

Charge Ahead: Strategy for A Zero-Emission County Fleet

Contra Costa County Zero Emission Vehicle Plan

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Acronym Guide

Acronym	Term
AB	Assembly Bill (California Legislature)
ACC/ACF/ACT	Advanced Clean Cars/ Fleets/ Trucks (California policy)
B	“Billion” monetary reference
BAAQMD	Bay Area Air Quality Management District
CARB	California Air Resources Board
CAAP	Climate Action and Adaptation Plan (2024)
CCTA	Contra Costa County Transportation Authority
C-TEC	Countywide Transportation Electrification Coordination
DCD	Contra Costa County Department of Conservation & Development
DER	Distributed Energy Resource
DR	Demand Response
EIA	Energy Infrastructure Agency (Federal)
EPA	Environmental Protection Agency (Federal)
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
GVWR	Gross Vehicle Weight Rating
ICE	Internal Combustion Engine
IRA	Inflation Reduction Act (Federal)
GHG	Greenhouse Gas
K	“Thousand” monetary reference
LCFS	Low-Carbon Fuel Standard
NREL	National Renewable Energy Laboratory (Federal)
M	“Million” monetary reference
MCE	Marin Clean Energy
OSHA	Occupational Safety and Health Administration
PG&E	Pacific Gas & Electric Company
PW	Contra Costa County Public Works
PV	Photovoltaic (Solar)

ROI	Return on Investment
SB	Senate Bill (California Legislature)
SEM Program	Strategic Energy Management Program (2024)
SUV	Sport Utility Vehicle
TCO	Total Cost of Ownership
V2G/ V2X	Vehicle-to-Grid / Vehicle-to-Anything
ZEV	Zero-Emission Vehicle

1. Vision Letter

Contra Costa County is at a turning point in an important transition to a lower carbon economy. This Zero-Emission Vehicle (ZEV) Plan builds upon the 2024 Contra Costa County Climate Action and Adaptation Plan (CAAP), a comprehensive vision and action plan for a sustainable future, charting a pathway to net zero greenhouse gas (GHG) emissions in the County by 2045. Transportation accounts for 47% of the County's GHG emissions, the single largest category of harmful carbon pollutants.

This challenge brings opportunity, as the County pursues innovative actions to transition its fleet to zero-emission by 2035, with the great majority of vehicles transitioning to all-electric. The ZEV Plan describes specific, timebound actions that the County can take to convert its fleet to zero-emission fuels and build out the infrastructure needed not only to support its own fleet, but neighboring municipal fleets, private vehicles driven by County employees, and the broader community. Converting the County fleet of more than 1,300 vehicles to zero-emission fuels will eliminate 43,000 tons of carbon dioxide equivalent (CO₂e) and 750 pounds (lbs) of particulate matter, which will improve local air quality and reduce pollutants associated with childhood asthma cases. These efforts are especially important for the County's Impacted Communities, which are already burdened by pollution from nearby industrial facilities. A foundational pillar of this ZEV Plan is to prioritize equity in the benefits, investments and strategies contained herein.

Our vision is that detailed ZEV Plan actions will create a ripple effect in the community. The County plans to launch innovative strategies to operate its fleet on zero emission fuels, learn from the experience, and share knowledge with community stakeholders in the private sector, nonprofits, and community-based organizations with similar goals and intentions to reduce carbon emissions from transportation. Some actions within this ZEV Plan will become direct investments in zero-emission transportation in the Contra Costa County community, such as opening up Electric Vehicle Supply Equipment (EVSE) at County facilities to the general public to charge their EVs.

Converting the transportation sector to zero-emission vehicles is a necessary step in reducing the harmful pollutants that cause climate change. While converting the County's fleet to zero-emission is a daunting task, it will be well worth the additional time and up-front investment, as the result will be cleaner air, reduced risk of wildfires, and a more resilient Contra Costa County.

2. How to Use the ZEV Plan

This ZEV Plan is intended to guide County staff to reach the goal established in the 2024 Climate Action and Adaptation Plan (CAAP) of converting the County's fleet of more than 1,300 vehicles to zero-emission by 2035.

This plan highlights the distinct steps that County staff and leadership may take to support, fund, and ultimately achieve this fleet transition. The County's ZEV journey thus far has demonstrated that simply converting gasoline vehicles to electric vehicles (EVs) is not enough to accomplish a functioning all-electric fleet; the County must also invest in supportive technology such as Electric Vehicle Supply Equipment (EVSE), workforce training, change management, and policy to uphold the transition.

Chapters four (4) through six (6) cover the key drivers and rationale for the County to embark on this fleet transition, as well as the recommended year-by-year vehicle conversions to EVs that the County may take in order to achieve an all-electric fleet at least cost with optimal outside investment, and while ensuring compliance with Federal, state and local regulations. The cost of the fleet transition is characterized by the Total Cost of Ownership (TCO) of each vehicle, taking into account the costs for up-front purchase, maintenance, repair and fueling over the lifetime of vehicles, comparing electrification scenarios against a baseline of no ZEV transition. These chapters focus on the vehicle conversions that must take place in order to achieve the CAAP goal of an all-electric fleet by 2035, though there is an alternate reference scenario analyzed where the fleet converts to zero-emission according to state policy compliance goals and a restricted budget.

Chapter seven (7) analyzes the current state of EVSE on County owned- and leased- sites, and recommends additional EVSE investment to support a full fleet transition. Vehicle domiciles, duty cycles and needs of County drivers from each Department were taken into account in order to arrive at these recommendations. The subsequent chapters in this ZEV Plan contain specific, actionable and timebound recommendations organized by key topics, such as Regional Collaboration, Funding and Financing, Policy, and Innovation. These additional recommendations are essential to a successful fleet transition, as they will ensure that County financial resources are considered and conserved whenever possible, key stakeholders are informed, County drivers are comfortable with new technologies, and a trained workforce is ready to address the need to service new vehicles and EVSE.

The ZEV transition will be a learning process, and the recommendations in this ZEV Plan are a starting point for the County to take action, plan for the future, and iterate as the transition continues.

3. Executive Summary

This Zero-Emission Vehicle (ZEV) Plan outlines a roadmap for Contra Costa County to transition its fleet of more than 1,300 vehicles to zero-emission by 2035, aligning with state, regional, and local sustainability goals. The plan analyzes various scenarios and provides actionable recommendations across key areas.

Key Findings

- **Achieving the CAAP Scenario is Most Cost-Effective:** A Total Cost of Ownership (TCO) analysis reveals that achieving the Climate Action and Adaptation Plan (CAAP) goal of full fleet electrification by 2035 is the least expensive option in the long term, with a TCO of just under \$200M compared to \$239M for the Fossil Fuel Baseline Scenario.
- **Significant EVSE Investment Required:** The County needs to invest an estimated \$26.5 million in EVSE infrastructure, requiring 266 Level 2 charging ports and 100 DCFC spread across County-owned and leased sites. Investment is front-loaded with significant investment in EVSE through 2031.
- **ZEV Transition Benefits the Environment and Public Health:** Transitioning the full County fleet is estimated to save 43,000 tons of carbon dioxide equivalent (CO₂e) and 750 pounds (lbs) of fine particulate matter (PM 2.5) over 15 years, improving environmental and public health outcomes.

Key Action Areas

Funding and Financing

- Actively pursue outside funding resources (rebates, incentives, grants).
- When available, utilize tax equity financing for EVSE projects and Elective Pay options for EV purchases.
- Leverage Low Carbon Fuel Standard (LCFS) credits for up to 15% cost reduction for EVSE
- Explore innovative financing strategies such as vehicle leasing and green bonds.

Workforce Development

- Prioritize two key skillsets for in-house County workforce: EV Mechanics and EVSE O&M Specialists
- Partner with unions, educational institutions, utilities, and the Contra Costa County Workforce Development Board (WDBCCC) to plan robust job training pathways for new and existing hires

Regional Collaboration

- Leverage the Countywide Transportation Electrification Coordination (C-TEC) to consider a Joint Powers Authority (JPA) to procure EVSE and coordinate on grants and incentives

- Leverage utility partnerships with MCE and PG&E for grid planning and incentives

Policy

- Set clear EV charging etiquette and policies, emphasizing communication and safety
- Prioritize County and agency fleets for DCFC access while accommodating personal employee EVs with Level 2 chargers
- Allow take-home fleet EV fleet charging with reimbursement at the IRS variable-cost mileage rate

Next Steps

This ZEV Plan provides a comprehensive framework for Contra Costa County to achieve its ambitious fleet electrification goals. Successful implementation will require ongoing collaboration, strategic investment, and a commitment to innovation and equity.

4. EV Market and Drivers

4.1 EV Policy Drivers

Policies at the local, State and Federal level are driving the transition to zero-emission vehicles. The following policies are the most influential in shaping the EV transition curve for Contra Costa County.

County Policies

In 2019 the Contra Costa County Transportation Authority (CCTA) published the Contra Costa Electric Vehicle Readiness Blueprint (EV Blueprint), a preliminary plan outlining short-, medium-, and long-term actions to support transportation electrification. The Blueprint does not set a long-term procurement or EVSE infrastructure mandate but evaluates EV adoption scenarios using Energy Information Administration (EIA) sales projections and contemporaneous state GHG and carbon-neutrality policies. Many Blueprint recommendations have been updated and re-contextualized for this report.

In November 2020 voters approved Measure X, a half-cent countywide sales tax that generates roughly \$120 million per year for County priorities. The Board of Supervisors allocates these funds with input from a countywide Advisory Board.

To date, the County has designated \$2.5M annually (\$7.8M to date) to a Sustainability Fund from Measure X to support Climate Action and Adaptation Plan (CAAP) objectives. The Sustainability Fund is intended to finance investments that advance CAAP objectives within County facilities—such as lighting, building controls, and related systems—thereby lowering barriers for departments to implement these upgrades. The County Energy Management Team uses Sustainability Fund resources as matching funds for state and federal grants to invest in Electric Vehicle Supply Equipment (EVSE). As of Q2 2025, \$3.6M of the Sustainability Fund has been allocated to EVSE on County sites, and leveraged to secure approximately \$18M in additional state and federal funding for additional EVSE.¹

Also in February 2022 the County adopted a vehicle purchasing policy establishing mileage-based replacement milestones and directing Public Works to “utilize EVs to the greatest extent possible unless there is a compelling documented reason that an EV does not meet operational needs.”² Replacements must be zero-emission except for emergency response vehicles or when a ZEV model does not meet duty-cycle requirements. The policy defines “zero emission” to include battery electric vehicles, hydrogen vehicles, and plug-in hybrid electric vehicles (PHEVs), with PHEVs permitted only when a full EV is demonstrably insufficient.

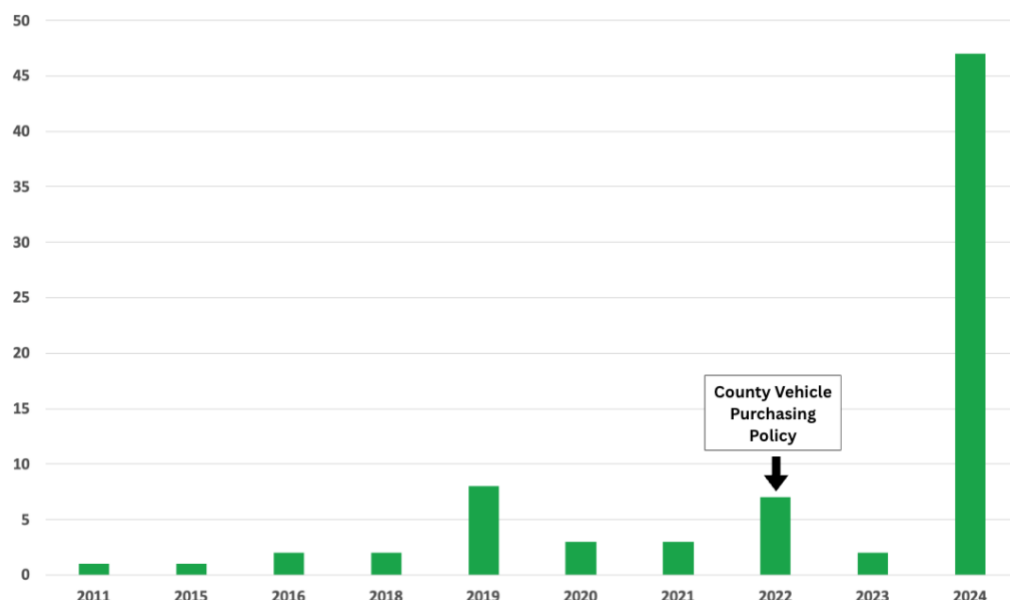
¹ County Measure X Sustainability Fund website, <https://www.contracosta.ca.gov/10249/Measure-X-Community-Impact>

² Administrative Bulletin 508.6, County Vehicle and Equipment Acquisition and Replacement Policy, February 10, 2022.

The 2022 purchasing policy has been the most significant local driver of fleet electrification. Prior to its adoption the County had purchased 20 EVs; by the end of 2024 purchases had more than tripled to 76 EVs (see Figure 1),³ reflecting the policy's immediate impact.

In 2024 the County updated its CAAP, which sets a pioneering fleet target: all County vehicles will be zero-emission by 2035.⁴ While the CAAP allows hydrogen and PHEVs, the expectation is that the vast majority of replacements will be battery electric. Supporting CAAP actions include large-scale EV charger deployment, local policy changes to require or incentivize additional chargers, and support for e-mobility solutions (e-bikes, e-scooters, and EV car-share).

Figure 1: Historical County EV Purchases Through 2024



State Policies

California State policies in sustainability, greenhouse gas (GHG) reduction, and zero-emission transportation are influencing the County's EV transition.

In 2006, California passed Assembly Bill (AB) 32, the first major statewide GHG reduction bill, requiring the state to reduce GHGs to 1990 levels by 2020. AB 32 set the stage for myriad sustainability initiatives in the state, including zero-emission transportation programs and requirements that would develop over the next two decades. This legislation also empowered the California Air Resources Board (CARB) to monitor and regulate all sources of GHGs across the state, including the transportation sector. In 2018, California passed Senate Bill (SB) 100, requiring that the state meet ever-increasing levels of zero-carbon sources of electricity, until all retail electric sales are 100% zero carbon by 2045. While not explicitly a transportation bill, SB

³ Contra Costa County AssetWorks, data pull February 2025

⁴ Contra Costa County Climate Action and Adaptation Plan, 2024, Goal TR-2, <https://www.contracosta.ca.gov/8678/Climate-Action-Plan>

100 provided a roadmap to electrify energy end-uses while ensuring low- or zero- emissions as electrification progresses.

The most influential state policies that directly influence the transition to EVs are the Advanced Clean Cars (ACC), Advanced Clean Trucks (ACT), and Advanced Clean Fleets (ACF). Advanced Clean Cars and Advanced Clean Trucks regulations have been lowering GHG emissions allowances for light-duty cars and sports utility vehicles (SUVs) since 2012. In 2020, California Governor Gavin Newsom signed Executive Order 79-20,⁵ establishing a long-term goal that light-duty vehicles in the state shall be zero-emission by 2035, and that medium- and heavy-duty vehicles will be zero-emission by 2045. In keeping with that Executive Order, the 2021 ACF regulation requires that all public and private owners of fleets larger than 50 vehicles and/or more than \$50M in annual revenue phase in zero-emission vehicles over time. Fleet owners can choose between two pathways for compliance: 1) a Milestone option, where fleet owners must achieve increasing percentages for the proportion of ZEVs in the fleet, by vehicle type; and the 2) Model Fleet Year option, where older internal combustion engine (ICE) engines must be retired and replaced with ZEVs at prescribed vehicle age milestones.⁶

Contra Costa County has chosen the Milestone option for ACF compliance, to provide the fleet manager with full flexibility to transition vehicles at intervals most appropriate to the County while ensuring that overall ZEV percentages are met. Figure 2 shows the ZEV percentages by vehicle type that must be met under the ACF Milestone option.

