person emissions grew by 53 percent from 2005 to 2019 compared to a 73 percent increase in absolute emissions.~~

TABLE 5. PER-PERSON GHG EMISSIONS, 2005 TO 2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Population					
Residents	154,270	165,700	174,110	174,150	13%
Emissions ($MTCO_2e$ per-person)					
Transportation	4.07	3.93	3.28	2.66	-35%
Energy - Residential	1.91	1.70	1.22	1.10	-42%
Energy - Nonresidential	0.77	0.76	0.57	0.49	-36%
Solid waste	1.58	1.36	1.28	1.27	-20%
Agriculture	0.22	0.24	0.26	0.21	-4%
Off-road equipment	0.22	0.22	0.25	0.31	53%
Water and wastewater	0.05	0.04	0.03	0.03	-47%
BART	0.01	0.01	0.01	Less than 0.01	-84%
Land use and sequestration	-0.46	-0.43	-0.41	-0.41	-11%

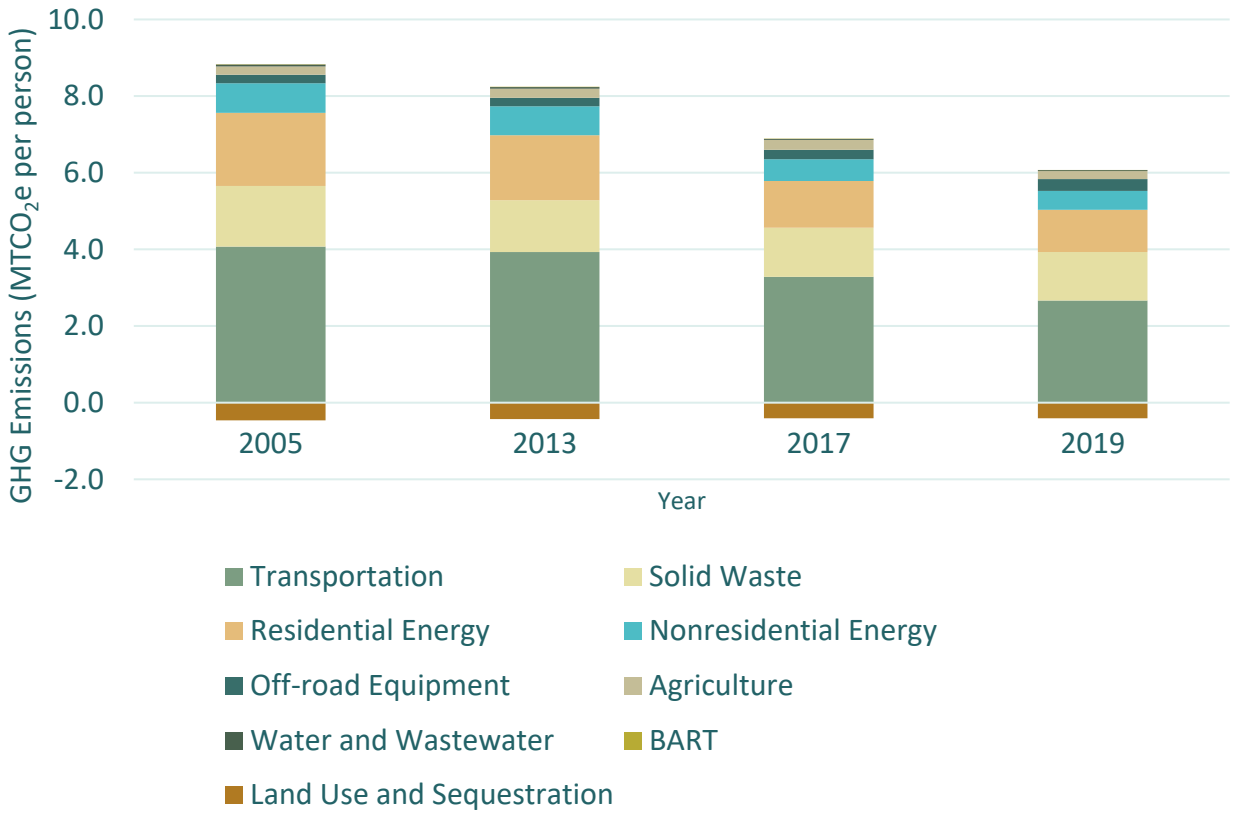
Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Total Annual ($MTCO_2e$ per-person)	8.37	7.82	6.48	5.66	-32%
Informational Items					
Stationary Sources	90.64	72.15	64.51	62.40	-31%
Wildfire	0.09	0.40	0.00	0.06	N/A[1]*
Direct access electricity	0.00	0.00	0.00	0.44	N/A[2]**

Note: All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

[1] Overall change between 2005 and 2019 is not calculated because of the high degree of year-to-year variability.

[2] Overall change between 2005 and 2019 is not calculated because of limited availability of direct access electricity use data between 2005 and 2017.

FIGURE 8. PER-PERSON ANNUAL GHG EMISSIONS BY SECTOR, 2005 TO 2019



GHG Forecast

The following sections present the results of the community-wide and County operations GHG emissions forecasts for the years 2030 and 2045. For a detailed description of GHG forecast methods and assumptions, see **Appendix B**.

ABSOLUTE BUSINESS-AS-USUAL GHG EMISSIONS FORECAST

Table 7 and **Figure 11** show an estimate of unincorporated Contra Costa County's projected future GHG emissions if no further action is taken at the state, regional, or local level to reduce emissions, relative to the 2019 inventory. These projections are obtained by applying projected changes in community population to resource use and transportation behavior recorded in 2019. As such, these projections do not account for any potential changes in transportation or resource use directly resulting from the COVID-19 pandemic, the long-term effects of which are not currently known.

Most sectors show an increase in GHG emissions due to the growing population. Agricultural emissions decrease because the amount of land used for agricultural purposes is projected to decline. Although the land use and sequestration sector is expected to remain a net carbon sink (negative emissions), the amount of emissions sequestered (removed from the atmosphere) by the activities in this sector are projected to decline. This is due to anticipated development of currently undeveloped land, removing the potential for this land to sequester, or store, carbon. Sequestration in forested and urbanized areas is projected to increase slightly.

TABLE 7. ABSOLUTE BUSINESS-AS-USUAL GHG EMISSIONS FORECAST, 2019 TO 2045

Sector	2019	2030	2045	Percentage Change, 2019–2045
Transportation	464,040	542,020	605,080	30%
Energy - Residential	191,780	217,710	259,380	35%
Energy - Nonresidential	85,590	93,590	106,070	24%
Solid waste	220,760	229,450	260,490	18%
Agriculture	36,130	34,770	33,410	-8%
Off-road equipment	54,010	69,520	76,100	41%
Water and wastewater	4,870	5,530	6,590	35%
BART	190	220	260	37%
Land use and sequestration	-70,860	-67,580	-58,890	-17%
Total Annual $MTCO_2e$	986,310	1,125,230	1,288,490	31%

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4. GREENHOUSE GAS EMISSION REDUCTION STRATEGY



Briones Valley. Photo credit: Stephen Joseph.

GHG Emissions Reduction Goals

A key part of any CAAP is one or more goals for future GHG emissions levels. These goals may be "firm" levels of GHG emission reductions supported by State regulations and local commitments (also called regulatory goals) or aspirations that go beyond adopted minimums and represent a higher level of GHG emission reductions that communities can strive toward. The 2024 CAAP includes GHG emission reduction goals for 2030 and 2045.

As discussed in **Chapter 2**, California has two statewide regulatory goals for reduction of GHGs:

- Reduce GHG emissions to 40 percent below 1990 levels by 2030. This goal was codified into law by SB 32.
- Reduce emissions to 85 percent below 1990 levels and achieve net carbon neutrality by 2045. This is the goal codified by AB 1279.

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The 2022 Scoping Plan recommends that local governments support statewide efforts to achieve net carbon neutrality by achieving an 85 percent reduction in GHG emissions compared to 1990 by 2045. The 2022 Scoping Plan also removes specific goals for per-person emissions reductions that appeared in previous versions. The BAAQMD 2020 CEQA Guidelines,[13] *CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans*, require that local climate action plans such as the 2024 CAAP be consistent with these State-level goals.

CONTRA COSTA COUNTY'S GHG EMISSION REDUCTION GOALS

Local GHG emissions reduction efforts, such as this 2024 CAAP, may select any GHG emissions reduction goals that are appropriate for unincorporated Contra Costa County. However, to comply with State and regional guidelines for CEQA, the GHG emission reduction goals in the 2024 CAAP should be broadly consistent with the State-level goals. Additionally, the 2045 General Plan informs the County's land use decisions and related policies out to 2045; therefore, consistency with the State's 2045 goal also aligns with the General Plan's horizon year. Given these considerations, the GHG emissions reduction goals for Contra Costa County are:

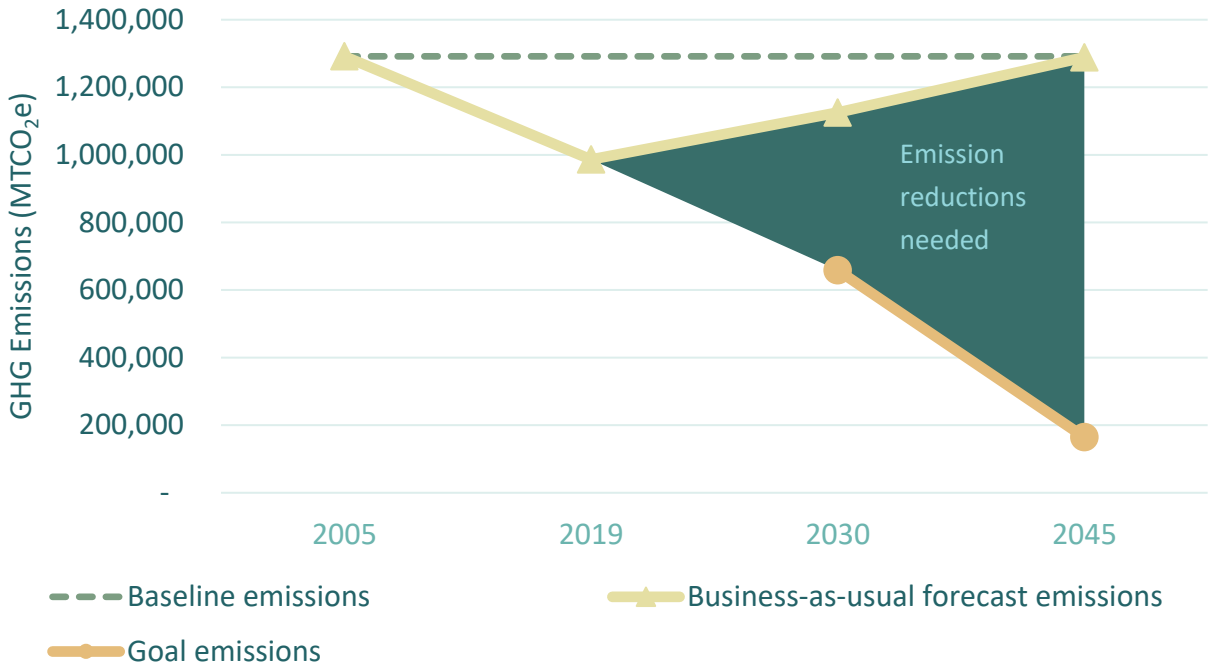
- Reduce GHG emissions to 658,700 $MTCO_2e$ by 2030.
- Reduce GHG emissions to 164,680 $MTCO_2e$ by 2045.

Table 8 and **Figure 12** show these emission goals and how they compare to the County's projected business-as-usual GHG emissions in **Chapter 3**.

TABLE 8. CONTRA COSTA COUNTY BUSINESS-AS-USUAL GHG EMISSIONS FORECAST AND EMISSION GOALS, 2019 TO 2045

	2019	2030	2045
Business-as-usual forecast GHG emissions	986,310 $MTCO_2e$	1,125,230 $MTCO_2e$	1,288,490 $MTCO_2e$
Goal	N/A	658,700 $MTCO_2e$	164,680 $MTCO_2e$
GHG emissions to be reduced	N/A	466,530 $MTCO_2e$	1,123,810 $MTCO_2e$

FIGURE 12. BUSINESS-AS-USUAL FORECAST GHG EMISSIONS AND REDUCTION GOALS



Existing and Planned GHG Emissions Reduction Efforts

The County must substantially reduce its GHG emissions to achieve its goals. Fortunately, the State of California and regional and local agencies ~~there are~~ already have several efforts in place or planned ~~at the State and regional level~~ that are expected to reduce GHG emissions in the unincorporated areas of Contra Costa County without the County taking additional action. The County can receive "credit" for the level of GHG emissions reduced locally by these existing and planned efforts.

STATE REDUCTION EFFORTS

California has adopted and committed to implementing policies to decrease GHG emission levels statewide, including from several of the major GHG emission sources in the unincorporated areas of Contra Costa County. Many of these policies are identified in the 2008 Scoping Plan and have been revised and expanded by successive updates.