Figure 2: ZEV Percentages to Comply with California’s ACF Milestone Option

Percentage of vehicles that must be ZEVs	10%	25%	50%	75%	100%
Milestone Group 1: Box trucks, vans, buses with two axles, yard tractors, light-duty package delivery vehicles	2025	2028	2031	2033	2035 and beyond
Milestone Group 2: Work trucks, day cab tractors, pickup trucks, buses with three axles	2027	2030	2033	2036	2039 and beyond
Milestone Group 3: Sleeper cab tractors and specialty vehicles	2030	2033	2036	2039	2042 and beyond

Federal Policies

The U.S. federal government has historically implemented a range of policies to accelerate vehicle conversion to all-electric, focusing on both consumer incentives and infrastructure development. The Clean Vehicle Tax Credit, expanded under the Inflation Reduction Act of 2022 (IRA), had provided up to \$7,500 for qualifying new EVs and up to \$4,000 for used EVs,

⁵ California Executive Order N-79-20, signed September 23, 2020: <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>

⁶ California Air Resources Board (CARB), Advanced Clean Fleets (ACF) Regulation <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets>

helping reduce upfront costs. The IRA also invested billions in domestic EV battery manufacturing and supply chains to strengthen U.S. competitiveness. Additionally, the National Electric Vehicle Infrastructure (NEVI) program had allocated \$5B to build a nationwide network of Direct Current Fast Chargers (DCFC) along major highways, improving accessibility and reliability for drivers. Together, these policies aimed to lower barriers to EV adoption, stimulate market growth, and support the transition to a cleaner transportation system.

These policies and many others in the clean energy sector have been suspended by the current Trump administration. The IRA-driven tax credits ended in September 2025. Although promoting the EV market is not a priority for the current U.S. Administration, the U.S. EV market continues to grow, driven by consumer interest, economic drivers, and state and regional policies. It is also possible that future U.S. Administrations will be more supportive of transportation electrification.

4.2 Stakeholder Drivers

People are a central driver of the County's ZEV transition. County leaders sponsored the key policies and resources guiding this effort: the Vehicle Purchasing Policy, the Climate Action and Adaptation Plan (CAAP), and the Measure X Sustainability Fund.

- **Green Government Group (G3) Champions:** Cross-departmental staff who implement CAAP actions, including all-electric fleet conversion and expanded EVSE at County sites. The G3 Champions influence culture change in their Departments to support sustainability initiatives.
- **Interdepartmental Climate Action Task Force:** Director-level leaders overseeing Measure X Sustainability Fund allocation, a primary source of funding for EV and EVSE investments.
- **County Sustainability Commission:** Appointed community members who advise the Board of Supervisors and staff on CAAP implementation; major efforts typically undergo Commission review before Board consideration.
- **Board Sustainability Committee:** A subset of Supervisors that engages with staff and the Sustainability Commission and provides in-depth oversight to inform Board decisions.

4.3 Global and U.S. EV Market

Worldwide, EV manufacturing and sales are entering an inflection point where production is diversifying from a few light-duty models to mass manufacturing across a wider range of vehicle types. To wit, in 2022 EVs represented 14% of all vehicles sold worldwide, and in 2023 this percentage rose to 18%.⁷

⁷ EV Outlook 2024, International Energy Agency <https://iea.blob.core.windows.net/assets/a9e3544b-0b12-4e15-b407-65f5c8ce1b5f/GlobalEVOutlook2024.pdf>

Manufacturing remains regionally concentrated, with China leading global EV production and accounting for roughly half of all EVs manufactured despite representing only about 10% of all internal combustion vehicles manufactured. EV manufacturing is expected to diversify across the sector because 90% of vehicle manufacturers now have electrification goals and plan to develop more EV models over the next ten years.

Sales are likewise regionally concentrated, with the majority of EV sales occurring in China (60%), Europe (25%) and the US (10%). Reasons for this concentration include supportive regional policies and consumer preferences that favor locally manufactured vehicles, particularly in China.

Affordability is a central driver of potential EV market share growth, and China currently leads in this area: in 2023, 60% of Chinese EVs were cheaper than comparable fossil-fuel alternatives. By contrast, EVs in the US and Europe were 10% to 50% more expensive in upfront capital than gasoline or diesel alternatives. This disparity stems from China's focus on lighter-duty, lower-cost EVs and aggressive pricing strategies to rapidly grow market share; prior to the 2025 tariffs the IEA projected price parity by 2030.

Recent U.S. policy changes are altering price dynamics and market forecasts: as of April 2025, the Trump administration imposed a 25% tariff on vehicle components manufactured outside the U.S., clarified not to be stacked with other material tariffs. These tariffs are expected to primarily affect Chinese-made vehicles and components and will also impact domestically manufactured EV prices, since many U.S. OEMs source parts and materials from China. Additionally, the administration withdrew major aspects of the 2022 Inflation Reduction Act (IRA), which provided EV tax credits and grant funding that previously stimulated the U.S. EV market.

The combined effect of tariffs and potential IRA withdrawal is a slowing of U.S. light-duty vehicle sales overall and a reduced EV growth rate in particular. J.D. Power projects U.S. vehicle prices will rise by 5% by the end of 2025, producing an 8% reduction in overall vehicle sales; EV share of light-duty vehicles is now predicted at 11% by end-2025 (down from a pre-tariff 12% scenario), though still expected to grow to 45% by 2035 and 64% by 2040.⁸ Under the current administration, hybrid and plug-in hybrid growth is expected to be higher than previously predicted and is being marketed as a cost-effective alternative that mitigates range anxiety.⁹

Medium- and heavy-duty electrification is likely to advance faster than light-duty in the U.S., driven by regulatory pressure. The EPA's 2024 phase-3 greenhouse gas rules will tighten emissions standards for model year 2027 heavy-duty vehicles and impose more stringent standards through 2028–2032; if implemented, CalStart predicts electric trucks could comprise more than half the heavy-duty truck market by 2032, representing a market size exceeding \$70 billion.

⁸ National Public Radio (NPR) Up First Podcast, "America is Changing Lanes on EVs," June 29, 2025.

⁹ J.D. Power, "How have global EV forecasts adjusted to tariffs?" April 30, 2025

<https://autovista24.autovistagroup.com/news/how-have-global-ev-forecasts-adjusted-to-tariffs/>

Paradoxically, global EV light-duty market share may accelerate even under the current U.S. tariff scenario, with forecasts showing worldwide EV share reaching 19% by end-2025 and potentially 80% by 2045. This faster global growth is driven in part by China expanding its presence in Europe and developing countries to compensate for reduced access to U.S. markets.

For the County, these global shifts imply procurement implications: local vehicle buyers may need to source internationally to access the volume and variety of EVs required to transition the County's fleet of 1,300+ vehicles to zero-emission vehicles (ZEVs).

4.4 California EV Market

California has established the most ambitious zero-emission transportation goals in the nation, underpinned by the Advanced Clean Cars (ACC), Advanced Clean Trucks (ACT), and Advanced Clean Fleets (ACF) regulations. These policies, coupled with the state's commitment to carbon neutrality by 2045, mandate a transition to zero-emission vehicles across various sectors. Specifically, all light-duty vehicles sold in the state must be zero-emission by 2035, and medium- and heavy-duty vehicles by 2045.

The state's progress towards near-term milestones provides valuable insights into the effectiveness of these policies and the likelihood of achieving long-term objectives. However, recent developments and market trends raise questions about the trajectory of EV adoption.

Notably, upon President Donald Trump taking office in January 2025, California rolled back key components of the ACT and ACF regulations pertaining to privately-owned diesel vehicles and locomotives. These segments would have required a Federal Clean Air Act waiver, presenting a significant regulatory hurdle. Currently, the ACF regulation only applies to state and local government fleets, maintaining the mandate for the County's 1,200-vehicle fleet and other municipal fleets to transition to zero-emission vehicles by 2045. The 2035 zero-emission target for light-duty vehicle sales remains in place and is currently unchallenged.¹⁰

Data from the California Energy Commission indicates consistent growth in EV registrations between 2020 and 2023. However, registrations remained static in 2024. This slowdown has raised concerns as to whether California will meet its 2026 milestone of 35% of new car sales being EVs. Furthermore, the sales-based nature of the target means that consumers can potentially circumvent the policies by purchasing gasoline-powered vehicles in other states or extending the lifespan of existing vehicles.

Several factors are influencing consumer adoption. Interviews with auto industry experts by The early adopter market – characterized by higher incomes, left-leaning political views, and strong environmental values – has largely been saturated.¹¹ Broader consumer adoption, especially

¹⁰ California Air Resources Board, Advanced Clean Fleets Regulation: <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets>

¹¹ CalMatters, "California's surge in EV sales has stalled — so what happens to its landmark mandate?" February 6, 2025: <https://calmatters.org/environment/climate-change/2025/02/electric-car-sales-stall-california>

among residents of multi-family housing, is contingent on addressing concerns about vehicle cost, range limitations, and charger access. The market dominance of Tesla has become another variable influencing California consumer interest in electric vehicle purchases. Due to Tesla CEO Elon Musk's diminished public image among left-leaning consumers, some California consumers are now unwilling to purchase Tesla vehicles, and may even seek to sell their Tesla stocks and Teslas.

This shift is supported by first quarter 2025 data, which showed a 21% decline in Tesla vehicle registrations. While other EV brands helped to partially offset this drop with a combined 14% increase in registrations, the overall trend indicates a potential challenge to continued growth. Additionally, auto industry experts believe that consumers are not always aware of the potential long-term cost savings associated with EVs, highlighting the need for robust consumer education initiatives.¹²

To comply with ACT and ACF regulations, California OEMs not able to meet percentage sales requirements are allowed to purchase credits from OEMs that sell only electric cars, such as Tesla and Rivian. Given these mixed market signals, California may face challenges in meeting its clean transportation targets if consumer adoption does not accelerate.

One potential positive indicator is the increased diversification of EV models available to California consumers: the first quarter of 2025 saw 147 ZEV models in the California market, a substantial increase from the 105 models available in the first quarter of 2024.¹¹

To maintain its ZEV transition goals, California must strategically invest in both vehicle availability and supporting infrastructure. A significant deterrent to consumer adoption remains "range anxiety"—the concern that conveniently located and readily available charging options will be lacking. Expanding EVSE availability can alleviate this concern.

The recent lawsuit filed by California and several other states against the federal government, which seeks to challenge the cancellation of federal EVSE investments, underscores this need. The outcome of this legal challenge will directly impact California, potentially costing the state \$300 million earmarked for EVSE deployment. Should the lawsuit prove unsuccessful, California, and individual entities such as Contra Costa County, will need to consider allocating greater local taxpayer dollars to support a successful ZEV transition.

¹² California Energy Commission, "California ZEV Sales Hold Steady to Start 2025," May 16, 2025: <https://www.energy.ca.gov/news/2025-05/california-zev-sales-hold-steady-start-2025>

Figure 3: California ZEV Sales: 2020 - 2024

Zero-emission vehicle sales remained flat in 2024

Annual percent of new California car registrations that were battery electric, plug-in hybrid or hydrogen fuel cell

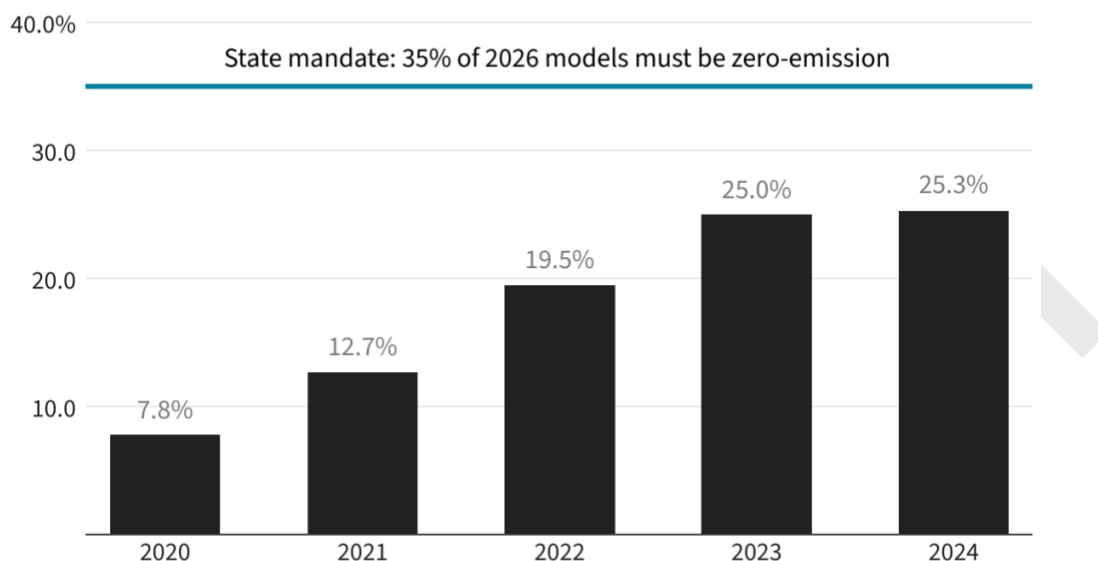


Chart: Erica Yee, CalMatters • Source: California Energy Commission

4.5 Bay Area EV Market

The Bay Area is a national leader in EV adoption, with over 500,000 EVs—more than 25% of California’s total—and repeated recognition of San Francisco and San Jose among top U.S. metropolitan areas for EV uptake.¹³

As of 2024 nearly 10% of Bay Area vehicles were all-electric. The Bay Area Air Quality Management District (BAAQMD) targets 90% transportation electrification by 2050 (about 5 million vehicles) and an interim milestone of 1.5 million EVs by 2030. Contra Costa County had over 65,000 registered EVs as of July 2025; registrations have more than doubled since 2021, with roughly 13,000 new registrations in 2023.¹⁴ Although growth moderated in 2024, recent acceleration highlights the need for expanded charging infrastructure, trained technicians, and driver outreach.

The Bay Area currently has roughly 23,500 public charging ports, including 1,589 in Contra Costa County. The National Renewable Energy Laboratory (NREL) estimates that charger

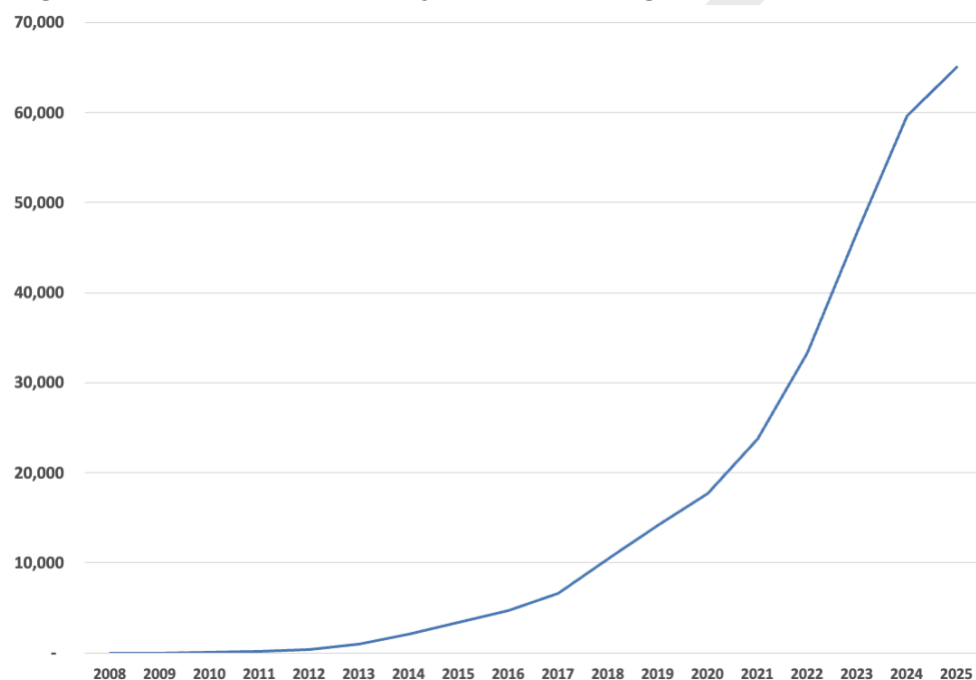
¹³ New York Times, “The Bay Area Leads the National Shift to Electric Vehicles” March 12, 2024

¹⁴ California Energy Commission, ZEV and Infrastructure Stats Data, as of July 31, 2025.
<https://www.energy.ca.gov/files/zev-and-infrastructure-stats-data>

supply must more than double within five years to support BAAQMD's near-term goals, indicating a substantial infrastructure gap.¹⁵

EV adoption is uneven across the region: higher-income ZIP codes show the highest uptake, while lower-income areas such as Richmond and San Pablo lag.¹⁶ Contributing factors include upfront vehicle costs and higher renter populations, which complicate private-property charger deployment. This equity gap affects charger distribution and County fleet operations that will rely on public charging in the same way gasoline vehicles rely on public stations. To meet regional targets and ensure operational reliability, County EV support and incentive programs should prioritize equitable charger deployment, renter/landlord solutions, and targeted outreach.

Figure 4: Contra Costa County EV Vehicle Registrations (Cumulative), 2008 - 2025



5. ZEV Transition

5.1 Current State of the County's EV Fleet

The County's ZEV transition assumes gasoline and diesel vehicles will be converted primarily to battery electric vehicles. A limited number of hydrogen vehicles is possible but unlikely given

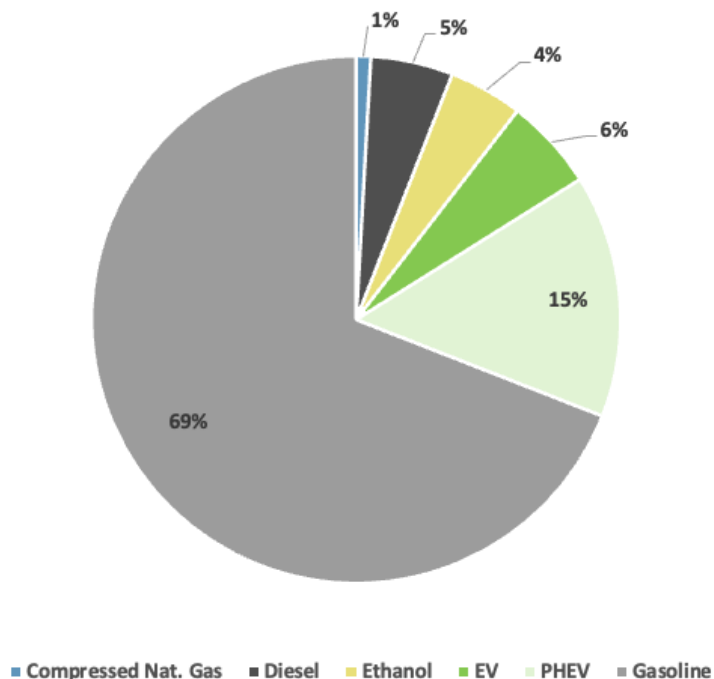
¹⁵ EV Coordinating Council Presentation, BAAQMD and Acterra, June 4, 2025: https://www.baaqmd.gov/~media/files/planning-and-research/ev-coordinating-council/2025-meetings/060425-meeting/ev-council-slides-june_4_2025-regional-collaboration-pdf.

¹⁶ California Energy Commission, ZEV Sales by Zip Code: <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/new-zev>

current refueling network constraints. Transition timing will vary by vehicle class according to economics, technology, and policy.

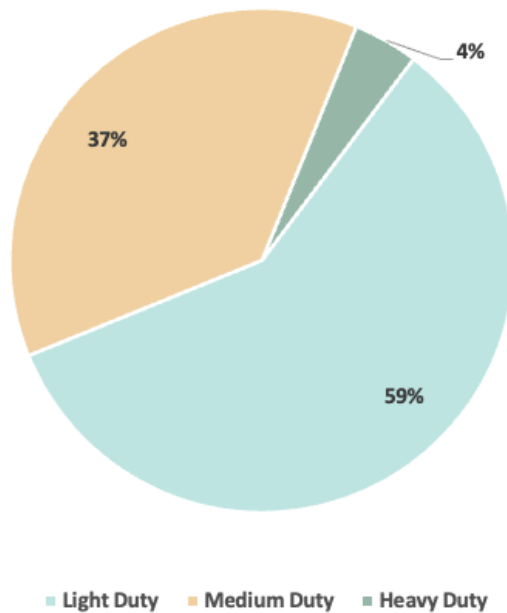
As of April 2025, the County operates 1,368 fleet vehicles, of which 76 are EVs (6%). Most vehicles use unleaded gasoline; plug-in hybrid electric vehicles (PHEVs) make up 15% of the fleet and serve as an interim technology toward full ZEV adoption.

Figure 5: Breakdown of County Vehicles by Fuel Type



By Gross Vehicle Weight Rating (GVWR), 59% of fleet vehicles are Light Duty (<8,500 lb), 37% are Medium Duty (8,500–14,000 lb), and 4% are Heavy Duty (>14,000 lb). Without ACF regulations, Light-Duty vehicles would likely transition first to all-electric because of greater market availability. However, the ACF targets Medium- and Heavy-Duty fleets and the County's Milestone Group Option requires annual percentages of Medium/Heavy all-electric conversion.

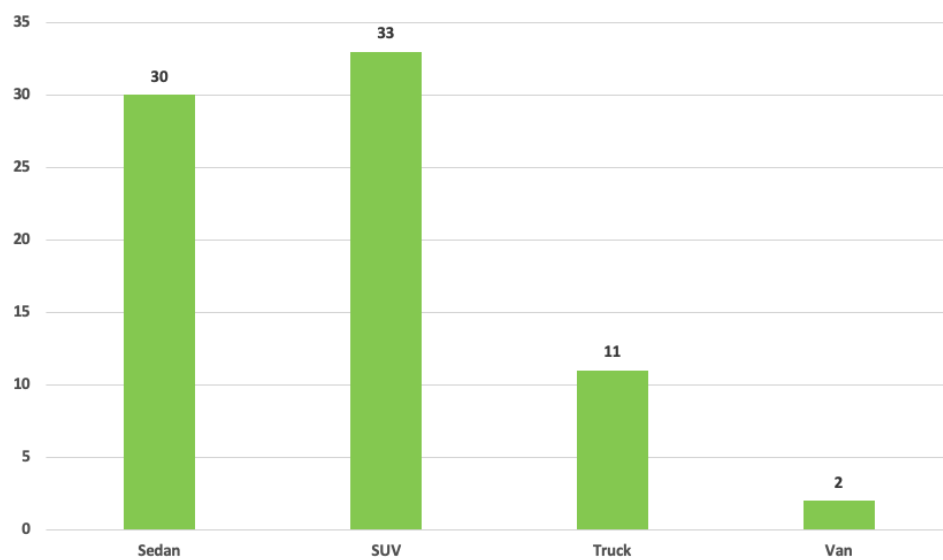
Figure 6: Breakdown of County Vehicles by Weight Class



The County's EV fleet is skewed toward Light Duty. Light-Duty vehicles account for 84% of EVs, Medium-Duty for 16%, and Heavy-Duty for 0%, compared with 59% Light-Duty in the overall fleet.

The County's first EV was a 2012 Ford Transit Connect (Medium-Duty) acquired for the Print & Mail Department because of its reliable duty cycle. Between 2012 and 2017 the County added three (3) small EV sedans. From 2017 to 2022 the County purchased 16 Chevrolet Bolts, which remain the most common EV sedan in the fleet. After the 2022 Vehicle Purchasing Policy, County EV acquisitions accelerated and diversified. By the end of 2024, the County EV fleet had more than doubled and included small Sport Utility Vehicles (SUVs) and ½-ton trucks. The Toyota bZ4X represents 23 of the 33 SUVs. The County also purchased nine (9) Ford F-150 Lightning pickups and an additional electric transit van, expanding the Medium-Duty EV inventory.

Figure 7: Breakdown of County Electric Vehicles by Type



5.2 County EV Transition Curve and Timeline

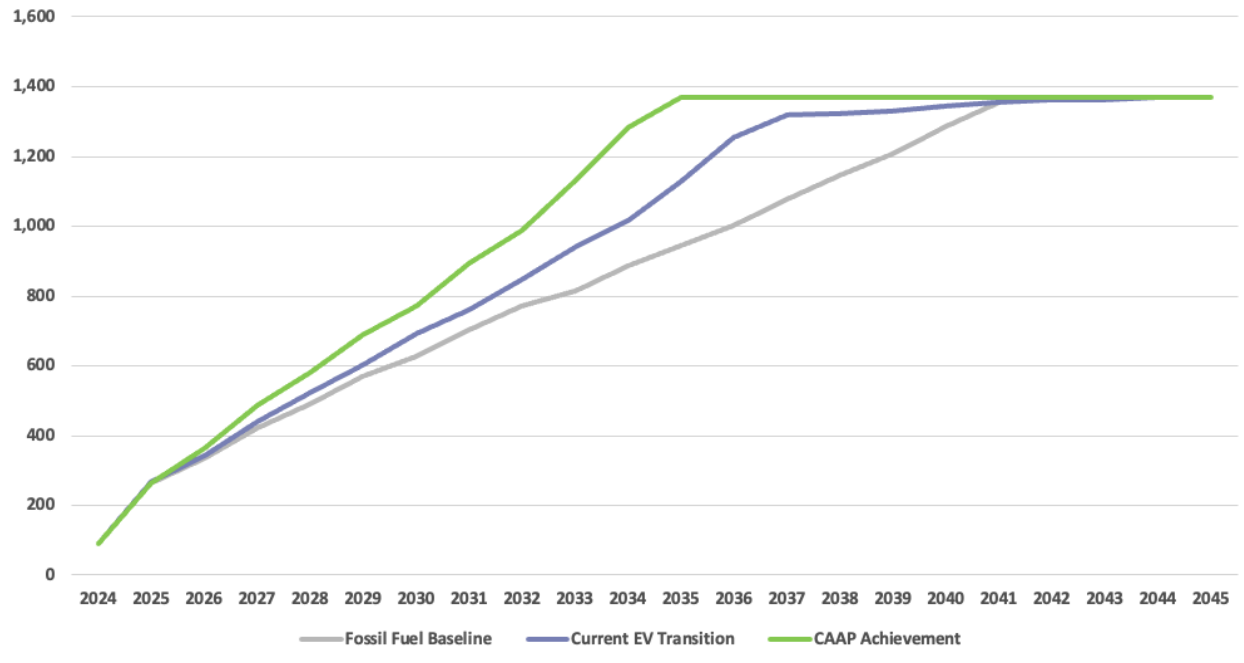
The County is pursuing a primarily electric fleet in line with state, regional, and County policies. Using estimated mileage-driven replacement schedules and ACF milestone percentages by vehicle class, three (3) 20-year transition scenarios were modeled:

- 1. Fossil Fuel Baseline:** Assumes no further all-electric replacements—all subsequent vehicle purchases are gasoline or diesel. Although unlikely given current policy, this baseline provides a point of comparison for lifecycle cost categories (capital, fuel, maintenance, repair). The curve shows gasoline/diesel replacements as vehicles age; by 2045 the fleet is fully replaced with conventional vehicles.
- 2. Current EV Transition:** Reflects the County's present trajectory, driven by ACF compliance and the County Vehicle Replacement Policy, with the replacement budget held at the 2024 level plus a 4% annual inflation escalator. Under these budget constraints, the CAAP goal of an all-electric fleet by 2035 is tracked but not achieved: the fleet reaches 69% electrification by 2035 and full electrification by 2044.
- 3. CAAP Goal Achievement:** Models attainment of a fully electric fleet by 2035. ACF compliance is achieved early, unlocking key incentives, notably for medium- and heavy-duty vehicles. This Scenario has no imposed budget constraint; required budget is an output of the model. The transition curve is the steepest, with EV purchases concentrated before 2035 and investment flattening thereafter.

Figure 8 compares replacement curves for all three scenarios. The CAAP Goal Achievement Scenario shows the fastest transition. The Current EV Transition Scenario is more gradual, with most replacements by 2037 and medium/heavy-duty vehicles mandated to electrify by 2045

under ACF. The Fossil Fuel Baseline is the slowest vehicle transition curve, reflecting only age-based replacement.

Figure 8: EV Transition Curve: Fossil Fuel Baseline, Current EV Transition, and CAAP Achievement



Figures 9 and 10 present transition curves by vehicle class for all three Scenarios. The light-duty curves show the largest divergence between the Fossil Fuel Baseline and the electrification scenarios because the current average current age of light-duty vehicles is 7.5 years versus 11.5 years for medium- and heavy-duty vehicles; medium/heavy vehicles therefore reach replacement sooner, while light-duty vehicles have more remaining service life. In both electrification scenarios, light-duty turnover is steepest from 2032–2035 as younger vehicles maximize service life before transitioning to all-electric. Medium- and heavy-duty electrification follows a more linear trajectory from 2029 to roughly 2035–2037, then flattens — despite the ACF requirement to electrify by 2045 — because many medium/heavy vehicles will age out and be replaced earlier.