The CARB Scoping Plan and related documents lay out several State-led policies to reduce GHG emissions, but six policies have a direct and apparent GHG emission reduction benefit to unincorporated Contra Costa County: tThe Renewables Portfolio Standard (RPS), Clean Car Standards, Title 24 building energy efficiency standards, the Low Carbon Fuel Standard (LCFS), the Short-Lived Climate Pollutant Reduction Strategy, and Renewable Natural Gas. An in-depth description of these initiatives and their projected GHG emission savings are provided in **Appendix B**. Because these are State-led programs, Contra Costa County will not be involved in their implementation or regulation.

1. **The Renewables Portfolio Standard** requires increases in renewable and carbon-free electricity supplies.
2. **The Clean Car Standards** require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels.
3. The updated **Title 24 building energy efficiency standards** require new buildings to achieve increased energy-efficiency goals, and in some cases to install rooftop solar panels. The latest version of these standards went into effect January 1, 2023.
4. **The Low Carbon Fuel Standard** mandates reduced carbon intensity of fuels used in off-road equipment.
5. **The Short-Lived Climate Pollutant Reduction Strategy**, also known as SB 1383, requires that jurisdictions provide organic waste collection services, recover edible food, and keep most organic waste out of landfills.
6. **Renewable Natural Gas** assumes that biomethane and renewable hydrogen fuels will be blended into the fossil gas pipeline and that, in the 2030s, dedicated hydrogen pipelines will be constructed to serve certain industrial clusters.

The project team estimated GHG savings from the Clean Car Standards using State modeling tools released in 2021. These models do not consider newer State regulations to accelerate the transition to zero-emission vehicles, and so they do not reflect all the expected GHG reductions from zero-emission vehicles in Contra Costa County. The remaining savings are covered in Strategy TR-2, which is discussed later in this chapter.

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REGIONAL AND LOCAL REDUCTION EFFORTS

In addition to State actions, the County's default electricity provider, MCE, has also taken action to reduce the GHG emissions from the electricity it supplies to unincorporated Contra Costa County community members, beyond the minimum required by the RPS. In 2019, MCE electricity was approximately 60 percent renewable and 90 percent carbon-free. In future years, MCE will work to source 95 percent of its electricity from carbon-free sources. When quantifying the emissions impacts from electricity procurement policies, GHG emissions reductions from RPS are considered first. The County also enacted an all-electric reach code (suspended in February 2024, as discussed in **Chapter 1**), which required many types of new buildings to not use natural gas. The reductions from MCE clean energy procurement and the all-electric reach code shown in **Table 9** represent savings obtained after the effects of the RPS have been considered. **Table 9** shows the GHG emissions reduction potential from the State-level efforts, ~~and~~ MCE's energy procurement plans and projected levels of adoption of MCE Deep Green, and the all-electric reach code. ~~as well as~~This table also shows how unincorporated Contra Costa County's GHG emission levels with these reductions compares to the goals discussed previously.

TABLE 9. GHG EMISSION REDUCTIONS FROM EXISTING AND PLANNED STATE, REGIONAL, AND LOCAL ACTIONS, 2019 TO 2045

	2019 $MTCO_2E$	2030 $MTCO_2E$	2045 $MTCO_2E$
Forecast emissions without existing and planned actions	986,310	1,125,230	1,288,490
Reductions from RPS	-	-3,640	-41,270
Reductions from Clean Car standards	-	-110,250	-214,120
Reductions from Title 24	-	-9,880	-31,600
Reductions from LCFS (off-road only) *	-	740	7,430
Reductions from SB 1383		-21,880	-53,870
Reductions from renewable natural gas	-	-18,460	-78,050
Reductions from MCE clean energy procurement	-	-1,240	-
Reductions from all-electric reach code (suspended February 2024)	-	-3,150	-2,590
Reductions from all existing and planned state, regional, and local actions		-188,740	-488,200
Remaining emissions with existing and planned state, regional, and local actions	986,310	957,470	874,420

*Due to how the off-road equipment emissions from LCFS are calculated, the results show a minor increase in emissions from this sector.

Achieving Our Goals

With the reductions currently projected from the 2024 CAAP strategies, GHG emissions for the unincorporated areas of Contra Costa County are expected to fall to 1.47 $MTCO_2e$ per person. This is 55 percent below GHG emissions without the 2024 CAP.

County staff developed a set of 11 GHG emission reduction strategies and assessed the GHG emission reduction potential of these strategies, given the project team's reasonable understanding of available resources and what seemed appropriate for the unincorporated area. **Appendix B** provides detailed information about the GHG emission reduction potential of these strategies.

These GHG emission reduction potentials are intended to be a starting point. They are based on the best available information, the experience and expertise of County staff, and known resources and capabilities. It is possible to achieve greater reductions if there is more confidence in higher levels of participation or development of additional programs. **Table 10** shows the expected GHG emission levels with these strategies enacted,

TABLE 10. GHG EMISSIONS WITH 2024 CAAP DRAFT REDUCTION STRATEGIES, 2019 TO 2045

SECTOR	2019	2030	2045	PERCENTAGE CHANGE, 2019–2045
Transportation	464,040	277,450	60,970	-87%
Energy - Residential	191,780	141,720	24,180	-87%
Energy - Nonresidential	85,390	71,500	24,540	-71%
Solid Waste	220,760	146,270	137,070	-38%
Agriculture	36,130	34,770	33,410	-8%
Off-road Equipment	54,010	54,150	29,270	-46%
Water and Wastewater	4,870	3,610	1,470	-70%
BART	190	150	50	-74%
Land Use and Sequestration	-70,860	-90,210	-147,800	-109%
Total Annual $MTCO_2e$	986,310	639,460	163,130	-83% *

Note: Due to rounding, totals may not equal the sum of the individual values

* Reductions of 83 percent below 2019 levels are comparable to reductions of 85 percent below 1990 levels.

All the strategies discussed in this chapter help Contra Costa County reduce its GHG emissions and allow the County to achieve its GHG reduction goals. Different strategies, along with existing and planned efforts, contribute to the GHG reductions in each of the different sectors as projected in 2045:

- Transportation: The largest share of GHG reductions from transportation-related emissions comes from a significant increase in adoption of electric vehicle and other zero-emission vehicle (ZEV) technologies, as discussed in Strategy TR-2. The State's Clean Car Standards, establishing stricter vehicle fuel efficiency standards and ZEV adoption requirements, accounts for approximately 39 percent of these reductions. Strategy TR-1, which reduces VMT through increases in transit use, active transportation, and micromobility, accounts for the remaining 7 percent of GHG reductions in transportation energy use.
- Residential energy: More than half of GHG reductions in residential energy use comes from energy efficiency and electrification of existing homes, as discussed in Strategy BE-2, and another 24 percent comes from the State's program to partially meet natural gas needs from renewable sources. The State's increase in the Title 24 energy efficiency standards for new buildings and RPS program to convert all electricity to renewable or carbon-free sources each contribute about 10 percent of the GHG reductions in this sector. Smaller but still significant GHG reductions to residential energy use come from the high energy performance standards discussed in Strategy BE-1 and the effects of the County's earlier all-electric reach code.
- Nonresidential energy: Similar to the residential energy sector, the largest share of GHG reductions in nonresidential energy use (44 percent) comes from energy efficiency and electrification of existing building in Strategy BE-2, followed by the State's plan for increased natural gas from renewable sources (28 percent). The State's RPS and Title 24 programs create the next-largest sources of reductions. The County's energy performance standards in BE-1 and the County's earlier all-electric reach code also play a role in reducing emissions from this sector.
- Solid waste: The largest contributor to solid waste GHG emission reductions in the CAAP is the increased capture rate of methane from landfills in Strategy NW-4, which is responsible for about 50 percent of these reductions. The State's organics recycling requirements, SB 1383, is responsible for another 44 percent of GHG emission reductions from solid waste. Local efforts to increase recycling and minimize waste generation, as discussed in Strategies NW-1, NW-2, and NW-3, collectively achieve the remaining GHG emission reductions.

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- Agriculture: The State and CAAP strategies do not directly reduce agricultural emissions in a measurable manner, although Strategy TR-2 reduces emissions from agricultural equipment (part of the off-road equipment sector) and Strategy NI-4 may affect agricultural emissions by supporting increased carbon farming and sequestration on the County's natural and working lands.
- Off-road equipment: The CAAP achieves reductions in off-road equipment GHG emissions by promoting replacing gasoline and diesel-fueled equipment with electric models, as discussed in Strategy TR-2.
- Water and wastewater: The primary contributor to GHG emission reductions from water and wastewater is the State's RPS program. Water-efficiency standards in Strategy DR-1 account for the remaining GHG emission reductions.
- BART: The State's RPS program reduces GHG emissions from BART operations.
- Land use and sequestration: Strategy NI-4 in the CAAP, which increases carbon farming and sequestration on the County's natural and working lands, drives the GHG reductions in the land use and sequestration sector.

With the reductions currently projected from the 2024 GHG emissions reduction strategies, GHG emissions for the unincorporated county are expected to be reduced to 856 percent below 1990 levels, equal to 878 percent below baseline 2005 levels and~~or 85~~ 83 percent below 2019 levels. These reductions are predicted to occur across most GHG emission sectors, though emissions within the Solid Waste sector will continue to be affected by previously deposited waste continuing to decompose in landfills. As noted previously, there is the potential for these strategies to yield additional GHG emission reductions as County staff and decision makers develop and institute implementation actions and monitor the results.

With these reductions as currently assessed, unincorporated Contra Costa County achieves the GHG emissions reduction goals for 2030 and 2045, as shown in **Table 11**. The County may reduce emissions faster than expected as it implements the CAAP, and it will report on this progress as part of the CAAP monitoring activities.

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TABLE 11. 2024 GHG EMISSION REDUCTIONS AND REGULATORY GOALS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG emissions goals	658,700	164,680
GHG emissions with CAAP strategies	639,460	163,130
Gap to GHG emission reduction goal*	-19,240	-1,550

Note: Due to rounding, totals may not equal the sum of the individual values.

* Negative values mean that the strategies reduce GHG emissions to below the goal.

THE 2024 CAAP AND NET CARBON NEUTRALITY

Achieving net carbon neutrality in Contra Costa County will require implementation of GHG reduction efforts that meet the County's regulatory goals, in combination with carbon sequestration and potentially other methods to "zero out" the remaining emissions. The 2024 CAAP achieves significant reductions in GHG emissions, consistent with the County's emission reduction goals, and places Contra Costa County on a path to support statewide net carbon neutrality by 2045. Currently, there is insufficient guidance and certainty around local carbon sequestration, storage, and potential carbon offset strategies to mathematically demonstrate with certainty that the 2024 CAAP will achieve carbon neutrality by 2045. However, the County believes that such guidance and certainty will emerge in future years as the County, regional agencies, and the State further explore the opportunities, develop guidance and methods, and validate new technology. When available, guidance on quantifying how to achieve carbon neutrality will be integrated into future updates of this 2024 CAAP.

For the foreseeable future, achieving net ~~the County's GHG emissions reductions goals, including~~ carbon neutrality~~,~~ will likely not be feasible without the use of local carbon sequestration~~, notably~~ on natural and working lands. Although GHG emissions can be eliminated from many of the County's GHG emissions sources, this is not practical for every source given technical, economic, or political considerations. Assuming implementation of the strategies in this 2024 CAAP, **Figure 15** shows the major sources of Contra Costa County's remaining GHG emissions in 2045.

APPENDIX B: TECHNICAL GHG APPENDIX

This appendix provides details for Contra Costa County's greenhouse gas (GHG) emissions inventory and forecast in Chapter 3 of the 2024 Climate Action and Adaptation Plan (CAAP) and the GHG emission reduction pathway presented in Chapter 4 of the 2024 CAAP. It summarizes the technical details and findings from these analyses as well as the data sources, assumptions, and performance metrics used to assess the potential for GHG savings from State and local existing and planned efforts and the reduction strategies associated with the CAAP.

Inventory and Forecast

As part of the preparation of the 2015 CAP, Contra Costa County and its regional partners and technical consultants prepared community-wide and County operations GHG inventories for the calendar years 2005 and 2013. The 2015 CAP identified the year 2005 as the baseline year for emission reductions, as this was considered a year with good data availability at the time, consistent with State guidance, and without any unusual factors that might affect GHG emissions.

As part of the 2024 CAAP update process, the project teams prepared inventories of community-wide emissions for the years 2017 and 2019. County staff made some updates to the 2005 and 2013 community-wide inventories in the 2015 CAP to ensure a consistent method and approach across all inventory years.

County staff have also prepared a County operations GHG emissions inventory for the year 2017.

This document presents the full results of the Contra Costa County community-wide GHG inventory and the County operations inventory and is the most up-to-date summary of Contra Costa County's GHG emissions.