Figure 9: Light-Duty EV Transition Curve: Fossil Fuel Baseline, Current EV Transition, and CAAP Achievement

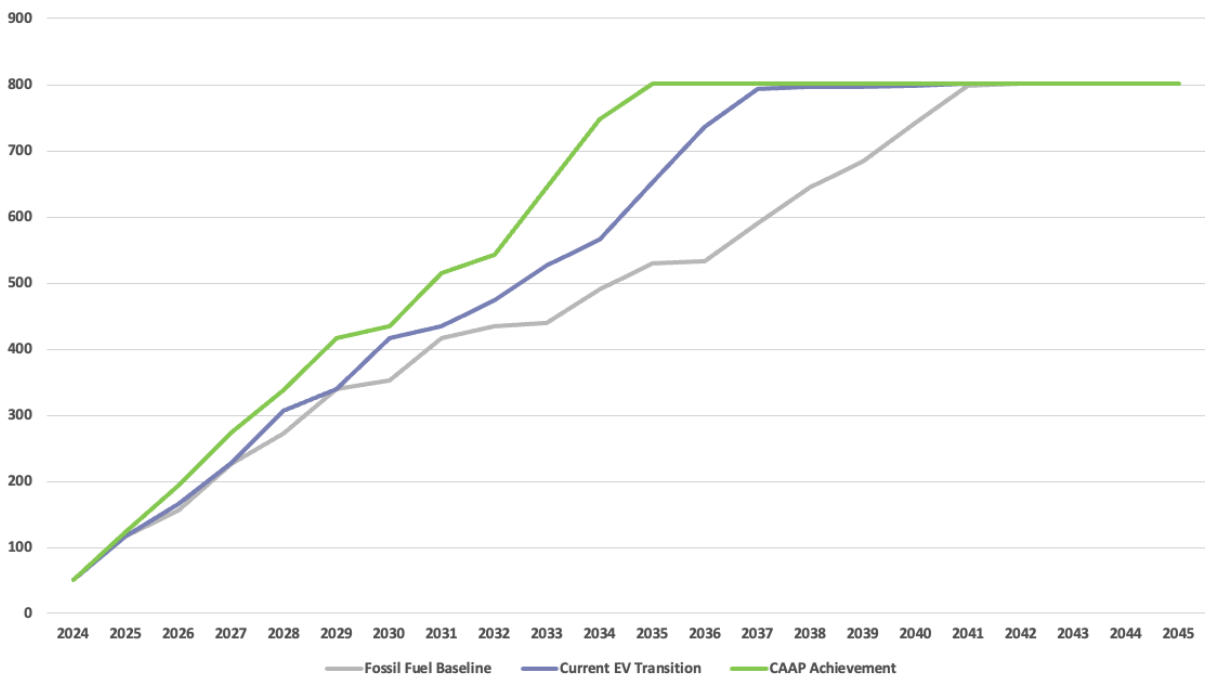
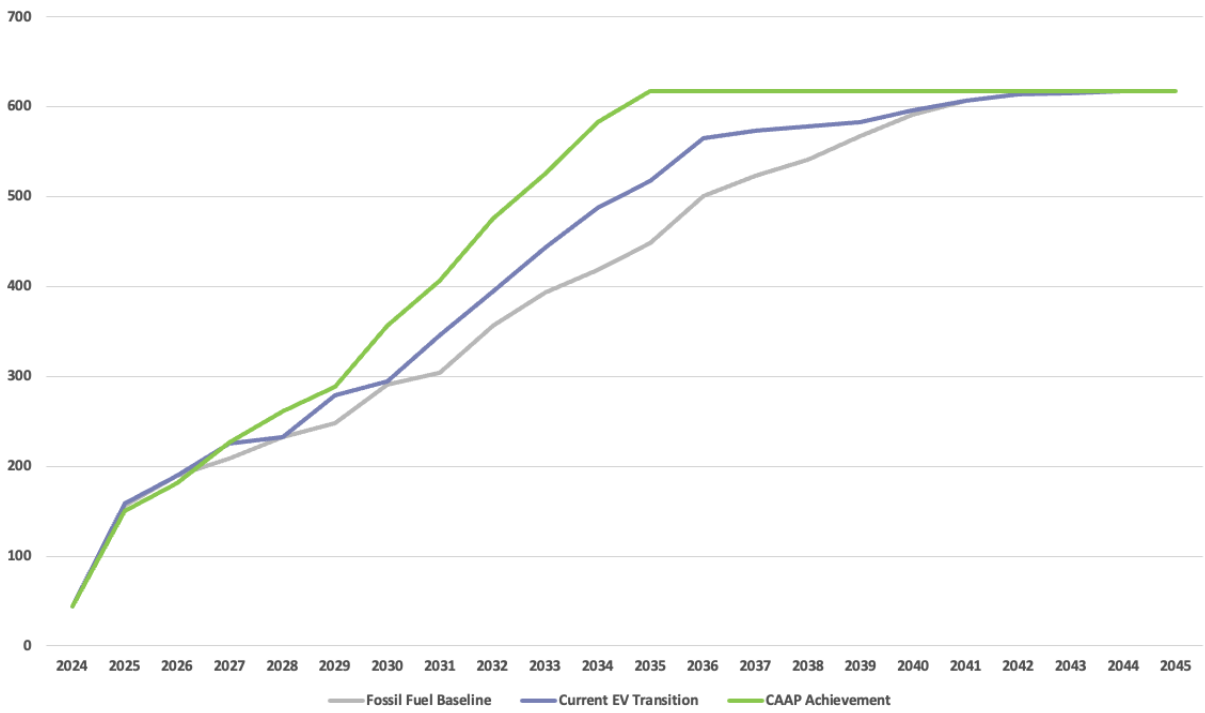


Figure 10: Medium- and Heavy-Duty EV Transition Curve: Fossil Fuel Baseline, Current EV Transition, and CAAP Achievement



5.3 Environmental and Public Health Benefits of ZEV Transition

The County's ZEV transition will deliver substantial environmental and public-health benefits. Using the International Energy Agency's Electric Vehicle Lifecycle Assessment Calculator, lifecycle greenhouse gas emissions (metric tons CO₂-equivalent, tCO₂e) were estimated for transitioning the County's fleet of 1,368 vehicles, excluding the 76 already electrified. Vehicles were modeled in three weight classes (light, medium, heavy) with a 15-year service life. All electric vehicles were assumed to charge at MCE's Deep Green rate carbon intensity for 2030 (40 g CO₂e/kWh). The baseline for comparison is the Fossil Fuel Baseline Scenario, in which 1,292 vehicles remain gasoline- or diesel-powered. Over the lifetimes of the transitioned fleet vehicles, the analysis estimates a reduction of approximately 43,194 tCO₂e.

The full fleet transition is also estimated to reduce fine particulate matter (PM_{2.5}) emissions by about 750 pounds over the vehicles' combined lifetimes.¹⁷ PM_{2.5} exposure is associated with respiratory illnesses, including asthma in children.¹⁸ Localized emissions reductions would yield measurable public-health benefits across Contra Costa County.

6. Total Cost of Ownership Analysis of the EV Transition

6.1 Value of Conducting TCO Analysis

Analyzing the Total Cost of Ownership (TCO) of EVs compared to gasoline and diesel vehicles is valuable because it provides a more complete picture of the financial implications of electric vehicle (EV) adoption over time. A TCO analysis for vehicles is a way to calculate the full financial impact of owning and operating a vehicle over its entire lifespan. Instead of focusing only on the purchase price, TCO adds up all major costs—fuel or electricity, maintenance and repairs—to show the true long-term cost of ownership. This helps compare different vehicle options more accurately, such as electric vehicles versus gas and diesel vehicles.

While EVs often have higher up-front capital purchase prices, they typically offer significant long-term savings through lower fuel costs, reduced maintenance needs, and potential incentives or tax credits. In contrast, gasoline and diesel vehicles may appear more affordable initially but can accumulate higher operating and maintenance expenses over their lifespan. By evaluating TCO, the County can make informed decisions that go beyond sticker price, accounting for the true economic benefits of EV adoption and better aligning purchasing decisions with long-term financial and sustainability goals.

¹⁷Same assumptions were used as in the above paragraph. PM_{2.5} emissions reductions were calculated using the assumptions embedded in the Argonne National Laboratory's AFLEET Model for electric vehicle conversions: <https://afleet.esia.anl.gov/home/>

¹⁸ National Institute of Health (NIH), "The relationship between PM_{2.5} and the onset and exacerbation of childhood asthma: a short communication," Zhang, et. al., August 2023 <https://pmc.ncbi.nlm.nih.gov/articles/PMC10429171/>

6.2 TCO Methodology and Assumptions

The County commissioned a Total Cost of Ownership (TCO) model-based analysis from consultant Glumac to evaluate the financial implications of transitioning its fleet from primarily gasoline to electric vehicles over the next 20 years. The primary purpose of this model is to inform long-term planning by comparing the costs associated with different fleet transition Scenarios: Fossil Fuel Baseline, Current ZEV Transition, and CAAP Goal Achievement. The core of the TCO analysis hinges on effectively comparing and contrasting the lifetime and ownership costs for both gasoline/diesel and EV models to inform a decision on transition strategy.

The methodology for this TCO analysis focuses on integrating detailed data from Contra Costa County with external research to project costs across the specified scenarios. The key components considered in the TCO model include: 1) vehicle purchase price, 2) routine maintenance expenses, 3) vehicle repair expenses, and 4) fuel or electricity costs, depending on the vehicle type. To determine vehicle costs, the model groups existing fleet data into representative vehicle classes, identifying the most commonly purchased make and model for gasoline/diesel vehicles and escalating purchase costs to reflect estimated prices for a future purchase year (2025 and beyond). For EV alternatives, the model identifies representative EV alternatives based on current market data, using placeholder vehicles with estimated prices, battery capacities, and ranges where direct replacements are unavailable. Insurance and vehicle resale value were assumed to be consistent across Scenarios and were excluded from this analysis. The model incorporates real-world data from Contra Costa County with expert knowledge from a consultant to inform the projections for these costs.¹⁹ The model incorporates a comprehensive fleet characteristics database, as well as fueling and maintenance data from county records.

Several key assumptions underpin the TCO model. For fueling costs, the analysis references MCE's Deep Green Rate for Large Business Electric Vehicles (\$0.21/kWh)²⁰ and local gasoline prices over the past two years. The model conservatively assumes vehicles charge 50% during peak hours (4:00 PM - 9:00 PM) and uses a 4% escalation rate for electricity based on MCE's 2024 rate increase and 4% for gasoline retail, reflecting the real gasoline retail price compound annual increase in the Bay Area from 2021-2024.²¹ Maintenance and repair cost estimates are derived from the county's records over the past three years, varying according to vehicle type and duty cycle, with some adjustments for EV maintenance costs informed by expert consultant Glumac, based upon their expertise in developing EV transition plans for local governments.

¹⁹ Interviews with Ricky Williams, County Fleet Manager, April - June 2025. Data pulls from County AssetWorks database, April - June 2025.

²⁰ MCE, "How PG&E's 2024 Rate Increase Impacts You" <https://mcecleanenergy.org/how-pges-2024-rate-increase-impacts-you/>

²¹ U.S. Energy Information Agency, "San Francisco Regular All Formulations Retail Gasoline Prices (Dollars per Gallon)", 2021 - 2024 <https://www.eia.gov/dnav/pet/hist>

Table 1: Key Assumptions in TCO Analysis - All Scenarios

EVs	
EV Purchase Price Annual Escalation Rate	4%
Starting Electricity Price	\$0.21/kWh
Electricity Price Annual Escalation Rate	4%
EV Maintenance Cost	\$0.19/mi - \$0.56/mi
EV Repair Cost	\$0.29/mi - \$2.66/mi
Gasoline Vehicles	
Gasoline Vehicle Purchase Price Annual Escalation Rate	4%
Starting Gasoline Price	\$5.00/gallon
Gasoline Price Annual Escalation Rate	4%
Gasoline Vehicle Maintenance Cost	\$0.29/mi - \$0.93/mi
Gasoline Vehicle Repair Cost	\$0.41/mi - \$2.89/mi

6.3 TCO Findings

The Total Cost of Ownership analysis provides insight into the cost drivers and investment levels required for the County to transition its vehicles to all-electric, compared to a Fossil Fuel Baseline Scenario where the County fleet remains primarily gasoline and diesel vehicles.

Figure 11 shows the all-in costs of the TCO analyses for the three Scenarios, from the years 2025 - 2045. The largest cost driver is the vehicle replacement cost, which varies by vehicle type and by fueling type. Given the vehicle escalation rate of 4% for all vehicle types, vehicles replaced farther into the future will be more expensive than vehicles replaced in the near-term. Vehicle costs are the least expensive in the Fossil Fuel Baseline Scenario, primarily because gasoline/diesel vehicle models exist today for every vehicle type that the County owns, and those vehicles enjoy the economies of scale provided by mass manufacturing. Electric vehicles are generally more expensive up-front than gasoline and diesel models, though costs are starting to reach parity with light-duty vehicles. Electric models for medium- and heavy-duty vehicles are on average 22% more expensive than gasoline and diesel equivalents. The Current EV Transition Scenario has the most expensive vehicle cost because the vehicles are transitioning further out into the future than the CAAP Transition, and because the CAAP Transition Scenario assumes that the County may capture savings on vehicle costs in the form

of grants for transitioning Advanced Clean Fleets (ACF) - regulated vehicles before their state-required transition date.²²

The two all-electric fleet scenarios estimate that across the fleet, the costs for routine vehicle maintenance, vehicle repair and fueling will be less expensive for an all-electric fleet than for a gasoline- and diesel fleet. These findings are in keeping with leading publicly-available TCO reports published in the last three years.²³ When all three cost drivers of TCO are combined, the CAAP Achievement Scenario is the least expensive at just under \$200M, and the Fossil Fuel Baseline Scenario is the most expensive at \$239M.

Figure 11: Total Cost of Ownership Cost Stacks, 2025 - 2045

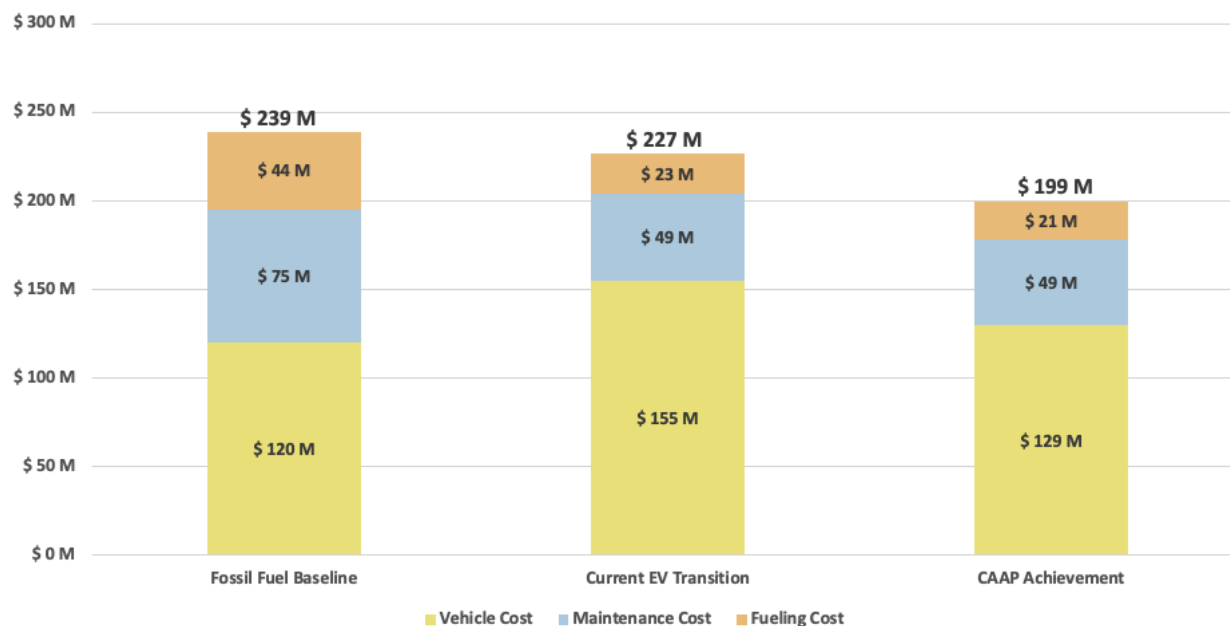


Figure 11 displays the TCOs of the three Scenarios as cost stacks, representing total County investment from 2025 - 2045. It is also useful to consider the costs over time, and the point at which the TCOs reach parity. Figure 12 shows the cumulative costs of the three Scenarios with vehicle costs, maintenance, repair, and fueling costs wrapped into the analysis.