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PROTOCOLS

A series of guidance documents, called protocols, provide recommendations on how to adequately assess GHG emissions. The project team prepared the new GHG inventories and updates to past GHG inventories consistent with the guidance in widely adopted, standard protocol documents. These protocols provide guidance on what activities should be evaluated in the GHG inventories and how emissions from those activities should be assessed. Using standard methods also allows for an easy comparison of GHG emission levels across multiple years and communities.

- The County operations GHG inventory relies on the Local Government Operations Protocol (LGOP), which was first developed in 2008 and was updated in 2010. The LGOP is a tool for accounting and reporting GHG emissions of local government (municipal) operations and is used throughout California and the United States. The LGOP includes guidance from several existing programs as well as the state's mandatory GHG reporting regulations.
- The community-wide GHG inventory uses the United States Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (U.S. Community Protocol), which was first developed in 2012 and updated most recently in 2019. The California Governor's Office of Planning and Research encourages cities and counties in California to follow the U.S. Community Protocol for community-wide GHG emissions.
- A third protocol, the Global Protocol for Community-Scale Greenhouse Gas Inventories (Global Protocol) was first developed in 2014 and is intended for use in preparing international community-scale GHG inventories. It is largely consistent with the U.S. Community Protocol, although it contains additional guidance and resources to support a wider range of activities that may be found in other countries. The project team has used the Global Protocol to assess GHG emissions from sources that are not covered in the U.S. Community Protocol.

GHG inventories are estimates of GHG emissions based on these standard methods and verified datasets. While they are not direct measurements of GHG emissions, the use of the standard methods identified in the protocols, in combination with accurate data from appropriate sources, allows GHG inventories to provide reliable estimates of local emission levels. Due to potential data limitations, some inconsistencies in methods may remain. Any concerns about inconsistent methods are noted in the appropriate sector discussion.

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UNITS OF MEASUREMENT

GHG inventories and forecasts assess emissions in a unit called carbon dioxide equivalent (CO_2e), which is a combined unit of all GHGs analyzed in the inventory. As different GHGs have different effects on the processes that drive climate change, CO_2e is a weighted unit that reflects the relative potency of the different GHGs. These inventories report amounts of GHGs in metric tons of CO_2e ($MTCO_2e$), equal to 1,000 kilograms or approximately 2,205 pounds.

EMISSION FACTORS

An emission factor describes how many $MTCO_2e$ are released per unit of an activity. For instance, an emission factor for electricity describes the $MTCO_2e$ produced per kilowatt hours (kWh) of electricity used. Since different sources of electricity can have different emission factors, the emission factors in **Table B-1** represent a weighted average of emission factors across electricity sources and portfolios (e.g. MCE's Light Green and Deep Green products). The emission factor for on-road transportation describes the $MTCO_2e$ produced per mile of driving. The project team calculated most of the GHG emissions using data on GHG-generating activities in combination with emission factors. Some sources of GHG emissions (known as sectors), including agriculture and off-road emissions, are calculated using formulae or models and do not have specific emission factors. **Table B-1** shows the emission factors for the inventory years for the unincorporated area.

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TABLE B-1: GHG INVENTORY EMISSION FACTORS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change	Source
PG&E electricity ($MTCO_2e$/kWh)	0.000226	0.000195	0.000096	0.000108	-52%	PG&E
Direct access electricity ($MTCO_2e$/ kWh)	0.000388	0.000309	0.000208	0.000187	-52%	California Energy Commission
MCE electricity ($MTCO_2e$/ kWh)	N/A	N/A	0.000059	0.000045	-24% *	MCE
Natural gas ($MTCO_2e$/therm)	0.005311	0.005311	0.005311	0.005311	0%	US Community Protocol
Propane ($MTCO_2e$/gallon)	0.005844	0.005844	0.005844	0.005844	0%	US Community Protocol
Kerosene ($MTCO_2e$/gallon)	0.010569	0.010569	0.010569	0.010569	0%	US Community Protocol
Wood ($MTCO_2e$/MMBTU)	0.095624	0.095624	0.095624	0.095624	0%	US Community Protocol
On-road vehicles ($MTCO_2e$/VMT)	0.000486	0.000483	0.000421	0.000408	-16%	California Air Resources Board
BART ($MTCO_2e$/ passenger mile)	0.000093	0.000093	0.000093	0.000013	-86%	BART
Municipal solid waste ($MTCO_2e$/ton)	0.293179	0.293184	0.286047	0.261659	-11%	CalRecycle
Alternative daily cover ($MTCO_2e$/ton)	0.191850	0.245890	0.245694	0.245693	28%	CalRecycle

* MCE's percentage change is from 2017 to 2019.

COMMUNITY-WIDE EMISSIONS

Sectors

The community-wide GHG inventory assessed GHG emissions from the following 11 categories of activities, known as sectors.



- **Transportation** includes GHG emissions created by driving on-road vehicles in the unincorporated county, including passenger and freight vehicles.



- **Residential energy** includes GHG emissions attributed to the use of electricity, natural gas, and other home heating fuels in residential buildings.



- **Solid waste** includes the GHG emissions released from trash collected in the unincorporated areas of Contra Costa County, as well as collective annual emissions from waste already in place at the Acme, Keller Canyon, and West Contra Costa Landfills.



- **Nonresidential energy** includes GHG emissions attributed to the use of electricity and natural gas in nonresidential buildings.



- **Agriculture** includes GHG emissions from various agricultural activities in the unincorporated county, including agricultural equipment, crop cultivation and harvesting, fertilizer application, and livestock operations.



- **Off-road equipment** includes GHG emissions from equipment that does not provide on-road transportation (excluding agricultural equipment), such as tractors for construction, ~~or~~ equipment used for landscape maintenance, commercial and industrial equipment, and outdoor recreational equipment.



- **Water and wastewater** accounts for the electricity used to transport and process water and wastewater used or generated by unincorporated county residents and businesses, as well as direct emissions resulting from wastewater treatment activities.



- **Bay Area Rapid Transit (BART)** includes GHG emissions associated with the operation of BART for unincorporated county residents.

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- **Land use and sequestration** includes GHG emissions absorbed and stored in trees and soils on locally controlled lands as part of healthy ecosystems and released into the atmosphere from development of previously undeveloped land.



- **Stationary sources** are emissions from fuel use at major industrial facilities, permitted by state and regional air quality authorities. These emissions are informational and are not counted as part of the community total.



- **Wildfire** includes emissions released as a result of wildfires. These emissions are informational and are not counted as part of the community total.



- **Direct access electricity** is electricity purchased directly from an Electric Service Provider (ESP) rather than a conventional utility company or Community Choice Energy provider such as MCE, generally to power large industrial, commercial, and institutional facilities.



Community-Wide Inventory Results

Table B-2 show the community-wide GHG emissions for the unincorporated area associated for the four inventory years. Total community-wide emissions declined 22 percent from 2005 to 2019. The most significant decreases in emissions came from BART, water and wastewater, residential energy use, and transportation, which all saw their associated emissions decrease by more than 25 percent. Only off-road equipment saw a significant (58 percent) increase in associated GHG emissions.

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TABLE B-2: ABSOLUTE ANNUAL GHG EMISSIONS, 2005–2019 ($MTCO_2E$)

Sector	2005	2013	2017	2019	Percentage Change, 2005 - 2019
Transportation	628,200	651,130	571,650	464,040	-26%
Residential energy	294,930	280,870	212,420	191,780	-35%
Nonresidential energy	118,740	125,350	98,8501	85,390	-28%
Solid waste	243,940	224,570	223,100	220,760	-10%
Agriculture	33,350	39,300	44,880	36,130	8%
Off-road equipment	34,160	36,290	42,840	54,010	58%
Water and wastewater	8,080	7,400	4,400	4,870	-40%
BART	1,040	1,320	1,440	190	-82%
Land use and sequestration	-70,860	-70,860	-70,860	-70,860	0%
Total Annual $MTCO_2e$	**1,291,580**	**1,295,370**	**1,128,720**	**986,310**	**-24%**
Informational Items					
Stationary sources	13,983,030	11,956,000	11,232,290	10,867,670	-22%
Wildfire	14,270	66,080	02*	10,100	N/A3
Direct access electricity	0[4]	0[4]	0[4]	74,130	N/A

Note: All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.
1 Estimates of nonresidential electricity use in 2013 are used in 2017 to account for a lack of available data in 2017.
2 No wildfires were recorded in the unincorporated county in 2017.
3 Overall change between 2005 and 2019 for wildfire is not calculated because of the high degree of year-to-year variability.
4 PG&E did not provide direct access electricity use data in these years. ~~All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.~~
~~*No wildfires were recorded within the unincorporated County in 2017.~~

Regarding stationary sources, there are several factors outside of the County's control that influence the operations and related emissions and energy use at these facilities. The County has therefore elected to exclude the direct emissins and energy use at these facilities from consideration of the County's GHG reduction goals for the following reasons:

- These facilities are regulated primarily through the Federal Energy Regulatory Commission and the California Energy Commission (CEC), and are subject to air quality and emissions standards set forth by USEPA, CARB, and BAAQMD.
- The energy used at some of these facilities fluctuates from year to year depending on the demand for resources and the availability of other electricity-generating sources such as hydropower or renewable resources. This makes it difficult to accurately forecast the energy use at these facilities.

- The County has limited jurisdictional authority to reduce GHG emissions from these sources as they are subject to cap-and-trade regulations set forth by CARB.
- The approach to excluding energy from sources that are outside of the County's jurisdictional control is consistent with the *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*.

The resultant jurisdictional inventory more accurately reflects the energy use from nonresidential customers in unincorporated Contra Costa County and allows the County to focus on actions that are within its control.

Contra Costa County is developing a Just Transition Economic Revitalization Plan, a long-term strategic plan for transitioning to a net zero-emission economy.

COMMUNITY-WIDE GHG INVENTORY RESULTS BY SECTOR

Transportation

On-road transportation activity accounts for vehicle miles driven between two points in the unincorporated area, or between the unincorporated area or another community. It does not include miles for trips that begin and end in other communities but pass through the unincorporated area (e.g., from Sacramento to Oakland). Unincorporated Contra Costa County community members drove approximately 1.3 billion vehicle miles in 2005, decreasing 12 percent to approximately 1.1 billion vehicle miles in 2019. The VMT in 2005 resulted in GHG emissions of approximately 628,200 $MTCO_2e$, which dropped to approximately 464,040 in 2019, a 26-percent decrease. GHG emissions decreased due to this reduction in VMT, increasingly fuel-efficient vehicles, and a wider adoption of electric vehicles. The average vehicle on the road in unincorporated Contra Costa County generated 16 percent fewer GHG emissions per mile in 2019 than in 2005, as reported by Caltrans. **Table B-3** provides a breakdown of the activity data and emissions for on-road transportation for the unincorporated area by each individual year included in the updated community inventory.

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TABLE B-3: TRANSPORTATION ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

SECTOR	2005	2013	2017	2019	PERCENTAGE CHANGE, 2005 - 2019
Activity Data (VMT)					
On-road transportation	1,291,819,230	1,349,279,980	1,357,121,160	1,136,911,090	-12%
Emissions ($MTCO_2e$)					
On-road transportation	628,200	651,130	571,650	464,040	-26%
All numbers are rounded to the nearest 10.					

Residential Energy

Contra Costa County's GHG emissions from residential energy totaled approximately 191,780 $MTCO_2e$ in 2019, compared to 294,930 $MTCO_2e$ in 2005, a decline of 35 percent. Residential electricity GHG emissions decreased due to a decrease in overall use and usage of cleaner sources of electricity. Residential electricity use fell 40 percent from 2005 to 2019, from 488,236,740 kWh to 293,561,300 kWh. Over this period, as seen in **Table B-1**, a unit of electricity supplied by Pacific Gas and Electricity Company (PG&E) emitted 52 percent less GHG in 2019 than in 2005. Electricity from MCE, which supplied electricity to community residents in 2017 and 2019, generated even fewer GHG emissions per unit of electricity than PG&E-supplied electricity, which has also contributed to the decline in this sector. Natural gas use and GHG emissions saw a small decrease from 2005 to 2019 of 3 percent despite a growing population. Propane and wood use and GHG emissions also declined over this period, although GHG emissions from these fuels are only a small proportion of those from the residential energy sector. **Table B-4** provides a breakdown of the activity data and GHG emissions for residential energy for the unincorporated area.

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TABLE B-4: RESIDENTIAL ENERGY ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

SECTOR	2005	2013	2017	2019	PERCENTAGE CHANGE, 2005 - 2019
Activity Data					
Residential PG&E electricity (kWh)	488,236,740	478,219,710	461,970,670	46,158,330	-91%
Residential MCE electricity (kWh)	-	-	307,820	247,402,970	80,273%*
Residential natural gas (therms)	30,919,160	31,007,110	28,634,420	30,100,640	-3%
Residential propane (gallons)	1,525,330	1,106,900	1,043,270	1,021,340	-33%
Residential kerosene (gallons)	13,160	10,960	8,030	16,320	24%
Residential wood (MMBTU)	117,000	165,830	100,960	101,710	-13%
Emissions ($MTCO_2e$)					
Residential PG&E electricity	110,120	93,380	44,510	5,000	-95%
Residential MCE electricity	0	0	20	11,060	55,200%*
Residential natural gas	164,570	165,040	152,060	159,850	-3%
Residential propane	8,910	6,470	6,100	5,970	-33%
Residential kerosene	140	120	80	170	21%
Residential wood	11,190	15,860	9,650	9,730	-13%
Total Annual $MTCO_2e$	**294,930**	**280,870**	**212,420**	**191,780**	**-35%**

* MCE did not operate in the unincorporated County until 2017, and 2017 operations were very limited. MCE percentage changes are for changes from 2017 to 2019.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Solid Waste

Contra Costa County's community-wide GHG emissions associated with solid waste includes four subsectors.

- Municipal solid waste (MSW) is the material that is discarded by community members and reflects the actual waste generated by the community.
- Alternative daily cover (ADC) is organic material applied at landfills by the landfill operator as a means of controlling debris and pests.

- Waste in place is the solid waste and associated GHG emissions deposited in the County's landfills in previous years.
- The flaring subsector accounts for GHG emissions from the combustion of gases generated by the decomposing waste.

Between 2005 and 2019, total solid waste GHG emissions decreased by 10 percent due to decreases in solid waste generated and ADC applied, likely as a result of increased community awareness about recycling and composting and the availability of curbside recycling programs. Although annual waste generation decreased, waste in place at the landfills increased as waste is added to the landfills each year. **Table B-5** presents solid waste emissions data for each year for the unincorporated area.

TABLE B-5: SOLID WASTE ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Activity Data (Tons)					
Solid waste	154,820	78,790	79,520	79,340	-49%
ADC	15,950	13,990	11,470	7,580	-52%
Waste in place	34,455,010	41,785,650	45,776,140	47,618,290	38%
Landfill flaring	5,270	5,260	5,250	5,270	Less than 1%
Emissions ($MTCO_2e$)					
Solid waste	45,390	23,100	22,750	20,760	-54%
ADC	3,060	3,440	2,820	1,860	-39%
Waste in place	193,950	196,500	196,000	196,610	1%
Landfill flaring	1,540	1,530	13,550	13,590	-1%
Total Annual $MTCO_2e$	243,940	224,570	235,120	232,820	-10%

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Nonresidential Energy

Contra Costa County's GHG emissions from nonresidential energy totaled approximately 85,390~~159,520~~ $MTCO_2e$ in 2019, compared to 118,740 $MTCO_2e$ in 2005, a~~n~~ decrease~~increase~~ of 28~~34~~ percent. Electricity emissions from retail electricity suppliers (PG&E and MCE) have fallen significantly, driven by a small decrease in electricity use and a large increase in the amount of electricity for renewable and carbon-free sources (see **Table B-1**). Between 2005 and 2019, nonresidential electricity obtained from PG&E

decreased by 90 percent and nonresidential electricity obtained from MCE increased from virtually nothing in 2017 to approximately 200 million kWh in 2019. Natural gas use and associated emissions have reportedly increased, although this may be less of an actual increase and more so the result of data being omitted by PG&E as a way of complying with Sstate privacy regulations. As a consequence of this, the project team has kept nonresidential natural gas use constant at 2013 levels, a conservative estimate that may not account for actual decreases in this subsector. ~~Similarly, direct access electricity (electricity purchased from third parties instead of PG&E or MCE, usually by large customers such as major industrial facilities) was only reported for 2019, although this electricity use likely occurred in previous years but was not reported due to privacy regulations.~~ **Table B-6** provides a breakdown of the activity data and GHG emissions for nonresidential energy for the unincorporated area.

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TABLE B-6: NONRESIDENTIAL ENERGY ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
Nonresidential PG&E Electricity (kWh) [1]	284,558,070	266,216,660	266,216,660	29,062,250	-90%
Nonresidential MCE electricity (kWh) [2]	0	0	28,730	200,181,720	696,669%
~~Nonresidential Direct Access electricity (kWh)~~ [3]	~~0~~	~~0~~	~~0~~	~~396,805,940~~	~~N/A~~
Nonresidential natural gas (therms) [4]	10,251,360	13,784,410	13,784,410	13,784,410	-58%
Emissions ($MTCO_2e$)					
Nonresidential PG&E electricity [1]	64,180	51,980	25,650	3,150	-95%
Nonresidential MCE electricity [2]	0	0	Less than 10	9,040	451,900%
~~Nonresidential Direct Access electricity~~ [3]	~~0~~	~~0~~	~~0~~	~~74,130~~	~~N/A~~
Nonresidential natural gas [34]	54,560	73,370	73,200	73,200	34%
Total Annual $MTCO_2e$	118,740	125,350	98,850	85,390	34%

1: Due to omissions in data reported by PG&E for the calendar year 2017, the project team assumed that electricity use remained constant from 2013 levels.

2: MCE did not operate in the unincorporated County until 2017, and 2017 operations were very limited. MCE percentage changes are for changes from 2017 to 2019.

~~3: Direct access electricity was only reported for 2019. As PG&E also reports MCE-supplied electricity as Direct Access, the numbers given in this table are the electricity use after MCE data are removed.~~

34: Due to omissions in data reported by PG&E for the calendar years 2017 and 2019, the project team assumed that natural gas use remained constant from 2013 levels.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Agricultural Emissions

GHG emissions associated with the agriculture sector for the unincorporated area increased by approximately 8 percent between 2005 and 2019, as shown in **Table B-7**. This increase is due primarily to a minor increase (5 percent) in the amount of cattle in the county. Although crop acreages declined from 2005 to 2019, more fertilizer was applied in

2019 than in 2005 due to a shift in the types of crops being grown that required slightly more fertilizer.

TABLE B-7: AGRICULTURE ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
Crops (acreage)	200,980	204,031	197,360	183,730	-9%
Nitrogen applied (pounds)	3,261,620	3,560,480	3,698,500	3,608,340	11%
Livestock (effective annual population)	16,500	19,110	22,060	17,340	5%
Emissions ($MTCO_2e$)					
Crops	3,920	4,280	4,450	4,340	11%
Enteric fermentation	28,510	33,920	39,160	30,790	8%
Manure management	920	1,100	1,270	1,000	9%
Total Annual $MTCO_2e$	33,350	39,300	44,880	36,130	8%

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Off-Road Equipment Emissions

According to data shown in **Table B-8**, emissions from off-road equipment in unincorporated Contra Costa County increased approximately 73 percent between 2005 and 2019, although the sector overall remains a small proportion of the total community-wide emissions. This increase is primarily the result of a significant rise in diesel tractor and other agricultural equipment use over this period, along with increases in commercial and industrial/warehouse equipment use. Since this is modeling directly reported by State agencies, it is possible that changes in modeling methods may be affecting the results. Note that the State provides these GHG emission levels directly, so there is no activity data to display.

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TABLE B-8: OFF-ROAD EQUIPMENT GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Agricultural equipment	1,200	1,190	1,180	10,170	748%
Cargo handling equipment	900	380	330	310	-66%
Commercial harbor equipment *	0	0	0	2,600	N/A
Construction and mining equipment	6,780	7,170	8,880	7,200	6%
Industrial equipment	8,320	8,840	9,470	9,780	18%
Lawn and garden equipment	3,580	3,280	3,760	3,880	8%
Light commercial equipment	2,230	2,780	3,060	3,270	47%
Locomotives	3,170	3,260	3,540	3,620	14%
Oil drilling equipment	20	20	20	20	0%
Pleasure craft	1,890	1,810	1,800	1,830	-3%
Portable equipment	4,830	6,240	6,700	6,970	44%
Recreational equipment	650	670	610	630	-3%
Transport Refrigeration Units	590	650	3,490	3,730	532%
Total Annual $MTCO_2e$	**34,160**	**36,290**	**42,840**	**54,010**	**58%**

* State modeling only provided emissions for commercial harbor equipment for 2019.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

According to records maintained by the California Department of Conservation's Geologic Energy Management Division, there are no active oil or gas extraction wells in the unincorporated area. There are 16 natural gas storage wells in the hills between Clyde and Bay Point, along with an observation well. As these sites are not being used for active extraction, there are no further emissions associated with fossil fuel production at well sites in this inventory.

Water and Wastewater Emissions

Emissions associated with the water and wastewater sector are counted as indirect or direct emissions. Indirect water emissions refer to emissions created by the electricity required to treat and move water to where it is used. Indirect wastewater emissions refer to electricity needed to move wastewater to water treatment facilities, and to process and discharge it. Direct wastewater emissions refer to emissions produced directly by decomposing materials in wastewater.

GHG emissions from Contra Costa County's water and wastewater activity decreased 40 percent between 2005 and 2019. Indirect water GHG emissions declined by 62 percent between 2005 and 2019 while indirect wastewater GHG emissions decreased by 66 percent. Community members used substantially less water (31 percent less) and generated less wastewater (30 percent less) in 2019 than in 2005 despite population growth. This is likely a result of increased water efficiency by community residents and businesses. Additionally, the electricity used in water and wastewater pumping and treatment has been increasingly supplied by renewable and carbon-free sources, decreasing GHG emissions. Direct wastewater emissions did rise by approximately 199 percent from 2005 to 2019, but given that the amount of wastewater generated declined by this period, this is likely due to changes in modeling approaches and available data. The emissions data for the unincorporated area in **Table B-9** shows that overall emissions increased slightly within the water and wastewater sector.

TABLE B-9: WATER AND WASTEWATER ACTIVITY DATA AND GHG EMISSIONS BY SUBSECTOR, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Activity Data					
Water use (million gallons)	11,530	11,650	7,380	8,010	-31%
Water electricity use (kWh)	26,443,770	28,004,290	19,137,620	20,783,930	-21%
Wastewater generation (million gallons)	4,560	4,610	3,150	3,170	-30%
Wastewater electricity use (kWh)	6,199,120	6,198,590	4,268,050	4,295,780	-31%
Emissions ($MTCO_2e$)					
Indirect water	5,960	5,470	1,840	2,250	-62%
Indirect wastewater	1,400	1,210	410	470	-66%
Direct wastewater	720	720	2,150	2,150	199%
Total Annual $MTCO_2e$	**8,080**	**7,400**	**4,400**	**4,870**	**-40%**

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

BART Emissions

Emissions associated with BART ridership decreased 82 percent between 2005 and 2019. This decline is attributable to changes in BART's electricity portfolio, which in recent years have shifted to favor more renewable and carbon-free sources of energy. BART ridership from community members in unincorporated Contra Costa County increased 29 percent between 2005 and 2019, as shown in **Table B-10**. Ridership at all stations serving the unincorporated area increased by 10 to 35 percent over this period except for Pittsburg/Bay Point, which saw some of its ridership shift to Pittsburg Center and Antioch with the opening of the BART to Antioch extension in 2018.

TABLE B-10: BART ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005–2019
Activity Data					
BART Ridership (passenger miles)	11,231,870	14,228,420	15,528,840	14,444,740	29%
Emissions ($MTCO_2e$)					
Total Annual $MTCO_2e$	1,040	1,320	1,440	190	-82%
All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.					

Land Use and Sequestration

GHG emissions from land use and sequestration can be either positive (a source of emissions) or negative (removing emissions from the atmosphere, creating what is known as an emissions "sink"). Natural lands and trees in urban areas absorb carbon, storing it in wood, plants, and soil. As a result, when natural land is preserved or when more trees are planted, emissions from this sector are negative because GHGs are being removed from the atmosphere. However, developing natural lands or converting them to a different form (for example, replacing forests with crop land) or removing street trees causes carbon to be released, creating GHG emissions.

This sector includes emission sources and sinks from three types of activities: sequestration of GHG emissions in locally controlled forested lands, sequestration of GHG emissions in street trees in urbanized unincorporated areas, and emissions caused by permanently removing vegetation from natural lands or farmlands as a part of development.

Emissions and sequestered amounts remained constant in both years for all three activities. Locally-controlled forests and urban trees have not had their sequestration capabilities changed by human activities during the inventory period. While there was some development activity that caused a loss of sequestered GHG emissions, records of when the development specifically occurred are not available, and so the GHG emissions have been assigned equally to both inventory years, hence the lack of changes. Forests sequestered 58,110 $MTCO_2e$ annually, while urban trees sequestered 12,750 $MTCO_2e$, for a total carbon sink of 70,860 $MTCO_2e$ for the unincorporated area, as shown in **Table B-11**.

TABLE B-11: LAND USE AND SEQUESTRATION ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

Sector	2005	2013	2017	2019	Percentage Change, 2005 – 2019
Activity Data					
Acres of forested land	60,050	60,050	60,050	60,050	0%
Acres of urban trees	32,780	32,780	32,780	32,780	0%
Acres of land use changes	0	0	0	0	0%
Emissions ($MTCO_2e$)					
Forest sequestration	-58,110	-58,110	-58,110	-58,110	0%
Street tree sequestration	-12,750	-12,750	-12,750	-12,750	0%
Land use changes	0	0	0	0	0%
Total Annual $MTCO_2e$	**-70,860**	**-70,860**	**-70,860**	**-70,860**	**0%**
All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.					