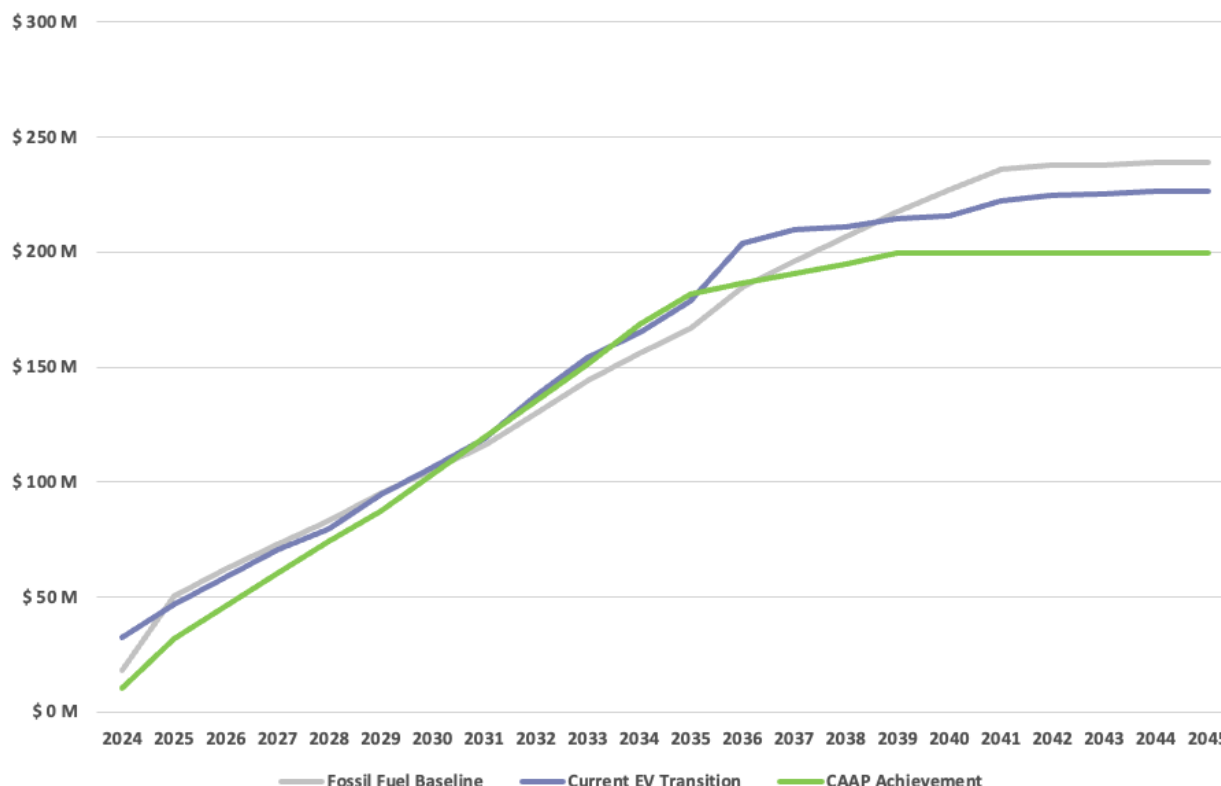
Figure 12 reveals that at the year 2030 the two all-electric Scenarios surpass the Fossil Fuel Baseline in overall cost, primarily because both all-electric Scenarios assume significant investment in EVs from 2025 to 2035. However, in the year 2037, the Fossil Fuel Baseline exceeds the CAAP Achievement Scenario in cost, because of the mounting costs of fueling and

²² Specifically, the model assumes that the County may capture \$13.5M in vehicle grants over the next ten years from the California Volkswagen Mitigation Trust and from the Bay Area Air Quality Management District. All grants would be applied to medium- to heavy-duty vehicles and for off-road equipment.

²³ Environmental Defense Fund. "Electric Vehicle Total Cost of Ownership Analysis: Summary Report." July 2023; Rocky Mountain Institute Veysey, D., & Thonet, H., "Fleet Electric Vehicle Total Cost of Ownership with and without Federal Tax Credits"

maintaining a fossil-fuel based fleet. In 2039, the Fossil Fuel Scenario becomes more expensive than the Current EV Transition. By the year 2045, the CAAP Achievement Scenario has emerged as the least expensive option for the County, at \$26M less than the Current EV Transition and \$38M less than the Fossil Fuel Baseline.

Figure 12: Total Cost of Ownership Cumulative Costs, 2025 - 2045



Figures 13, 14, and 15 show the annual costs of the Fossil Fuel Baseline, Current EV Transition and CAAP Achievement Scenarios from 2025 - 2040. Each Scenario assumes significant investment in vehicles in the 2024 - 2026 time frame, driven by vehicles naturally aging out and needing replacement. The Fossil Fuel Baseline annualized costs can be characterized by relatively steady vehicle investment, with significant maintenance and fueling costs keeping annual TCOs above \$10M per year. The Current EV Transition Scenario assumes a large investment in EVs in the 2024 - 2026 time frame, which is already planned by the County Fleet Manager. The TCO then varies between \$10M and \$20M per year, as vehicles are transitioned according to the ACF regulations and by aging out. The year 2036 represents one of the largest vehicle transitions in that Scenario, in order to keep the County compliant with increasing ACF milestone targets. The CAAP Achievement Scenario also keeps its TCO between \$10M and \$20M per year, with vehicle investment dropping off significantly after 2035, the year that the CAAP goal is achieved. In the years 2035 - 2040, the primary cost drivers will be EV maintenance, repair and fueling, keeping the TCO below \$5M per year.

Figure 13: Total Cost of Ownership Annual Costs: Fossil Fuel Baseline

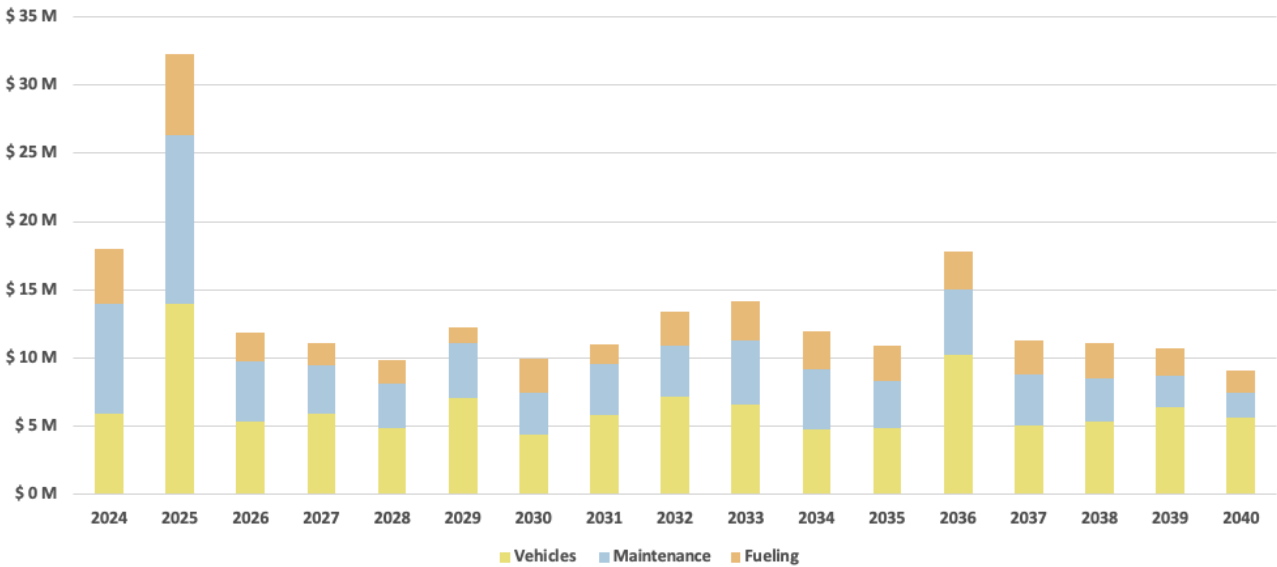


Figure 14: Total Cost of Ownership Annual Costs: Current EV Transition

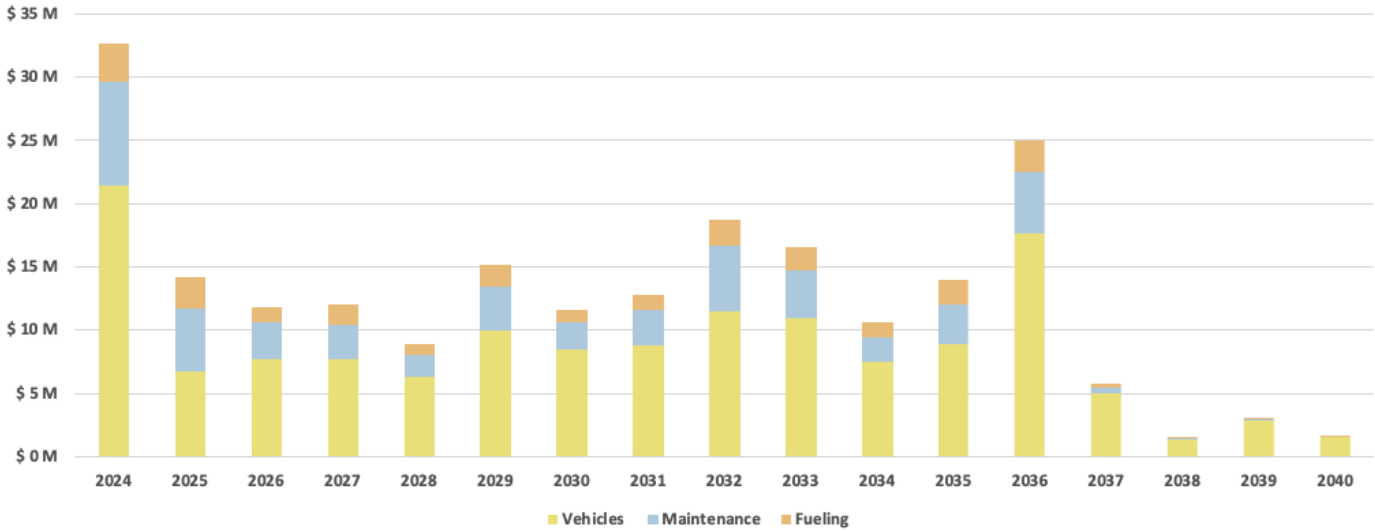
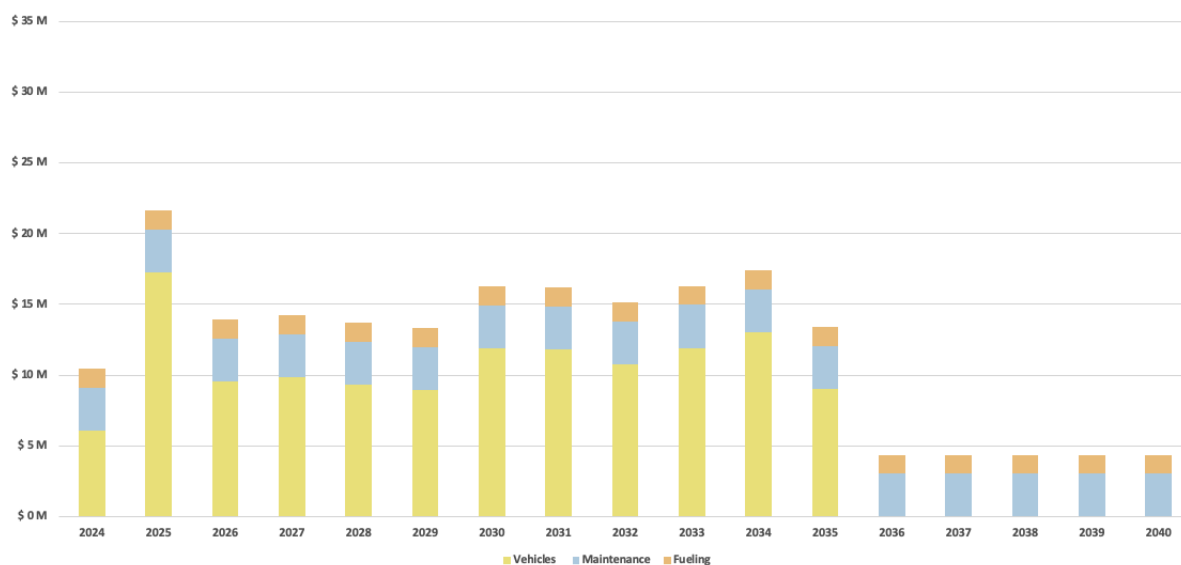


Figure 15: Total Cost of Ownership Annual Costs: CAAP Achievement



It is recommended that the County prioritize near-term conversions of vehicles with predictable duty cycles—especially those nearing end of service—to keep the transition cost-effective. As County investment in EVSE (see Chapter 7) increases, converting vehicles with less predictable duty cycles will become more feasible.

7. Charging Needs and Strategy

7.1 County EVSE Characterization

To date, the County has been supporting its fleet ZEV transition by installing EVSE at County-owned and leased facilities. The Measure X Sustainability Fund has been instrumental in funding the design, construction, and maintenance costs of County EVSE. The majority of County EVSE are Level 2 chargers, though there are some strategically-located DCFC in the places where the most County EVs are domiciled.

Figure 16 shows the County's current EV charger sites, with Level 2 and DCFC differentiated. As a general trend, Level 2 chargers are concentrated in the downtown Martinez area where most County facilities are located, and DCFC are spread to all regions of the County. The current EVSE layout is supporting the County's EV fleet, where most EVs are domiciled near the downtown area. Level 2 chargers serve the EVs when they are parked for several hours or overnight. The DCFCs support a quick charge while vehicles are driving their daily routes, so the dispersed nature of the DCFC aligns with a dynamic County fleet that regularly drives to every corner of the County.

Figure 16: Current and Near-Term County Charger Sites

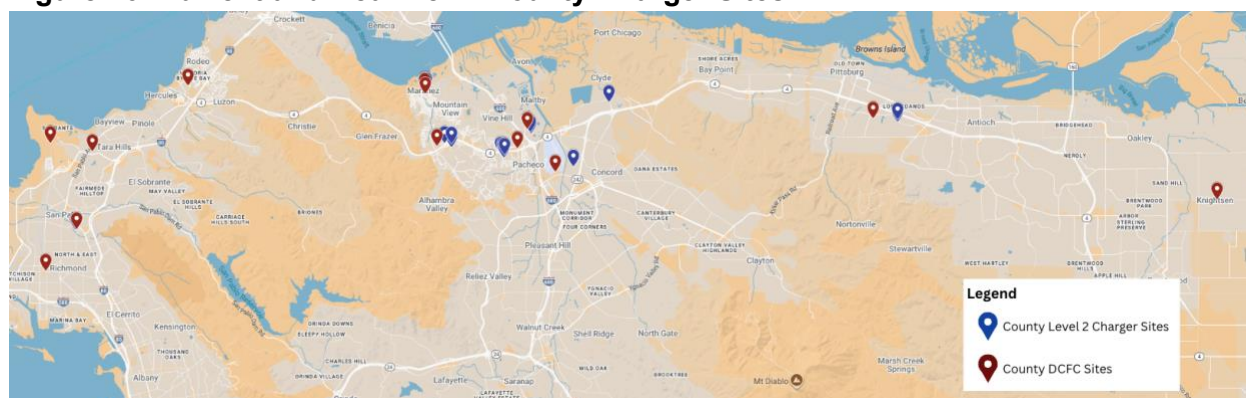


Figure 17 depicts the current and near-term EVSE in Martinez, where most County fleet EVs are currently domiciled. In keeping with locations of vehicles, EVSE are clustered into four main regions of downtown Martinez: 1) the Public Works Fleet Yard (includes Animal Services); 2) the administrative offices of Public Works and Sheriff; 3) the County Administration building and other Martinez offices; and 4) County Health Services and several other offices. The Martinez facilities are where most of the current and near-term Level 2 chargers are located, supporting fleet vehicles that are domiciled in those locations overnight.

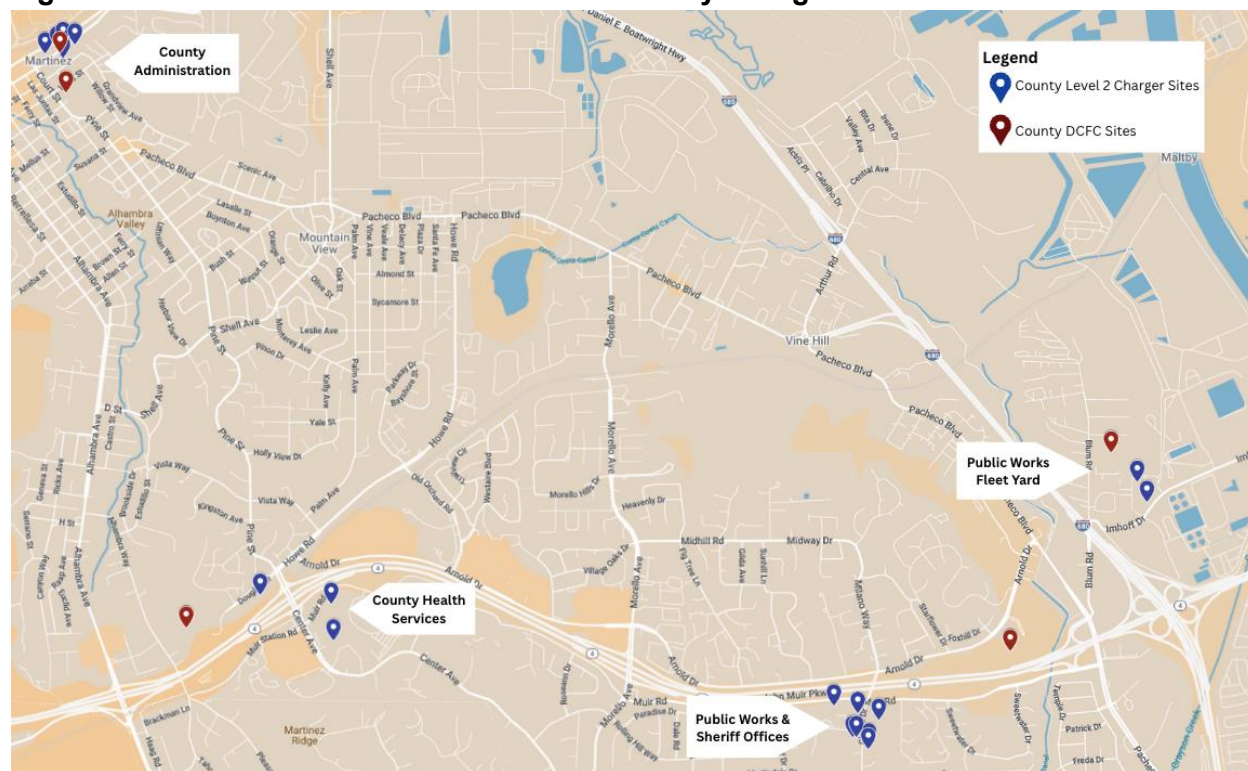
Table 2: Current EVSE at County Sites

Existing County-Sited Level 2 Chargers	
Chargepoint	27
Flo	94
To be determined (CEC)	158
TOTAL Level 2 Chargers	279
Existing County-Sited DCFC	
To be determined (CEC)	20
TOTAL DCFC	20
TOTAL EXISTING EV CHARGERS	299

The County's current and near-term EVSE inventory includes EV chargers already installed or funded for installation within the next two years. These installations are financed through Measure X Sustainability Fund earmarks and awarded grants, including a 2024 California Energy Commission (CEC) grant that will fund 178 chargers (158 Level 2 and 20 DCFC) across 14 County-owned or -leased sites distributed countywide. A developer for the CEC-funded installations will be selected via a forthcoming competitive solicitation. These chargers are

intended to prioritize County fleet vehicles and support the ZEV transition; depending on availability and capacity they may also serve other local jurisdiction fleets, County employee vehicles, or the public. Any public access to County-sited EVSE must be managed to preserve safety and operational access for fleet vehicles (see Chapter 12).

Figure 17: Martinez Current and Near-Term County Charger Sites



7.2 County Present and Future Charging Needs

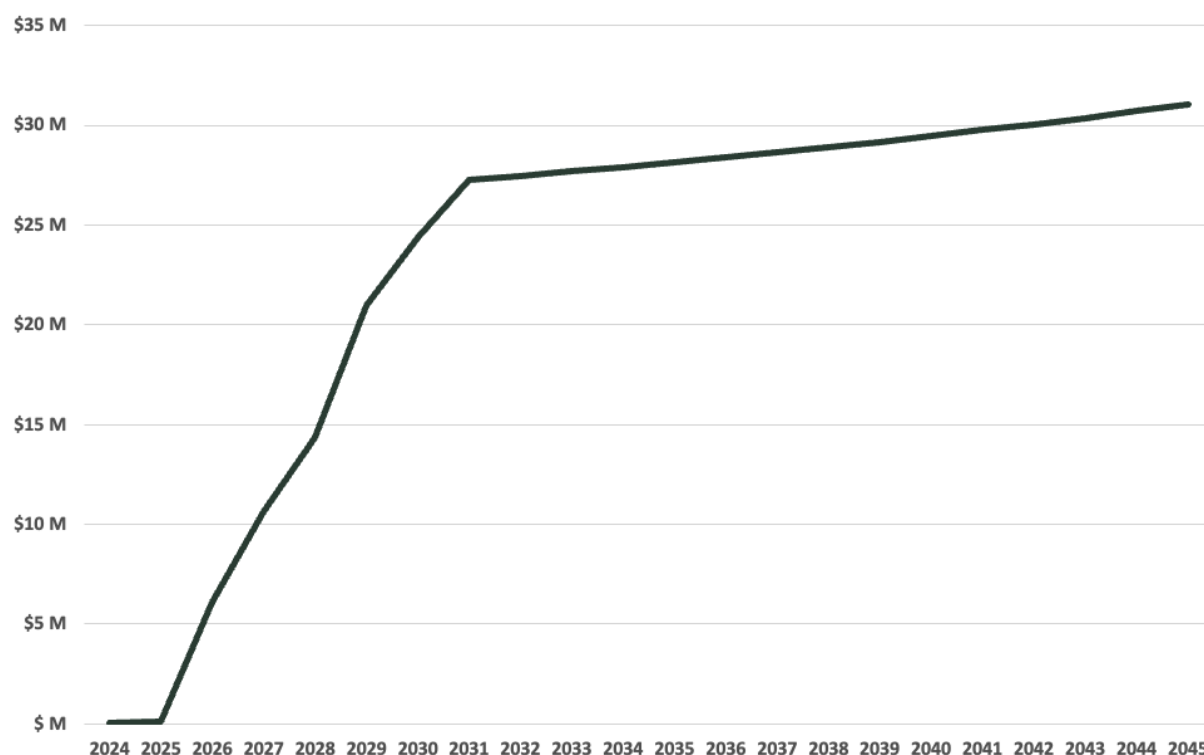
The future need for County-sited EVSE was quantified according to the full fleet electrification Scenarios. To arrive at the quantity and type of EVSE needed, the Energy Management team partnered with consultant Glumac to analyze the duty cycle of each individual County vehicle and determine the energy (kWh) and frequency that vehicle needed to charge. From there, the energy requirement for each vehicle was assigned to that vehicle's domicile. Each County site was assigned a total energy requirement based on the present and future number of EVs. The total energy requirement was then converted into a recommended number and type of charger for that site.

The type of EVSE recommended per site depends upon the vehicle duty cycles. Generally, vehicles that are driven frequently and have unpredictable duty cycles are the best candidates for DCFC, as DCFC can provide a quick charge with a minimal wait time. For example, Sheriff investigator vehicles, and domiciles assigned to the Sheriff Department, are a strong fit for DCFC, since investigator vehicles operate at all times of day and night, receive assignments at unpredictable times, and often leave the County.

Vehicles that are driven less frequently and/or have a predictable duty cycle are the best candidates for Level 2 charging, because Level 2 chargers require many hours to charge a vehicle. Up to four vehicles may share a Level 2 charger, but with each additional vehicle, the charging time to reach a charge of at least 80% becomes longer. Thus, Level 2 chargers are appropriate for vehicles that drive the same or similar routes daily, and/or are parked for long stretches during the work day or overnight.

Figure 18 shows the cumulative cost for the County for EVSE, taking both up-front investment and maintenance into account. **The total cumulative cost for County EVSE from 2025 - 2045 is estimated to be \$31.5M.** Specifically, the County will need an additional 266 Level 2 charging ports and an additional 100 DCFC, spread across various County-owned and leased sites. **The total up-front cost of the additional EVSE is estimated to be \$26.5M;**²⁴ the remainder of the costs are estimated to be maintenance costs of the EVSE, going out to the year 2045.

Figure 18: Contra Costa County Total Cumulative EVSE Cost, 2025 - 2045



To best accommodate the ZEV transition in any Scenario, the EVSE should ideally be put in place earlier than EVs are transitioned, thereby not leaving any sites where there are EVs domiciled, but no EVSE to support them. The analysis recommends that EVSE continue to be installed on County sites through the year 2031, with each year representing significant investment. After the year 2031, the EVSE will require annual maintenance, but no net new EVSE is estimated to be required to support an all-electric fleet.

²⁴ Please note that EVSE costs are not included in the TCO Analysis (Chapter 6).

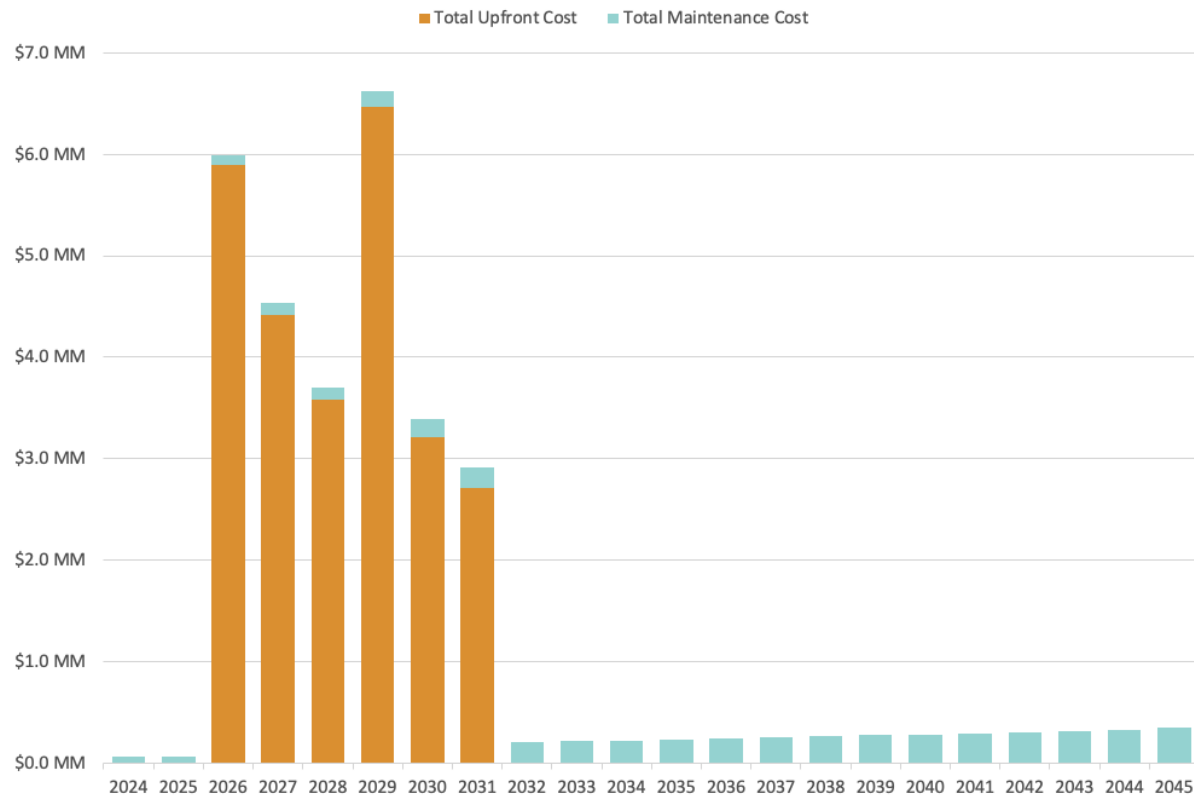
In both the Current EV Transition and the CAAP Goal Achievement Scenarios modeled, there is a significant up-front investment required over the years 2026 - 2031 to ensure that EVs have dedicated places to charge during the workday and overnight. After the year 2031, the County's main cost driver for EVSE will be maintenance and occasional repair. Figure 19 shows estimated annual costs for EVSE to support a full fleet transition, from the years 2025 - 2045. As the figure shows, annual investment from the years 2026 - 2031 is between \$3M and \$6.5M.

The year 2029 represents the most significant up-front investment in EVSE, as that year is estimated to cover a large influx of EVSE to the County Fleet Yard, located at 2467 Waterbird Way in Martinez. The Fleet Yard EVSE is expected to be installed in one single year so that the County can plan to "dig once" and save on trenching and construction costs. Currently there are 40 Level 2 chargers and four (4) DCFC located at the Fleet Yard, and a fully electric fleet will require an additional 24 Level 2 chargers and an additional 14 DCFC. The Fleet Yard is an essential site for all-electric conversion; not only is it the largest County site where vehicles are domiciled at 220 total vehicles, it serves as a central hub where all County vehicles visit at some point during the vehicle lifetime, for routine repair and maintenance. Thus, the Fleet Yard will host the largest volume of EVSE. It is anticipated that the additional EVSE needed at the Fleet Yard could coincide with the planned expansion and development of that site, according to the 2022 County Capital Facilities Master Plan.²⁵ If budget is a constraint in any given year, the County could install the EVSE at the Fleet Yard in phases.