Wildfire

Wildfires create GHG emissions by burning organic materials such as trees and plants, releasing the carbon sequestered in these materials. Larger fires and those that burn through forested areas, as opposed to less densely vegetated ecosystems, release more GHG emissions. The County reported wildfires in the unincorporated area in 2005, 2013, and 2019, but not in 2017. The acreages and emissions of these fires for the unincorporated area are reported in **Table B-12**. Although wildfire emissions and acreages were lower in 2019 than in 2005, wildfire activity varies widely from year to year, and is generally expected to increase in future years due to climate change. Wildfire emissions are not calculated in the totals presented in this appendix and are for informational purposes only.

TABLE B-12: WILDFIRE ACTIVITY DATA AND GHG EMISSIONS, 2005–2019

SECTOR	2005	2013	2017	2019	PERCENTAGE CHANGE, 2005–2019
Activity Data					
Acres burned	2,070	6,320	0	1,830	-31%
Emissions ($MTCO_2e$)					
Total Annual $MTCO_2e$	14,270	66,080	0	10,100	-29%

2005 wildfires: Bragdon Fire, BNSF Fire, Byron Fire, Vasco Airport Fire, and an unnamed fire south of Antioch.

2013 wildfires: Kirker Fire and Morgan Fire.

2019 wildfires: Marsh 3 Fire, Marsh 5 Fire, Marsh 6 Fire.

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Stationary Source Emissions

Stationary source emissions result from fuel use, such as natural gas or propane, at large industrial facilities. These facilities include refineries, power plants, factories, and similar installations. Natural gas use at these facilities may be included as part of the nonresidential natural gas use reported by PG&E. These facilities are regulated by the State and BAAQMD, and the County does not have direct control over their operations. Emissions from these facilities are therefore not counted toward the County's total GHG emissions.

Table B-13 shows the emissions from stationary sources for the unincorporated area. This information is directly reported by the California Air Resources Board as total emissions. The Board does not report activity data for stationary sources, which would include amounts of fuel burned at these facilities. These emissions are not included in the totals presented in this memorandum and are for informational purposes only.

TABLE B-13: STATIONARY SOURCE GHG EMISSIONS, 2005–2019

SECTOR	2005	2013	2017	2019	PERCENTAGE CHANGE, 2005–2019
Emissions ($MTCO_2e$)					
Total Annual $MTCO_2e$	13,983,030	11,956,000	11,232,290	10,867,670	-22%

All numbers are rounded to the nearest 10. Totals may not equal the sum of individual rows.

Direct Access Electricity Emissions

PG&E provided direct access electricity data only for 2019. In 2019, Contra Costa County direct access electricity customers used 396, 805, 940 kWh of electricity, producing 74,130 $MTCO_2e$ of emissions. Direct access electricty, supplied by an ESP to large nonresidential customers, is regulated by the California Public Utilities Commission. The identities of direct access customers and the specific ESPs from which they purchase electricity are not made available to the public. Given the County's limited ability to monitor and regulate the sale and use of direct access electricity, as well as historical inconsistences in how direct access electricity use is reported, direct access emissions are reported for informational purposes only.

COUNTY OPERATIONS EMISSIONS

Sectors

The County operations inventory looks at GHG emissions from the following sectors:

- **Employee commute** includes GHG emissions from County employees commuting to and from work, as well as emissions associated with business travel.
- **Buildings and facilities** includes the electricity and natural gas use at County-owned facilities.
- **Government fleet** includes the fuel-use from County-owned vehicles.
- **Government-generated solid waste** includes the waste materials generated at County facilities.
- **Public lighting** includes the electricity use for publicly owned lights, including streetlights and traffic signals.
- **Water and wastewater** includes emissions associated with water use and wastewater generation at County facilities.
- **Refrigerants** includes the leaks of GHGs from air conditioning systems in County-owned vehicles and buildings.

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County Operations Inventory Results

In 2006, Contra Costa County government operations emissions totaled 54,090 $MTCO_2e$ for the sectors reported in this inventory, as shown in **Table B-14**. In 2017, County government operations GHG emissions were 43,380 $MTCO_2e$, a 20 percent decrease from 2006 levels. This decrease is primarily the result of reductions in energy use, reductions in County fleet emissions, and reductions in employee waste disposal. The 2017 inventory also includes emissions from wastewater treatment and refrigerants, which were not included in the 2006 inventory.

TABLE B-14: 2006 BASELINE AND 2017 COUNTY-OPERATIONS GHG EMISSIONS SUMMARY

Sector	2006 GHG Emissions ($MTCO_2E$)	2017 GHG Emissions ($MTCO_2E$)	Percentage Change
Employee commute	23,530	25,800	10%
Buildings and facilities	19,260	12,500	-35%
Government fleet	8,500	3,430	-60%
Government-generated solid waste	1,980	900	-54%
Public lighting	830	440	-47%
Water and wastewater	Not included	220	—
Refrigerants	Not included	90	—
Total	**54,090**	**43,380**	**-20%**

These inventories assume 8,420 County employees in 2006 and 10,030 employees in 2017, a 19% increase.

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

COUNTY OPERATIONS GHG INVENTORY RESULTS BY SECTOR

Employee Commute and Travel

Tables B-15 and **B-16** summarize changes in 2006 and 2017 related to employee commute activities.

TABLE B-15: 2006 BASELINE AND 2017 EMPLOYEE COMMUTE AND TRAVEL EMISSIONS

Activity/Source	2006 $MTCO_2E$	2017 $MTCO_2E$	Percentage Change
Employee commute	23,530	25,800	10%

TABLE B-16: 2017 EMPLOYEE COMMUTE ACTIVITY DATA AND GHG EMISSIONS

ACTIVITY/SOURCE	ACTIVITY DATA	UNITS	GHG EMISSIONS ($MTCO_2E$)	PERCENTAGE
Driving alone (gas)	77,173,500	Vehicle miles	24,600	95%
Driving alone (electric)	4,494,570	Vehicle miles	0	0%
Carpool	1,155,500	Passenger miles	350	1%
Transit (BART, bus)	641,830	Passenger miles	100	Less than 1%
Motorcycle	425,050	Vehicle miles	749	3%
Active transportation (walk, bike)	66,590	Miles	0	0%
Telecommute	88,816	Miles	0	0%
Total	**84,045,860**	**Miles**	**25,800**	**100%**

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

Although employees' personal commute is not under the direct operational control of the County, there are a variety of tools and resources available to influence employees' commute patterns. For this reason, emissions are included in this inventory. Employee commute accounted for in the emissions inventory includes business travel; travel via personal vehicles; carpool; alternative transportation methods, including biking and walking; air travel; and public transit.

In 2017, County employees' commute to work contributed to 25,795 $MTCO_2e$. This is a 10 percent increase in GHG emissions from the 23,530 $MTCO_2e$ reported in 2006. Over the years, there was an increase in the number of employees from 8,420 to 10,030 between 2006 and 2017. Commute emissions reflect increased vehicle fuel efficiency, although changes in the number of employees and increases in commute distance balance that out.

Buildings and Facilities

The buildings and facilities sector includes electricity and natural gas use at County-owned and operated buildings and facilities. Emissions from this sector totaled 19,210 $MTCO_2e$ in 2006 and 12,500 $MTCO_2e$ in 2017 (see **Table B-17**), a 35 percent decrease.

TABLE B-17: 2006 BASELINE AND 2017 BUILDINGS AND FACILITIES ENERGY USE EMISSIONS

SUBSECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENTAGE CHANGE
Buildings and facilities – natural gas	11,360	6,300	-44%
Buildings and facilities – electricity	7,670	6,200	-19%
Total	19,030	12,500	-35%

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

Government (County) Fleet

The vehicles and equipment used in the County's daily operations burn gasoline, diesel, propane, and compressed natural gas fuel, resulting in the emission of GHGs.

Contra Costa's 2017 vehicle fleet emissions totaled 3,430 $MTCO_2e$ (see **Table B-18**). This is a 59-percent decrease in GHG emissions from the 8,500 $MTCO_2e$ in the 2006 inventory. This is primarily the result of a decrease in on-road vehicle miles traveled and an increase in fuel efficiency between inventory years.

TABLE B-18: 2006 BASELINE AND 2017 VEHICLE FLEET EMISSIONS

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENTAGE CHANGE
Government fleet	8,500	3,430	-59%

Solid Waste

County operations generates solid waste during normal activity, much of which is eventually landfilled. Emissions from this sector are estimates of methane generation that will result in future years from the waste that was sent to the landfill in the inventory year. Solid waste generated by County employees contributed to a total of 900 $MTCO_2e$ in year 2017 (see **Table B-19**). Solid waste collected from County operations saw a reduction of 54 percent in emissions since the 2006 baseline, where this sector contributed to 1,980 $MTCO_2e$.

TABLE B-19: 2006 BASELINE AND 2017 GOVERNMENT-GENERATED SOLID WASTE

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENTAGE CHANGE
Government-generated solid waste	1,980	900	-54%

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Public Lighting

Emissions from public lighting owned by the County, such as streetlights, totaled 440 $MTCO_2e$ in 2017 (see **Table B-20**). This is a 47-percent decrease from the 830 $MTCO_2e$ reported in 2006.

TABLE B-20: 2006 BASELINE AND 2017 PUBLIC LIGHTING

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$	PERCENTAGE CHANGE
Public lighting	830	440	-47%

Water and Wastewater

The water and wastewater treatment sector includes the emissions generated by the electricity needed to move and process the water used and the wastewater generated by County government facilities (indirect water and wastewater), along with direct emissions caused by the processing of County-generated wastewater. Water use and wastewater generation at County facilities generated a total of 220 $MTCO_2e$ in 2017 (see **Table B-21**). The water and wastewater sector was not included in the 2006 baseline inventory.

TABLE B-21: 2006 BASELINE AND 2017 WASTEWATER TREATMENT

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$
Indirect Water	Not included	180
Indirect Wastewater	Not included	20
Direct Wastewater	Not included	20
Total	**Not included**	**240**

Note: All numbers are rounded to the nearest 10. Totals may not add up to the sum of individual rows due to rounding.

Refrigerants

Vehicles and buildings with air conditioning use refrigerants that can leak from engines and appliances during normal operation and maintenance. These refrigerants are often GHGs that trap a very large amount of heat per unit of gas, known as gases with a very high global warming potential (GWP). Emissions from refrigerant leaks were accounted for in the 2017 GHG emissions inventory for County government operations. This sector was not included in the 2006 baseline inventory.

Refrigerant emissions contributed to 90 $MTCO_2e$ in 2017 (see **Table B-22**).

TABLE B-22: 2006 BASELINE AND 2017 REFRIGERANTS

SECTOR	2006 $MTCO_2E$	2017 $MTCO_2E$
Refrigerants	Not included	90

CONSUMPTION-BASED INVENTORY EMISSIONS

As discussed in Chapter 3, the consumption-based inventory accounts for GHG emissions created by the goods and services used by community members of the unincorporated county, including residents, businesses, and employees. A consumption-based inventory assesses emissions associated with the manufacture, transportation, and disposal of these goods and services, regardless of where they occur.

In 2015, BAAQMD worked with the Cool Climate Network at the University of California, Berkeley, to prepare a consumption-based inventory for all Bay Area jurisdictions. This inventory includes GHG emissions from the following sources:

- **Travel:** GHG emissions from fuel use by on-road vehicles, vehicle manufacturing and repairs, public transportation, and air travel.
- **Housing:** GHG emissions from electricity and natural gas use in homes as well as other fuels associated with home heating (such as kerosene or fuel oil), electricity emissions from water and wastewater activities, and waste emissions. This category also includes emissions from the manufacture, transportation, and construction and demolition of materials used to construct houses.
- **Food:** GHG emissions from the growth, processing/manufacturing, and transportation of food products.
- **Goods:** GHG emissions from the manufacture, transportation, and disposal of consumer products, such as home furnishings, appliances and electronics, clothing, and healthcare and personal items.
- **Services:** GHG emissions from personal and business services, including entertainment and recreation, communication, education, healthcare, and maintenance and repair activities.

Some of these GHG emission sources are also included in the production-based inventory prepared as part of the 2024 CAP, and others are covered by either the production-based or consumption-based inventory but not both. **Table B-23** compares the sources of GHG

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emissions in the 2024 CAAP production-based inventory and the BAAQMD/Cool Climate Network consumption-based inventory.