²⁵ County Capital Facilities Master Plan, 2022:

https://www.contracosta.ca.gov/DocumentCenter/View/77500/Contra-Costa-County_Facilities-Master-Plan-2022_Report

Figure 19: Contra Costa County Total Annual EVSE Cost, 2025 - 2045



While Appendix A lists EVSE needs by every County site requiring additional EVSE, Table 3 summarizes County EVSE needs within the short-term (1-2 years); medium term (3-5 years); and long term (6+ years), with budgets associated with each tranche of EVSE.

Table 3: Additional EVSE Needed at County Sites: Short, Medium and Long-Term

Term	EVSE Ports Needed	Up-Front Cost	Key Sites
Short Term (1-2 Years)	121 Level 2 Ports 40 DCFC	\$10.3M	1980 Muir Rd., Martinez 2380 Bisso Ln., Concord 900 Ward St., Martinez
Medium Term (3-4 Years)	44 Level 2 Ports 49 DCFC	\$10.0M	2467 Waterbird Way, Martinez 5555 Giant Hwy., Richmond 1850 Muir Rd., Martinez
Long Term (5+ Years)	101 Level 2 Ports 11 DCFC	\$5.9M	4800 Imhoff Pl., Martinez 300 Ellinwood Wy., Pleasant Hill 4545 Delta Fair Blvd., Antioch
TOTAL	266 Level 2 Ports 100 DCFC	\$26.5M	

Table 4 lays out the cost assumptions for these estimates; assumptions are based upon current industry costs of EVSE and the County's own experience in EVSE investment in the last three years. The up-front costs for EV chargers cover the costs for design, planning, charger equipment, trenching, construction, commissioning, and auxiliary equipment such as poles, stands and signage. EVSE equipment and labor costs are expected to rise at four percent (4%) per year, in keeping with the average Bay Area Consumer Price Index for the past four years.²⁶

Table 4: Key Assumptions in EVSE Analysis

Level 2 EV Charger Up-Front Cost per Port	\$31,000 ²⁷
Level 2 EV Charger Annual Maintenance Cost per Port	\$400
DCFC Port Up-Front Cost	\$150,000
Level 2 EV Charger Annual Maintenance Cost per Port	\$400
EVSE Equipment Annual Escalation Rate	4%

The maintenance costs per port include routine inspections every 6 months as well as unexpected repairs, such as from charger misuse or vandalism.

7.3 EVSE Standardization

Contra Costa County should consider adopting EVSE standards to ensure consistent performance, interoperability, and easier maintenance across facilities, and potentially across jurisdictions. The Open Charge Point Protocol (OCPP) is an open, vendor-neutral communications standard that lets EVSE and charging station management systems (CSMS) from different manufacturers communicate reliably. OCPP 2.0 is now the California standard for CALeVIP Eligible Equipment,²⁸ and adopting OCPP 2.0 ensures that County chargers meet state interoperability expectations, support expanded features (such as improved security, enhanced device management, smart charging, and standardized telemetry), and remain compatible with a wider vendor pool. Vendors should provide proof of OCPP 2.0 certification - test reports or certification IDs- before acceptance, and should maintain certification after firmware updates. OCPP-certified equipment should also be tested for interoperability with the County's chosen Charging Station Management System (CSMS).

Recommendation 7.3.1: Require County-sited EVSE to comply with the Open Charge Point Protocol 2.0, in keeping with California's CalEVIP standard.

²⁶ Association of Bay Area Governments (ABAG) Consumer Price Index Report, Average of Annual Average Percentage Changes 2021 - 2024: <https://abag.ca.gov/tools-resources/data-tools/consumer-price-index>

²⁷ Assumes that the Marin Clean Energy (MCE) rebate of \$4,500 per Level 2 charger port, with the Deep Green rate: <https://mcecleanenergy.org/ev-charging/>

²⁸ Cal eVIP program, Certification Process: <https://calevip.org/ocpp-certification-process>

Further, the County should consider adopting a Charging Station Management System (CSMS) for its existing and future EVSE. A CSMS is a centralized software system that controls, monitors, and coordinates EVSE and their back-end services. It manages user access, payment processing, transaction records, remote diagnostics, firmware updates, and dynamic load management across sites. Ideally, a CSMS enables real-time status and centralized reporting so the County can track EVSE uptime, energy use, and maintenance needs across facilities. It also supports demand-response programs, coordinated firmware or security updates, and roaming partnerships that expand user access. Once the County invests in a CSMS, any future EVSE vendor's equipment would need to be compatible with the CSMS. CSMS compatibility in equipment standards helps ensure consistent operation, simplifies vendor integration, reduces local Information Technology (IT) burden, and provides the data needed for performance monitoring, grant reporting, and long-term planning.

Recommendation 7.3.2: Invest in a Charging Station Management System to control, monitor and coordinate EVSE for rapid diagnostics and reporting.

To support reliable service and user confidence, the County should include a 97% uptime requirement for all EVSE in its equipment standards. This metric should be applied over an agreed reporting period and enforced through service-level agreements (SLAs) with defined monitoring, reporting, and remediation steps, including credits or repair timelines for breaches. Requiring 97% uptime, alongside OCPP 2.0 certification and CSMS compatibility, reinforces vendor accountability, reduces downtime for fleet and public users, and helps ensure the network meets operational and grant reporting expectations. This uptime recommendation aligns with the California Energy Commission's (CEC) proposed 97% uptime standard for publicly or ratepayer-funded DC fast charging ports.²⁹

Recommendation 7.3.3: Adopt a 97% uptime requirement for all County-sited EVSE.

These measures will help the County deploy a secure, scalable EV charging network that aligns with state programs, maximizes uptime, and simplifies long-term operations.

7.4 EVSE Investments at County-Leased Facilities

A potential implementation risk for the County's ZEV transition lies in the reliance on leased (non-County-owned) sites for overnight vehicle domiciling and charger installation. One quarter of the 71 facilities that house County vehicles are leased, resulting in 261 County fleet vehicles domiciled on leased sites. Without binding partnerships or agreements with landlords to permit charger deployment, up to ~20% of the fleet would be effectively stranded: vehicles could be converted to battery electric but lack overnight charging access at their domiciles. Moreover, failure to secure access to leased sites would prevent installation of approximately 121 planned

²⁹ California Energy Commission, "CEC Staff Report - Tracking and Improving Reliability of California's Electric Vehicle Chargers," June 2025. <https://www.energy.ca.gov/publications/2023/tracking-and-improving-reliability-californias-electric-vehicle-chargers>

Level 2 chargers (45% of the County's planned Level 2 capacity) and 16 DC fast chargers (16% of required DC fast capacity). These shortfalls would materially undermine operational readiness, fleet utilization, and the County's ability to meet electrification timelines. Proactive, contractual landlord partnerships and site access agreements are therefore critical risk-mitigation measures to ensure full delivery of the County's EV charging infrastructure and successful fleet transition.

To facilitate landlord cooperation, the County should emphasize the tangible benefits landlords can realize by hosting chargers: the ability to charge additional landlord-owned fleet or tenant EVs, which supports their own electrification and operational efficiencies; potential increases in property value and marketability driven by on-site EV infrastructure; and access to grants, tax incentives, or utility programs that can offset capital and installation costs. Offering cost-sharing arrangements for EVSE, managing permitting and installation on the landlord's behalf and guaranteeing minimal disruption during construction can further reduce perceived risk for landlords and accelerate agreement execution. These incentives and supportive measures will strengthen landlord willingness to enter formal site access agreements, reducing the County's risk of stranded fleet assets and infrastructure shortfalls.

Recommendation 7.4.1: Partner with owners of County-leased facilities to install jointly beneficial EVSE at leased sites to prevent ~20% of County vehicles from being stranded without overnight chargers.

8. Regional Collaboration Supporting the ZEV Transition

Regional coordination is essential as Contra Costa County and neighboring local agencies transition medium- and heavy-duty fleets to zero emission by 2045 under ACF. The County contains 19 cities plus multiple special districts and agencies (e.g., ConFire, Central Contra Costa Sanitary District), each operating its own fleet; many of these fleets will rely on the same public EVSE and may share chargers on one another's sites.

A formal EVSE-sharing approach improves utilization and cost-effectiveness. Industry benchmarks consider ~20% utilization sufficient to justify initial EVSE investment;³⁰ cross-agency sharing helps achieve that threshold, generates revenue for site hosts, and addresses early-stage underutilization when individual fleets lack sufficient EVs. Sharing arrangements can be adapted as fleets mature to ensure charger availability and meet operational needs.

Regional collaboration also strengthens grant competitiveness. Many funding opportunities impose minimum equipment counts or dollar thresholds that can exclude smaller agencies;

³⁰ EV Charging Summit EV Industry Blog, "Top Metrics to Measure the Performance of Your EV Charging Stations," March 2023: <https://evchargingsummit.com/blog/top-metrics-to-measure-the-performance-of-your-ev-charging-stations/>

aggregating needs across jurisdictions meets grant requirements, reduces application workload, and increases the likelihood of securing external funds.

8.1 C-TEC Partnership

The County's primary opportunity for regional collaboration is an engaged, informal group of local governments in Contra Costa County called Countywide Transportation Electrification Coordination, or C-TEC. C-TEC has 16 active agency partners and is growing. C-TEC is facilitated by the Energy Manager in the County Public Works Department. C-TEC currently meets virtually twice per month to discuss opportunities and challenges with electrifying fleets, with topics including mitigating driver reluctance, co-sponsoring each other's grants, strategically selecting vehicles to transition based on duty cycles, navigating statewide regulations, and more. Once per year, C-TEC meets for an in-person strategic summit where agencies coordinate more thoroughly during interactive sessions. Previous C-TEC summits have: 1) prompted members to place their preferred locations for EV chargers on a detailed regional map; 2) showcased a case study of electrified school busses in the City of Pittsburg; and 3) hosted police and fire personnel to speak on a panel dedicated to the unique opportunities and challenges of electrifying first responder and patrol vehicles.

Through C-TEC, the County is currently preparing a grant application for \$100M in EV chargers throughout the region, specifically to support first-responder emergency vehicles across agencies. Named Electrifying Vehicles for Reliable Emergency Services and Community Utilization with a focus on Equity (EV-RESCUE), this grant will leverage the collective expertise of 16+ agency partners to seek funding for a large-scale EV charging network across the region, with charging stations designed to meet the needs, duty cycles, and scale of County and City first responder vehicles.

8.2 Leveraging Joint Powers Authorities

A joint powers authority (JPA) offers practical advantages for advancing the County's zero-emission vehicle goals through coordinated, multi-agency action. By leveraging a JPA, the County can pool purchasing power to procure ZEVs and charging infrastructure at better pricing and with streamlined procurement processes; standardize specifications and pre-qualify vendors to reduce procurement risk and staff workload; centralize technical expertise, grant identification, application preparation, and grant administration to increase competitiveness for state and federal funding; and coordinate maintenance, warranty management, interoperability standards, and workforce training to lower lifecycle costs and operational complexity—particularly for smaller agencies with limited capacity.

The County and its municipal partners may choose to leverage an existing JPA for joint procurement and program delivery. The Contra Costa County Transportation Authority (CCTA) operates as a JPA; CCTA manages funds from a Countywide transportation sales tax as well as funds from the Bay Area Air Quality Management District (BAAQMD) and invests those funds to improve public transportation, safety and environmental quality on behalf of its jurisdictions.

While CCTA has not been leveraged for direct EV or EVSE investments to date, its scope and legal structure could potentially be leveraged to do so.

Additionally, Drive EV Fleets is a nationwide coalition of municipalities collaborating to purchase EVs in bulk from qualifying OEMs. Since 2018, more than 450 municipalities have pledged to electrify their fleets, and many have purchased EVs at competitive prices directly through Drive EV Fleets. Drive EV Fleets' procurement partner Sourcewell facilitates collaborative purchasing with groups of interested municipalities and manages solicitations on their behalf.³¹ Additionally, the County could consider leveraging SPURR, a Joint Powers Authority of member public agencies that aggregates purchasing power for clean energy projects; in 2023 SPURR issued a Request for Proposals for EVSE to qualify vendors and determine pricing for municipal charger deployments.³²

Recommendation 8.2.1: Leverage an existing Joint Powers Authority (JPA) to jointly procure EVs and EVSE at scale and coordinate grant-seeking.

8.3 Leveraging Utility Partnerships - MCE and PG&E

Partnering with PG&E and MCE will allow Contra Costa County to align EV charger deployment with utility grid planning and demand forecasts, reducing risks of localized capacity constraints and costly late-stage upgrades. Collaboration enables the County to leverage utility incentives, demand response programs, and technical support to lower installation and operating costs. In fact, the County has already used incentive funds from MCE to offset costs of Level 2 EVSE at County sites, and has partnered with MCE to receive technical assistance in designing EVSE and new EVSE plans.

Coordinated planning also improves site selection, timing, and load management strategies to optimize grid impact and charger utilization. Early data sharing on planned charger locations and expected demand helps PG&E refine distribution investments and reduces permitting and interconnection delays. Currently, the County is leveraging PG&E's EV Fleet Program to jointly plan EVSE investments in a manner that reduces grid constraints for the utility and site costs for the County.³³ Joint initiatives with PG&E and MCE can increase funding opportunities and streamline implementation while maintaining reliability and affordability for County operations.

Recommendation 8.3.1: Maintain and expand partnerships with MCE and PG&E to secure grants, receive technical assistance, and coordinate long-term planning of EVSE against grid capacity.

³¹ DriveEVFleets Website: <https://driveevfleets.org/>

³² SPURR Website: <https://spurr.org/about-us/>

³³ PG&E EV Fleet Program: <https://www.pge.com/en/clean-energy/electric-vehicles/ev-fleet-program.html>

9. Funding and Financing the EV Transition

Funding and financing the EV transition brings multiple opportunities and challenges, as the County is facing a paradigm shift where the County is expected to not only supply vehicles, but supply the fuel for vehicles as well, in the form of EVSE sited at County facilities.

The strategy for funding and financing the EV transition can be organized into pillars: 1) seek outside funding resources, leveraging County funds and resources; 2) pursue innovative financing structures with third parties; 3) diversify revenue sources by leveraging EVSE and EVs to provide grid services. Each of these strategies is discussed below, with detailed recommendations for the County. For the purposes of this report, “funding” generally refers to dollars that do not need to be paid back, and “financing” refers to dollars that reduce up-front capital cost barriers but do need to be paid back over a period of time.

9.1 Outside Funding Resources

Pursuing outside funding resources whenever possible for both EVs and EVSE will be essential for keeping costs manageable and within the bounds of the budget outlined in Scenario 2, while getting as close as possible for the complete electrification of the County’s fleet by 2035.

Outside funding resources are available at the local and state level, and come in the forms of rebates, incentives, grants and tax credits. Rebates and incentives typically reimburse (partially or fully) the cost of EVs or EVSE that meet certain environmental and/or performance standards. An up-front incentive applied at the point of purchase is usually more desirable than a rebate that applies post-purchase, since a post-purchase rebate would require the County to carry the full capital cost of the EV or EVSE before the rebate applies.

From a capital outlay perspective, grants operate similarly to rebates in that they require the grantee to spend funds up-front for a project, and then seek reimbursement for the cost of that project. A key difference between an EV or EVSE grant and a rebate would be that grants typically fund projects, and rebates fund specific equipment. Grants also tend to be larger in dollar amounts than rebates, as EV and EVSE projects require many more costs than the equipment, such as construction, permits, project management, and operations and maintenance. The drawbacks of grants from a County perspective are: 1) grants often require additional recordkeeping and reporting from typical County projects, which may add to the cost overhead; and 2) grants typically require match funding from the applicant to demonstrate their commitment to the project. Fortunately, the County has access to the Measure X Sustainability Fund to support match funding requirements, though it is finite; robust due diligence is recommended in any decision to offer Measure X funds as a grant match.