TABLE B-23 COMPARISON OF SOURCES IN PRODUCTION-BASED AND CONSUMPTION-BASED GHG EMISSION INVENTORIES

Source of Emissions	Production-Based CAAP Inventory	BAAQMD/Cool Climate Network Consumption-Based Inventory
Generation of electricity used	Included	Included
Combustion of natural gas used	Included	Included
Combustion of other home heating fuels used	Not included	Included
Fuel use from on-road vehicles	Included	Included
Fuel use from public transportation	Included	Included
Electricity use from BART	Included	Included
Vehicle manufacturing and repairs	Partially included*	Included
Air travel	Not included	Included
Fuel use from off-road equipment, including construction and landscaping equipment	Included	Not included
Generation of electricity used for water processing and transportation	Included	Included
Generation of electricity used for wastewater processing and transportation	Included	Unknown†
Direct wastewater process emissions	Included	Not included
Landfilling of solid waste	Included	Included
Reprocessing of recyclables	Partially included*	Included
Compost processing	Partially included*	Included
Manufacturing of home-construction materials	Partially included*	Included
Food growth, processing, production, and transportation	Partially included*	Included
Carbon sequestration in forests and street trees	Included	Not included
Other embedded emissions in goods and services	Not included	Included

Note: Due to differences in data sources and analysis methods, the same source of emissions in both inventories may produce different results.

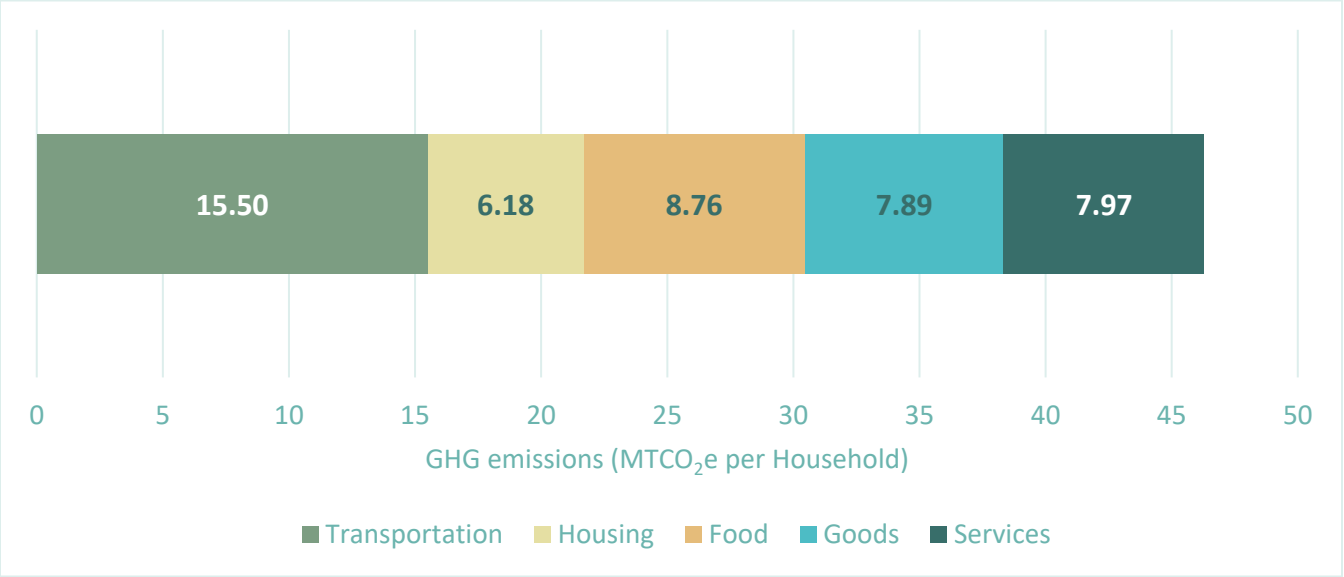
* Emissions from energy use, water use, and waste generation associated with these activities are included in the 2024 CAAP Update inventory if these activities occur in Contra Costa County. Emissions from these activities outside of Contra Costa County and other emissions associated with these activities in Contra Costa County are not included in the 2024 CAAP inventory.

† Emissions from these activities are not explicitly called out in the BAAQMD/Cool Climate Network consumption-based inventory but may be included in the total electricity use category.

Due to differences in data sources and analysis methods, the same source of emissions in both inventories may produce different results.

According to the consumption-based inventory, transportation is responsible for 15.5 $MTCO_2e$ per household, or 34 percent of emissions produced by activities conducted and goods consumed ~~with~~in ~~unincorporated~~ Contra Costa County. Food is responsible for 8.79 $MTCO_2e$ per household (19 percent), goods and services for 7.89 $MTCO_2e$ per household and 7.97 $MTCO_2e$ per household, respectively (17 percent each), and housing for 6.18 $MTCO_2e$ per household or 13 percent (see **Figure B-1**).

FIGURE B-1. CONSUMPTION-BASED INVENTORY RESULTS



Community-Wide Forecast

The forecast of community-wide GHG emissions for the unincorporated area is based on the results of the 2019 community GHG emissions inventory. The project team assumed growth in these emissions consistent with the anticipated growth in unincorporated Contra Costa County's future population, jobs, and development patterns, developed as part of the Envision Contra Costa buildout calculations. The project team forecast GHG emissions for the calendar years 2030 and 2045. The forecast is a "worst case" scenario that does not assume any efforts are taken, at any level, to reduce GHG emissions beyond the policies that are already in effect in 2019.

For many sectors, the GHG forecast assumes that each person in the unincorporated area will continue to contribute the same amount of GHG emissions as they did in 2019, so that the amount of GHG emissions increases proportionally to demographic growth. There are some sectors that are not projected this way:

- Transportation, which is projected using a regional traffic demand model based partially on demographics and partially on the location of various land uses.
- Agriculture, which is forecast using future land use projections for the amount of agricultural land in the unincorporated area.
- Land use and sequestration, which is forecast using future land use projections for developed land, forested land, and any agricultural and open space land that is developed.
- Within the off-road equipment sector, emissions from construction and mining equipment are projected using the rate of population and job growth, emissions from industrial equipment are projected using future land use projections for industrial land, and emissions from Transportation Refrigeration Units are projected using the proportion of county-wide road miles in the unincorporated area.

The forecast does not project any change in activity or GHG emissions for alternative home heating fuels (propane, kerosene, and wood), direct access electricity, cargo-handling equipment, or oil drilling equipment. Additionally, emissions for the two informational sectors (stationary sources and wildfires) are not forecasted, owing to their informational and substantial uncertainty in projecting future activities for these sectors. These GHG emissions do not have a demographic indicator that staff can use to reasonably project the volume of these emissions in the future, particularly given that they are informational

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items and not included in the total community-wide emissions. **Table B-23** shows the demographic projections and their sources for the unincorporated area.

TABLE B-23: DEMOGRAPHIC PROJECTIONS, 2019 – 2045

DEMOGRAPHIC	2019	2030	2045	PERCENTAGE CHANGE, 2019-2045	SOURCE
Population	174,150	199,360	239,720	38%	ABAG/MTC, Envision Contra Costa
Households	60,320	69,210	83,500	38%	ABAG/MTC, Envision Contra Costa
Jobs	38,760	42,480	48,150	24%	US Census Bureau, Envision Contra Costa
Service population*	212,910	241,840	287,870	35%	ABAG/MTC, US Census Bureau, Envision Contra Costa

* Service population is the sum of population and jobs

All numbers are rounded to the nearest 10.

Table B-24 shows unincorporated Contra Costa County's projected future GHG emissions relative to the 2019 inventory. Most sectors show an increase in GHG emissions due to the growing population. Agricultural emissions decrease because the amount of land use for agricultural purposes is projected to decline. Although the land use and sequestration sector is expected to remain a net carbon sink (negative emissions), the amount of emissions sequestered (removed from the atmosphere) by the activities in this sector are projected to decline. This is due to anticipated development of currently undeveloped land, removing the potential for this land to sequester carbon. Sequestration in forested and urbanized areas is projected to increase slightly.

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TABLE B-24: ABSOLUTE BUSINESS-AS-USUAL GHG EMISSIONS FORECAST, 2019–2045

SECTOR	2019 $MTCO_2E$	2030 $MTCO_2E$	2045 $MTCO_2E$	PERCENTAGE CHANGE, 2019–2045
Transportation	464,040	542,020	605,080	30%
Residential energy	191,780	217,710	259,380	35%
Nonresidential energy	85,590	93,590	106,070	24%
Solid waste	220,760	229,450	260,490	18%
Agriculture	36,130	34,770	33,410	-8%
Off-road equipment	54,010	69,520	76,100	41%
Water and wastewater	4,870	5,530	6,590	35%
BART	190	220	260	37%
Land use and sequestration	-70,860	-67,580	-58,890	-17%
Total Annual $MTCO_2e$	986,310	1,125,230	1,288,490	31%

All values rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.

Quantification

STATE AND REGIONAL GHG EMISSION REDUCTIONS FROM EXISTING ACTIONS

California has adopted and is committed to implementing policies that reduce statewide GHG emissions, including those in Contra Costa County. Many of these policies are laid out in the Climate Change Scoping Plan (Scoping Plan), a state document that outlines regulatory and market-based solutions to achieving California's GHG emission reduction goals. The Scoping Plan was first prepared in 2008, with successive updates in 2014, 2017, and 2022. These updates revised the state-level actions and identified additional opportunities for GHG emission reductions.

The Scoping Plan and related documents lay out several policies to reduce California's GHG emissions, although not all are directly applicable to Contra Costa County. The project team has assessed Contra Costa County's GHG emissions and identified five Sstate policies that are direclty relevant to the community. This allows the 2024 CAAP to provide "credit" to Contra Costa County for these policies. These Sstate efforts are:

- **The Renewables Portfolio Standard (RPS)**, which requires increases in renewable and carbon-free electricity supplies. RPS was first established in 2002 and has been amended multiple times, most recently by SB 100 in 2018. It requires all electricity

providers in the state to obtain at least 33 percent of their electricity from eligible renewable resources by the end of 2020, 60 percent of their electricity from eligible renewable resources by the end of 2030, and all of their electricity from carbon-free (although not necessarily eligible renewable) resources by the end of 2045. This policy reduces GHG emission from electricity use, including electricity used to transport and process water and wastewater, and electricity used for electric vehicles.

- **The Clean Car Standards,** which require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels. In 2002, California adopted AB 1493, the New Passenger Motor Vehicle Greenhouse Gas Emission Standards or Pavley standard. It required a reduction in tailpipe GHG emissions from new vehicles produced from 2009 to 2015. In 2012 CARB adopted an extension of this policy, the Advanced Clean Car Standards, which requires more stringent reductions in tailpipe GHG emissions from vehicles produced from 2016 to 2025. The Clean Car Standards reduce GHG emissions from on-road transportation. In August 2022, CARB adopted another expansion of these standards, known as the Advanced Clean Cars II standards. This regulation requires that all new light-duty vehicles (e.g., passenger cars, small trucks, and SUVs) sold in the state to be zero-emission by 2035, with interim targets for new light-duty vehicle sales beginning in 2026. There are some limited exceptions for plug-in hybrid vehicles. CARB adopted similar rules for heavy-duty vehicles and state and local government fleets in 2020 (Advanced Clean Trucks) and 2023 (Advanced Clean Fleets). Advanced Clean Cars II and Advanced Clean Fleets are not included in the modeling used to assess GHG reductions from the Clean Car Standards. These GHG reductions are counted as part of the reductions associated with Strategy TR-2.
- **The updated Title 24 building energy efficiency standards** require new buildings to achieve increased energy-efficiency targets. The latest version of these standards is set to go into effect January 1, 2023. California Code of Regulations, Title 24, Part 6 is California's energy efficiency standards for new and renovated buildings, applied at the local level through the project review and building permit process. The standards are strengthened every three years, with the ultimate goal of making new buildings net-zero energy, meaning that they would generate as much energy as they use. The most recent set of Title 24 standards went into effect on January 1, 2020. On August 11, 2021, the California Energy Commission (CEC) adopted the 2022 Title 24 standards. In December, it was approved by the California Building Standards Commission for inclusion into the California Building Standards Code. The 2022 Title 24 standards encourage efficient electric heat pumps, establish electric-ready requirements for new homes, expand solar photovoltaic and battery storage standards, and strengthen

ventilation standards. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Title 24 standards.

- **The Low Carbon Fuel Standard (LCFS)** mandates reduced carbon intensity of fuels used in off-road equipment. The Low Carbon Fuel Standard was adopted in 2009 and required a 10 percent reduction in the carbon intensity of all transportation and equipment fuels by 2020. This policy reduces GHG emissions from on-road transportation and from off-road equipment. The LCFS has since been revised several times, most recently in 2020. The 2020 LCFS requires further reductions in carbon intensity of around 1.25 percent every year until 2030.
- **The Short-Lived Climate Pollutant Reduction Strategy**, also known as Senate Bill (SB) 1383, requires that communities divert 75 percent of organic waste (food scraps, grass, and plant trimmings, etc.) away from landfills and toward alternatives such as composting or energy generation. As a part of this requirement, all jurisdictions must offer curbside composting to single-family and small multifamily properties (less than five units). Larger multifamily properties and businesses must either participate in curbside composting or subscribe to self-haul organic waste to a composting program or collection site. SB 1383 also includes requirements related to diverting surplus food to people in need, increasing the use of products made from recycled organics, and providing more detailed reporting statistics.
- **Renewable Natural Gas** assumes that biomethane and renewable hydrogen fuels will be blended into the fossil gas pipeline and that, in the 2030s, dedicated hydrogen pipelines will be constructed to serve certain industrial clusters.

In addition to these five state-level policies, the County's default electricity provider, MCE, has also taken action to reduce the GHG emissions from the electricity it supplies to Contra Costa community members, beyond the minimum required by RPS. In 2019, MCE electricity was approximately 60 percent renewable and 90 percent carbon-free. In 2023, MCE sourced over 95 percent of its electricity from carbon-free sources. Since MCE supplies more electricity from carbon-free sources than RPS requires it to, the County can receive "credit" for the GHG reductions that result from going beyond the State mininum. The County also enacted an all-electric reach code (suspended in February 2024), which required many types of new buildings to be built using only electricity, not use natural gas, thereby reducing GHG emissions associated with residential and nonresidential energy. The County is developing a new ordinance that will support high levels of energy efficiency and low levels of GHG emissions for new construction. This ordinance is expected to take

effect on January 1, 2025, and will be updated during future revisions to the Building Standards Code.

Overall, these existing policies are expected to reduce Contra Costa County's future GHG emissions. Without these policies in place, community-wide GHG emissions in the unincorporated area are expected to be approximatley 1,300,320 $MTCO_2e$ by 2045, or 289 percent above 2019 levels. With these polices enacted, community-wide GHG absolute emissions in the unincorporated area are projected to be approximately 874,420~~36,100~~ $MTCO_2e$ by 2045, or 187 percent below 2019 levels. **Table B-25** shows the absolute reductions achieved by these policies.

TABLE B-25: GHG EMISSION REDUCTIONS FROM EXISTING AND PLANNED STATE, REGIONAL, AND LOCAL ACTIONS (2019–2045)

	2019	2030	2045	PERCENTAGE CHANGE, 2019–2045
Forecast emissions without state and regional actions	986,310	1,125,230	1,288,490	31%
Reductions from RPS	-	-24,620	-115,400	-
Reductions from Clean Car standards	-	-110,250	-214,120	-
Reductions from Title 24	-	-9,880	31,600	-
Reductions from LCFS (off-road only)*	-	-740	7,430	-
Reductions from SB 1383	-	-21,880	-53,870	-
Reductions from renewable natural gas		-18,460	-78,050	
Reductions from MCE clean energy procurement	-	-1,240	-	-
Reductions from all-electric reach code (suspended February 2024)	-	-3,150	-2,590	-
Reductions from all existing and planned state and regional actions	**-**	**-188,740**	**-488,200**	**-**
Emissions with all existing and planned state and regional actions	986,310	957,470	874,420	-11%

Note: All numbers are rounded to the nearest 10. Due to rounding, totals may not equal the sum of the individual values.

* Due to the methods used in the forecast and assessment of state GHG reduction potential, future projections for off-road equipment GHG emissions are higher than forecast above.

TECHNICAL DATA FOR GHG REDUCTION STRATEGIES

This section discusses the data sources, methods, and assumptions for the quantification of the GHG-reduction strategies included in the Contra Costa County 2024 CAAP. In addition to the sources presented here, these calculations also rely on the GHG inventory and forecast. These calculations rely on emission factors that reflect the reductions already achieved by the existing actions discussed in the previous section. **Table B-26** shows these emission factors.

TABLE B-26: EMISSION FACTORS WITH EXISTING ACTIONS (2019–2045)

Activity Type	Units	2019	2030	2045
Electricity (PG&E)	$MTCO_2e$/kWh	0.000108	0.000077	0.000000
Electricity (MCE)	$MTCO_2e$/kWh	0.000045	0.000044	0.000000
Electricity (direct access)	$MTCO_2e$/kWh	0.000187	0.000134	0.000000
Electricity (PG&E and MCE)	$MTCO_2e$/kWh	0.000054	0.000047	0.000000
Natural gas	$MTCO_2e$/Therms	0.005310	0.005311	0.005310
Propane	$MTCO_2e$/Gallons	0.005845	0.005845	0.005845
Kerosene	$MTCO_2e$/Gallons	0.010417	0.010417	0.010417
Wood	$MTCO_2e$/MMBTU	0.095664	0.095664	0.095664
On-road transportation	$MTCO_2e$/VMT	0.000408	0.000325	0.000408
Solid waste (MSW)	$MTCO_2e$/Tons	0.261659	0.261678	0.261676
Solid waste (ADC)	$MTCO_2e$/Tons	0.245383	0.245132	0.245854
Solid waste (combined)	$MTCO_2e$/Tons	0.004628	0.003958	0.260191
BART	$MTCO_2e$/Passenger miles	0.000013	0.000008	0.000013

For each strategy, this appendix discusses the following items:

- The savings in activity data (e.g., kWh of electricity or tons of solid waste) in 2030 and 2045 resulting from implementing the strategy as described. A negative value indicates an increase in activity data.
- The decreases in GHG emissions in 2030 and 2045 resulting from implementing the strategy as described.
- The assumptions made about the strategy's performance, such as the level of community participation required to achieve the specified reductions by 2030 and 2045.
- The performance targets, which are quantifiable metrics about the projected level of success the strategy must meet to achieve the specified reductions by 2030 and 2045.

- Sources: Key studies, analyses, and other sources of data used to inform the quantification. This does not include the GHG inventory, forecast, or other technical analyses prepared as part of the 2024 CAAP or the 2045 Contra Costa General Plan.

CLEAN AND EFFICIENT BUILT ENVIRONMENT

Strategy BE-1: Require and incentivize new buildings and additions built in unincorporated Contra Costa County to be low-carbon or carbon neutral.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Natural gas savings (therms)	889,870	2,754,380
Electricity savings (kWh)	-1,198,930	-6,086,080

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	4,340	10,970

KEY ASSUMPTIONS

	2030	2045
Cumulative percentage of residential new construction influenced by EDR code (once implemented)~~built to be all-electric~~	95%	95%
Cumulative percentage of new eligible nonresidential ~~office~~ construction influenced by EDR code (once implemented)~~built to be all-electric~~	95%	95%
Cumulative percentage of new nonresidential buildings eligible for EDR code ~~non-office commercial construction built to be all-electric~~	50%	50%
Year EDR reach code is first implemented~~Cumulative % new non-residential buildings that are office space:~~	2025	2025

PERFORMANCE TARGETS

	2030	2045
Number of new EDR-compliant ~~all-electric~~ residential units	8,450	22,020
Number of new EDR-compliant~~all-electric~~ commercial buildings	140	360

SOURCES

~~American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). 2015. "ASHRAE Technical FAQ".~~

~~California Energy Commission. 2006. *2006 California Commercial End-Use Survey (CEUS).* https://www.energy.ca.gov/datB-reports/surveys/californiB-commercial-end-use-survey/2006-californiB-commercial-end-use-survey.~~

Frontier Energy, Inc, Misti Bruceri & Associates, LLC. 2023. "2022 Cost-Effectiveness Study: Single Family New Construction."

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Goyal, A., Farahmand, F., TRC Companies, Inc. 2023. "Nonresidential New Construction Reach Code Cost-effectivness Study."

Greenblatt, J.B. 2015. "Modeling California policy impacts on greenhouse gas emissions." https://eta-publications.lbl.gov/sites/default/files/lbnl-7008e.pdf.

Strategy BE-2: Retrofit existing buildings and facilities in the unincorporated County, and County infrastructure, to reduce energy use and convert to low-carbon or carbon-~~neutral~~ free fuels.

In March 2023, BAAQMD adopted amendments to Regulation 9, Rules 4 and 6. These revisions require that, when existing natural-gas-powered space heaters and water heaters reach the end of their operational life, they be replaced with electric-powered models. These requirements are scheduled to take effect in 2027 to 2031 for water heaters (depending on the capacity of the unit) and in 2029 for space heaters.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity savings (kWh) – With BAAQMD rule	100,583,970	190,187,380
Natural gas savings (therms) – With BAAQMD rule	6,596,190	16,882,720
Propane savings (gallons) – With BAAQMD rule	130,620	344,450
Gallons kerosene	2,090	5,500
MMBTU wood	13,010	34,300

GHG SAVINGS

With BAAQMD rule	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	55,990	156,150

KEY ASSUMPTIONS

	2030	2045
Percentage of existing homes conducting standard retrofits	20%	40%
Percentage of existing homes upgrading to Title 24 Standards	20%	40%
Percentage of existing mobile homes conducting standard retrofits	30%	60%
Percentage of businesses conducting standard retrofits (not including fuel switching)	15%	25%
Percentage of businesses retrofitting to current Title 24 standards (not including fuel switching)	15%	25%
Cumulative percentage of homes electrifying water heaters (BAAQMD compliance)	15%	85%
Cumulative percentage of homes electrifying space heaters (BAAQMD compliance)	10%	90%
Cumulative percentage of businesses electrifying water heaters (BAAQMD compliance)	Less than 10%	70%
Cumulative percentage of businesses electrifying space heaters (BAAQMD compliance)	5%	90%
Percentage of commercial buildings covered by BAAQMD rules	50%	50%
Cumulative percentage of homes electrifying cooking appliances	5%	65%
Cumulative percentage of homes electrifying clothes drying appliances	10%	80%
Cumulative percentage of businesses electrifying cooking appliances	5%	60%

PERFORMANCE TARGETS

	2030	2045
Number of housing units undergoing ~~energy efficiency~~ retrofits	14,160	28,310
Number of housing units renovated ~~brought up~~ to ~~current~~ Title 24 energy efficiency standards	13,210	26,430
Number of commercial buildings undergoing ~~energy efficiency~~ retrofits	490	820
Number of commercial buildings- ~~brought up~~renovated to ~~current~~ Title 24 energy efficiency standards	490	820

SOURCES

~~American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). 2015. "ASHRAE Technical FAQ".~~

~~California Energy Commission. 2006. *2006 California Commercial End-Use Survey (CEUS).* https://www.energy.ca.gov/datB-reports/surveys/californiB-commercial-end-use-survey/2006-californiB-commercial-end-use-survey.~~

~~California Energy Commission. 2014. *Impact Evaluation of the California Comprehensive Residential Retrofit Programs.*~~

~~California Energy Commission. 2021. *2019 California Residential Appliance Saturation Study (RASS).* https://www.energy.ca.gov/datB-reports/surveys/2019-residential-appliance-saturation-study.~~

California Public Utilities Commission. 2017. *Final Report: 2015 Home Upgrade Program Impact Evaluation*. https://www.calmac.org/publications/RES_5.1_HUP_FINAL_REPORT_ATR_06-30-17.pdf.

Martin, E. Sutherland, K., Parker, D. 2016. "Measured Performance of Heat Pump Clothes Dryers." https://www.aceee.org/files/proceedings/2016/data/papers/1_160.pdf.

Pacific Northwest National Laboratory. 2011. "Advanced Energy Retrofit Guides: Office Buildings." https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-20761.pdf.

Pacific Northwest National Laboratory. 2011. "Advanced Energy Retrofit Guides: Retail Buildings." https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-20814.pdf.

US Department of Energy. n.d. "Energy-Efficient Manufactured Homes." https://www.energy.gov/energysaver/energy-efficient-manufactured-homes.

Strategy BE-3: Increase the amount of electricity used and generated from renewable sources in the county.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity savings (kWh)	114,969,980	271,666,080

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	10,832~~2~~0	0

KEY ASSUMPTIONS

	2030	2045
Percentage of existing homes installing solar energy systems	15%	35%
Percentage of existing homes with solar energy systems and installing battery storage systems	20%	50%
Percentage of new homes installing battery storage systems	40%	60%
Percentage of existing businesses installing solar energy systems	3%	11%
Percentage of existing businesses with solar energy systems and battery storage systems	15%	45%
Percentage of residents enrolling in MCE	90%	90%
Percentage of businesses enrolling in MCE	90%	90%
Percentage of residents enrolling in 100% renewable tiers	10%	30%
Percentage of businesses enrolling in 100% renewable tiers	5%	20%
Percentage of direct access customers switching to MCE	5%	10%

PERFORMANCE TARGETS

	2030	2045
Residential solar systems installed	9,190	23,030
Residential battery systems installed	5,330	0
Nonresidential solar systems installed	30	290
Nonresidential battery systems installed	10	0
Residential electricity supplied by MCE (kWh)	272,202,760	292,636,220
Residential electricity provided at Deep Green tier (kWh)	25,842,700	83,347,910
Nonresidential electricity provided by MCE (kWh)	219,413,250	220,477,040
Nonresidential electricity provided at Deep Green tier (kWh)	10,533,730	42,339,190

SOURCES

California Distributed Generation Statistics. 2021. Interconnected Project Sites, 2021-09-30 [data set]. https://www.californiadgstats.ca.gov/archives/interconnection_rule21_projects/.

MCE. 2020. *Operational Integrated Resource Plan, 2021- 2030*. https://www.mcecleanenergy.org/wp-content/uploads/2020/10/MCE-Operational-Integrated-Resource-Plan_2021.pdf.

National Renewable Energy Laboratory. n.d. "PVWatts". https://pvwatts.nrel.gov/.

NO WASTE CONTRA COSTA

Strategy NW-1: Increase composting of organic waste.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Waste savings (tons)	5,580	9,190

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	2,240	4,000

KEY ASSUMPTIONS

	2030	2045
Current compost diversion rate	77%	77%
Target compost diversion rate	90%	95%

PERFORMANCE TARGETS

	2030	2045
Number of households with composting service	62,290	79,330
Number of businesses with composting service	2,930	3,510

SOURCES

California Air Resources Board. 2011. Landfill Methane Emissions Tool [data table]. https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool.

California Department of Resources Recycling and Recovery. 2019. "Residential Waste Stream by Material Type". https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=7&cy=7.

California Department of Resources Recycling and Recovery. 2019. "Waste Characterization Tool for California Jurisdictions". https://www2.calrecycle.ca.gov/WasteCharacterization/.

Contra Costa County. 2020. *Climate Action Plan Progress Report for 2020*. https://www.contracosta.ca.gov/AgendaCenter/ViewFile/Agenda/_12142020-3083.

Strategy NW-2: Reduce waste from County operations.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Waste savings (tons)	2,630	3,510

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	1,090	1,620

KEY ASSUMPTIONS

	2030	2045
Target composting diversion rate for County activities	85%	95%
Target recycling diversion rate for County activities	85%	95%

PERFORMANCE TARGETS

	2030	2045
Weekly average cubic yards of composted organics (uncompacted)	1,050	1,140
Weekly average cubic yards of recycled materials (uncompacted)	270	300

SOURCES

California Air Resources Board. 2011. Landfill Methane Emissions Tool [data table]. https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool.

California Department of Resources Recycling and Recovery. 2019. "Residential Waste Stream by Material Type." https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=7&cy=7.

California Department of Resources Recycling and Recovery. 2019. "Waste Characterization Tool for California Jurisdictions". https://www2.calrecycle.ca.gov/WasteCharacterization/.

Intergovernmental Panel on Climate Change. 2006. "2006 IPCC Guidelines for National Greenhouse Gas Inventories." https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html.

Strategy NW-3: Increase community-wide recycling and waste programs.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Waste savings (tons)	5,560	16,770

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	520	2,530

KEY ASSUMPTIONS

	2030	2045
Target community diversion rate	77%	85%
Decrease in non-organic and non-recyclable waste tonnage	20%	50%

PERFORMANCE TARGETS

	2030	2045
Reduction in landfilled recyclables (tons)	0	1,280
Decrease in non-compostable/recyclable tonnage (tons)	5,560	15,490
Pounds of waste per person per day	2.08	1.85

SOURCES

California Air Resources Board. 2011. Landfill Methane Emissions Tool [data table]. https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool.

California Department of Resources Recycling and Recovery. 2019. "Residential Waste Stream by Material Type". https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialStreams?lg=7&cy=7.

California Department of Resources Recycling and Recovery. 2019. "Waste Characterization Tool for California Jurisdictions". https://www2.calrecycle.ca.gov/WasteCharacterization/.

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Strategy NW-4: Reduce emissions from landfill gas.

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	57,460	61,410

KEY ASSUMPTIONS

	2030	2045
Current methane capture rate	75%	75%
Future methane capture rate (Keller and Acme only)	85%	85%
Decrease in flared landfill gas	15%	30%

PERFORMANCE TARGETS

	2030	2045
Methane capture rate at Keller and Acme landfills	15%	30%
Tons of flared landfill gas	5,460	4,330

SOURCES

Contra Costa County Department of Conservation and Development. 2020. "Attachment 8: November 2020 Draft MND SCH #2020100267." http://64.166.146.245/docs/2021/BOS/20210713_1776/46178_8%20November%202020%20Draft%20MND%20SCH%20%232020100267.pdf.

REDUCE WATER USE AND INCREASE DROUGHT RESILIENCE

Strategy DR-1: Reduce indoor and outdoor water use.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity savings (kWh)	1,436,210	2,560,780
Water (MG)	360	650

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	970	1,440

KEY ASSUMPTIONS

	2030	2045
Percentage of existing homes with graywater systems	5%	20%
Percentage of existing businesses with graywater systems	2%	10%
Percentage of existing homes retrofitting water fixtures	60%	90%
Percentage of existing businesses retrofitting water fixtures	60%	90%
Percentage of new homes with graywater systems	10%	35%
Percentage of new businesses with graywater systems	5%	20%

PERFORMANCE TARGETS

	2030	2045
Number of residential graywater system installations	3,910	20,180
Number of commercial graywater systems installations	70	440
Number of nonresidential buildings receiving water efficiency upgrades	1,790	2,680
Number of residential buildings receiving water efficiency upgrades	36,190	54,290

SOURCES

Environmental Protection Agency. 2009. "Water Efficiency in the Commercial and Institutional Sector: Considerations for a WaterSense Program." https://www.epa.gov/sites/default/files/2017-03/documents/ws-commercial-ci-whitepaper.pdf

State of California, Natural Resources Agency, Department of Water Resources. 2014. "California Water Plan Update 2013."

State of California, Natural Resources Agency, Department of Water Resources. 2019. "California Water Plan Update 2018." https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/CaliforniB-Water-Plan/Docs/Update2018/Final/CaliforniB-Water-Plan-Update-2018.pdf

Water Research Foundation. 2016. "Residential End Uses of Water Study, Version 2: Executive Report."

Strategy DR-2: Ensure sustainable and diverse water supplies.

This is a supportive measure that does not result in direct measureable GHG emissions. There are no activity or GHG savings, assumptions, performance indicators, or sources associated with this measure.

CLEAN TRANSPORTATION NETWORK

Strategy TR-1: Improve the viability of walking, biking, zero-emission commuting, and using public transit for travel within, to, and from the county.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Vehicle Miles Traveled (VMT)	52,447,950	153,067,310

GHG SAVINGS

	2030 $MTCO_2E$	20545$MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	17,050	40,370

KEY ASSUMPTIONS

	2030	2045
Miles of bicycle lanes	45	132
Average round trip length for bicycle~~e~~ trips (miles)	2.1	2.1
Is bike parking provided in most nonresidential locations?	Yes	Yes
Percentage~~%~~ increase in combined housing units/acre due to TOD	15%	63%
Percentage~~%~~ increase in jobs/acre due to TOD	10%	45%
Percentage increase in transit frequency	5%	15%
Level of implementation (increase in transit frequency)	10%	25%
Percentage increase in transit service miles	5%	15%
Percentage of employers participating in TDM	5%	20%
Average trip reduction from voluntary TDM participation	15%	45%
Percentage of county with expanded sidewalks	5%	15%
Change in percentage of households that have access to electric bike sharing	5%	9%
Percentage of multifamily units permanently designated as affordable	5%	15%
Percentage of transit routes that receive supportive treatments	1%	2%

PERFORMANCE TARGETS

	2030	2045
Miles of bicycle lanes	50	130
Bicycle mode share	1%	1%
Bus ridership (commute share)	5%	15%
BART ridership (passenger miles)	17,227,850	22,459,900
VMT reduction from TDM programs	1,705,370	25,757,280
New affordable multifamily units	70	540
Percentage of transit routes that receive supportive treatments	1%	2%
Change in percentage of households that have access to electric bike sharing	5%	9%

SOURCES

California Air Pollution Control Officers Association. 2010. "Quantifying Greenhouse Gas Mitigation Measures." http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoB-quantifying-greenhouse-gas-mitigation-measures.pdf.

Contra Costa Transportation Authority. 2018. "Contra Costa Countywide Bicycle Pedestrian Plan." https://ccta.net/wp-content/uploads/2018/10/5b8ec26192756.pdf.

US Census. "Contra Costa County 2019 ACS 5-Year Estimates, Table B08006."

Strategy TR-2: Increase the use of zero-emissions vehicles. Transition to a zero-emission County fleet by 2035 and a community fleet that is at least 50 percent zero-emission by 2030.

ACTIVITY DATA SAVINGS

Activity Data Type	2030	2045
Electricity used (kWh)	-111,003,180	-260,019,140
Natural gas (gallons)	2,760	5,450
Diesel (gallons)	530,690	1,353,420
VMT	14,260	14,260

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	148,000	343,890

KEY ASSUMPTIONS

	2030	2045
Percentage of ~~c~~County vehicles that are zero-emission	80%	95%
Percentage of community fleet that is zero-emission (light-duty)	35%	85%
Target percentage of total community TNC VMT from electric vehicles	75%	90%
Percentage of community fleet that is zero-emission (heavy-duty)	10%	70%
Target percentage total commercial Natural Gas VMT replaced by biomethane	2%	5%
Target percentage total commercial Diesel VMT replaced by biomethane	5%	15%
Percentage of lawn and garden fuel use converted to electric	30%	80%
Percentage construction equipment fuel use converted to electric	30%	60%
Percentage other commercial fuel use converted to electric	20%	55%
Number of EVs in EV car sharing	50	100

PERFORMANCE TARGETS

	2030	2045
New VMT from electric vehicles, community-wide, including municipal operations	325,676,160	968,702,100
Reduction in municipal vehicle gasoline use (gallons)	230,120	250,030
New VMT from electric vehicles, TNC	82,961,910	101,629,820
Reduction in offroad gasoline use (gallons)	2,113,740	0
Reduction in offroad diesel use (gallons)	3,625,240	0
Increase in biomethane VMT	3,003,670	8,050,840
Number of EVs in car sharing	50	100

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RESILIENT COMMUNITIES AND NATURAL INFRASTRUCTURE

Strategy NI-4: Sequester carbon on natural and working lands in Contra Costa County.

ACTIVITY DATA SAVINGS

There are no activity data savings associated with this strategy.

GHG SAVINGS

	2030 $MTCO_2E$	2045 $MTCO_2E$
GHG reduction (Absolute $MTCO_2e$)	22,630	88,910

KEY ASSUMPTIONS

	2030	2045
Percentage of irrigated crops with seasonal cover crops	15%	35%
Percentage of irrigated crops practicing mulching	5%	35%
Percentage of irrigated crops with compost application	15%	80%
Percentage of irrigated crops with field borders	2%	8%
Percentage of irrigated crops practicing alley cropping	10%	30%
Percentage of irrigated crops with conservation crop rotation	25%	50%
Percentage of irrigated crops practicing reduced tillage	15%	35%
Percentage of irrigated crops practicing no tillage	5%	10%
Percentage of orchards/vineyards with seasonal cover crops	5%	25%
Percentage of orchards/vineyards practicing mulching	5%	25%
Percentage of orchards/vineyards with compost application	15%	80%
Percentage of orchards/vineyards with windbreaks	0%	2%
Percentage of orchards with reduced tilling	10%	35%
Percentage of vineyards with reduced tilling	10%	35%
Percentage of pastures and rangeland with compost application	5%	15%
Percentage of pastures and rangeland with prescribed grazing	15%	40%
Percentage of pastures and rangeland practicing oak restoration	1%	5%
Percentage of pastures and rangeland practicing riparian restoration	0%	1.2%
Percentage of rangeland with range planting	2%	10%
Percentage of grasslands with native grass restoration	2%	10%
Percentage of forested areas undergoing annual fuel reduction	5%	25%

PERFORMANCE TARGETS

	2030	2045
Acres of irrigated crops with seasonal cover crops	3,770	8,130
Acres of irrigated crops practicing mulching	1,260	8,130
Acres of irrigated crops with compost application	3,770	18,590
Acres of irrigated crops with field borders	500	1,860
Acres of irrigated crops converted due to alley cropping	510	1,480
Acres of irrigated crops with conservation crop rotation	6,280	11,620
Acres of irrigated crops practicing reduced tillage	3,770	8,130
Acres of irrigated crops practicing no tillage	1,260	2,320
Acres of orchards or vineyards with seasonal cover crops	220	1,060
Acres of orchards or vineyards practicing mulching	220	1,060
Acres of orchards or vineyards with compost application	660	3,380
Acres of orchards or vineyards with windbreaks	-	80
Acres of orchards with reduced tilling	250	790
Acres of vineyards with reduced tilling	210	690
Acres of pastures and rangeland with compost application	7,430	21,430
Acres of pastures and rangeland with prescribed grazing	22,300	57,140
Acres of pastures and rangeland practicing oak restoration	1,490	7,140
Acres of pastures and rangeland practicing riparian restoration	-	1,710
Acres of rangeland with range planting	2,870	13,780
Acres of grasslands with native grass restoration	2,610	13,150
Acres of forested areas undergoing annual fuel reduction	3,030	15,250

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