Generally, there are more grant funding opportunities for EVs and EV chargers than the County can reasonably pursue, given staff capacity. Thus, it is recommended that the County continuously evaluate grant funding opportunities based on overall alignment, defined as 1) eligibility, 2) total funding available; 3) consistent with County priorities, 4) low overhead for the

grant application, reporting and data collection, and 5) low match requirement. In order to be consistent with County priorities, grant opportunities must target the types and performance specifications of EVs and EV Chargers that the County would purchase independently if not for the grant or rebate. At times, the County Energy Management Team has found that vehicle and charger type specifications have been too restrictive, or not a good fit for the County's EV investment trajectory. Tables 5 and 6 below displays a summary of grant and rebate opportunities deemed High Alignment, based upon this evaluation.

Table 5: EV Rebates and Grant Opportunities, Prioritized by County Alignment

Funding Title	Funding per EV	Overall Fund Amount	Timing	County Alignment Summary
CA VW Mitigation Grant Program - Zero Emission Class 8 Truck Program	\$240K for dump trucks, concrete mixers and drayage	\$27M	Available Now	Aligned with County needs for specific Public Works and Construction vehicle ZEVs, especially those that are regulated under ACF. The County has more than 15 vehicles that would qualify. Application is extensive though narrative sections are minimal.
CA VW Mitigation Grant Program - Zero Emission Freight and Marine	\$210K for heavy-lift forklifts and \$3M for marine repower	\$40M	Available Now	Aligned with County needs for specific Construction vehicles and Sheriff marine fleet. The County has seven (7) eligible forklifts and several marine vessels. Equipment costs are covered under the grant but labor costs are not covered.
CA VW Mitigation Grant Program - Zero Emission Transit, School and Shuttle Bus Program	\$215K for new, ZEV transit buses	\$130M	Available Now	Aligned with County needs for transit buses, as these are ACF regulated. The grant amount will cover an estimated ~50% of the full cost of a new ZEV bus, and the County has nine (9) eligible prisoner transport buses that would qualify.
BAAQMD Grant Program - Off-Road Equipment	85% to 100% of off-road equipment cost	\$75M	Available Periodically; Check Website	Many County vehicles would qualify for funding. However, replacement specifications are not always feasible, because meeting eligibility requirements can sometimes be prohibitive depending on market availability. A 15% match is required for funding.
BAAQMD Grant Program - Heavy Duty and Transit Buses	50% - 80% of heavy duty and transit buses	\$35M	Available Periodically; Check Website	Up to ten (10) County vehicles would qualify for funding. However, replacement specifications are not always feasible, because meeting eligibility requirements for can sometimes be prohibitive depending on market availability. A 25% match is required for funding.

PG&E EV Fleet Program	Up to \$9K per MDHD vehicle	\$236M ³⁴	Available Now	PG&E's EV Fleet program requires that the County install EV chargers at County-owned sites. PG&E will then offer rebates to qualifying medium- and heavy-duty vehicles domiciled at those sites. The County has at least 11 eligible sites with 10+ eligible vehicles for rebates.
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Table 6: EV Charger Rebates and Grant Opportunities, Prioritized by County Alignment

Funding Title	Funding per EV Charger	Overall Fund Amount	Timing	County Alignment Summary
MCE EV Charger Rebate Program	Up to \$4.5K per Level 2 charger	Depends on MCE annual budget	Available Now	Very aligned with County needs, and County has experience taking this rebate. The program also offers technical assistance run by CLEAResult. Rebates can only be used for Level 2 chargers, not DCFC.
PG&E Rule 29/ EV Fleet Program	Variable	\$236M	Available Now	Very aligned with County needs, since PG&E will pay for grid upgrades associated with extra load from EV chargers. Application is straightforward. EV Fleet requires medium- and heavy-duty vehicles to use the EV chargers, and PG&E will collect charger and vehicle data for five (5) years.
CEC Grant funding for EV Chargers	Up to \$12.5K for Level 2 charger and \$100K for DCFC	\$30M	Available Periodically; Check Website	Assessment based on GFO 23-606 for Government Fleets, but future grants will vary in requirement and funding level. Very aligned with County fleet and site needs. Application is extensive in both narrative and technical aspects, and data collection is rigorous. There is a 30% match fund requirement.
MTC Transit Oriented Communities (TOC) Climate Implementation Grants	Up to 88% of project costs, capped at \$5M per project	\$20M	Available Periodically; Check Website	Aligned with County needs, especially at sites that are in Impacted Communities. Funded chargers must be publicly accessible, which limits County facility site options. Application has limited narrative but is extensive in technical requirements. There is a 12% match fund requirement.
CALSTART Energiize Fast Track Grants	Up to \$35K for Level 2 charger and	\$544M	Available Periodically; Check	Almost all equipment and maintenance and eligible for reimbursement, but labor costs (including construction labor) are not

³⁴ According to PG&E representatives at the time of this report, funds are “almost depleted.” PG&E conversation, June 2025.

	\$93K for DCFC		Website	eligible except when in an Impacted Community. Projects are ranked based on "readiness" criteria like permits issued, which may be challenging before funding is committed.
BAAQMD Infrastructure Grants	Up to \$10K per EV charger site	\$35M	Available Periodically; Check Website	May be a good fit for the County, but site cost cap will likely limit investment to one to two Level 2 chargers. Public access is encouraged but not required. Grant timeline is short at only seven weeks.
BAAQMD Charge! Grant	Up to \$9K per Level 2 charger and \$60K for DCFC	\$10M	Available Periodically; Check Website	May be a good fit for the County though eligibility criteria has historically be unclear. There is a 20% match funding requirement.

Recommendation 9.1.1: Pursue outside grant funding at the state and local level (Tables 5 and 6)

9.2 Clean Energy Tax Credits

Governments cannot directly use tax credits, but Contra Costa County previously could access EV and EVSE incentives via tax equity financing and the IRA's Elective Pay option. Two relevant federal credits were the Alternative Fuel Vehicle Refueling Property Credit (30C), which covered up to 30% of EVSE costs for qualifying sites, and the Commercial Clean Vehicle Credit (45W), which provided up to \$7,500 for vehicles under 14,000 lb and up to \$40,000 for vehicles over 14,000 lb.³⁵

Under tax equity financing the County would partner with a third-party owner/developer. An investor -typically a bank, corporation, or insurer- provides equity, claims the tax credit and depreciation, and receives limited cash flow and a defined ownership interest for a set period before a buyout or transfer of ownership. This structure is well established in clean-energy projects and can reduce project costs and mobilize capital. It is most suitable for third-party-owned EVSE (for example, charging-as-a-service installations). Domestic banks account for 80% of the clean energy tax equity market, with the remainder of the market funded by large corporations and insurance companies.³⁶ Primary risks include failure to meet credit requirements, potential federal policy changes, and contractual or performance exposure to the third-party owner.

³⁵ As of the date of this report, both tax credits are suspended.

³⁶ California Tax Credit Allocation Committee, "Low Income Housing Tax Credit Programs" <https://www.treasurer.ca.gov/ctcac/tax.asp>

Elective Pay allows tax-exempt governments to receive the value of eligible credits as direct payments if project labor requirements (prevailing wage and apprenticeship) are met. Elective Pay is generally a better fit when the County purchases and owns vehicles directly, since 45W can effectively offset vehicle costs. Twelve clean-energy credits (including 30C and 45W) are currently eligible for Elective Pay, and over 600 municipalities have applied for reimbursement under this provision.

Federal policy and program availability are currently uncertain. A January 20, 2025 executive action and subsequent budget proposals have disrupted some IRA programs; litigation and partial reinstatements are ongoing. A House budget bill in May 2025 proposed eliminating these EV and EVSE credits by December 2025. Given this uncertainty, it is prudent to pursue tax equity and Elective Pay options promptly while monitoring federal developments and preserving flexibility should credits be reinstated or modified in the future.

Recommendation 9.2.1: Pursue tax equity financing (if available) for third-party owned EVSE.

Recommendation 9.2.2: Pursue Elective Pay to take tax credits on EV purchases directly, if available, in Fiscal Year 2026 and 2027.

9.3 Carbon Markets and Credits

Carbon markets and credits can provide after-purchase revenues which can offset the cost of EVs and EVSEs. In California, the Low Carbon Fuel Credit (LCFS) program is a market-based mechanism that caps the carbon intensity (CI) of fossil fuels from transportation sources. California fleet owners can take advantage of the LCFS program, where electricity sold for the fueling of EVs can generate credits, which can act as a partial refund for future investments in EVs and EVSE.

The County is already positioned to take advantage of the LCFS program, as it has partnered with broker FuSe to monetize LCFS credits from the County's investment in EVs and EVSE. The revenues, or "credits" from the LCFS program would be generated by the County according to measured volume of electricity (in MWh) used to fuel County EV fleet vehicles, compared to a theoretical fossil fuel baseline. The difference in CI between the electricity-based fuel and the fossil fuel creates a credit, according to a market-determined credit price. Since its inception in 2016, the market prices for LCFS have varied, reaching above \$200/credit in 2020, and hovering between \$50 - \$100/credit for the past two years.³⁷ According to the research organization Rocky Mountain Institute, when LCFS credit prices reach above \$200, the credit can offset more than 50% of EV fueling costs for California fleet customers, though at current

³⁷ California Air Resources Board, Low Carbon Fuel Standard Data Dashboard:
<https://ww2.arb.ca.gov/resources/documents/lcfs-data-dashboard>

prices, one could expect a 20 - 30% discount on EV fueling.³⁸ Since the County's broker partner FuSe will take a 10% fee from expected LCFS revenues,³⁹ LCFS could provide a 15% discount on EV fueling costs.

Recommendation 9.3.2: Activate contractor FuSe to monetize Low Carbon Fuel Standard credits for County-sited EVSE

9.4 Competition and Bulk Purchasing

Organized competition and bulk purchasing can lead to lower prices when purchasing EVs (and perhaps EVSE) when buyers collaborate to buy assets in bulk. When EV and EVSE dealers and OEMs sell in bulk, there are significant administrative savings compared to many individual sales, and these savings can be passed on to buyers in the form of lower prices. The County has some experience with this, as it purchased more than 50 Level 2 EV chargers from the EV charging developer Flo at bulk discount pricing.

The County's EV purchases alone may not add up to enough in any given year to yield savings from bulk purchasing, but the County may be able to benefit from bulk purchasing either from an existing collaborative or by creating its own collaborative of Bay Area or County-wide municipal fleet buyers. Adding additional buyers to a collaborative is more likely to harness the savings of bulk purchasing because many fleet buyers can purchase a portion of a large purchase of one single type of vehicle; for example, one purchase of discounted electric Ford F-150s could be divided up amongst all 20+ municipalities in Contra Costa County.

The most likely organization to conduct bulk purchasing for the County and other stakeholders is the countywide Joint Powers Authority (JPA), or an existing JPA such as SPURR or Drive EV Fleets, discussed in Chapter 9. JPAs cover much of the administrative tasks and vendor vetting on behalf of member agencies, allowing members to expedite procurement and enjoy bulk pricing. Bulk purchasing can be combined with EV tax credits as well, as long as the private vendor owns the vehicle 24 to 36 months. This strategy could work in the form of a short-term lease agreement where a municipality leases the vehicle(s) for two to three years, and then purchases the vehicle at a pre-owned vehicle price when the lease ends.

Of course, participation in any pre-existing collaborative purchasing effort would require the County to assess the collaborative's alignment with County needs for EVs or EV chargers, to ensure that the County receives appropriate bids. The County is advised to assess existing collaboratives for technical alignment, such as level of EV charger, type of vehicle and charger maintenance needs. The County should also assess qualitative alignment, such as whether the existing vendors have experience with County fleets, and whether that experience was positive.

³⁸ Rocky Mountain Institute, "Understanding California's Low Carbon Fuel Standards Regulation," October 2023: <https://rmi.org/understanding-californias-low-carbon-fuel-standards-regulation/>, assuming that electricity costs 20-30 cents per kWh

³⁹ Broker agreement between Contra Costa County and FuSE, 2024.

Recommendation 9.4.1 For each bulk EV or EVSE purchase, assess alignment with existing municipal agency purchasing collaboratives to leverage administrative efficiency and bulk pricing.

9.5 Innovative Financing Strategies

Conversion to all-electric vehicles on a large scale requires up-front investment and brings benefits over time, such as cost savings on vehicle maintenance, reduced greenhouse gasses, and public health benefits in the form of cleaner air for communities already burdened by refinery pollution. However, up-front investment can be a significant barrier. Innovative financing strategies can reduce up-front costs, spread investments over time, reduce the risk of investments, lower the cost of financing and sometimes bring in expertise of third-party entities. Funding sources have an obvious advantage compared to financing because funding sources generally do not need to be paid back. However, funding sources tend to be finite, highly competitive, and may not cover the full cost of EVs and EVSE. Financing instruments for EVs and EVSE tend to be more abundant and likely to cover the full cost of the vehicle or EVSE project.⁴⁰ Numerous innovative financing strategies exist for transportation electrification; the following strategies have been culled for their potential to benefit Contra Costa County.

Vehicle Leasing	
Leasing EVs rather than purchasing allows the vehicle user to essentially purchase only the number of years of vehicle use for that lease term. Thus, the principal cost for the vehicle is typically lower than the principal for financing the vehicle for its lifetime. Lessees pay interest on a leased vehicle, an additional cost. However, there is significantly less up-front capital required compared to a straight purchase. Maintenance costs can be included in the lease, enabling amortization of those costs over time. Lessors typically take on the risk of unexpected maintenance, repairs and vehicle defects. However, lessees may have to agree to vehicle lease terms such as mileage limits and limitations on duty cycles.	
Pros	Cons
• Lower or zero up-front capital required • Lower principal compared to financing entire vehicle • Maintenance costs wrapped into lease • Lessors cover risk of unexpected maintenance and vehicle defects • Enables piloting new vehicle types for a short period of time, which may be especially valuable for EVs	• Interest payments add cost compared to straight purchase • Vehicle use limitations reduce flexibility • Lessee is liable for vehicle damage beyond expected wear-and-tear

⁴⁰ The Electrification Coalition, “How to Amp Up the Transportation Transformation: A Guidebook for Funding and Financing Electrification,” 2021

Low-Interest Financing

Financing EVs and EVSE rather than an up-front purchase would allow the County to spread out costs over time with monthly payments of principal and interest. Some individual County departments already essentially “finance” their vehicles with County Public Works using the ISF system, so this option would be for Public Works to partner with a third-party financial institution to finance EVs in order to overcome the higher annual up-front costs that the EV transition requires. As a local government, Contra Costa County is eligible for low-cost financing only available to agencies and nonprofits, such as the California Infrastructure and Economic Development (iBank) Bank’s Revolving Fund, offering interest rates typically lower than those found for traditional financing.⁴¹ iBank and other entities also offer low-interest “bridge loans,” short-term loans targeted to cover the term between the EV or EVSE investment, and the timing of incentives or rebates for the project. Revolving loans funds for clean energy, where capital from existing loans is reinvested into new loans, are becoming more popular at the state and local level.

Pros

- Reduces up-front capital, which may be especially valuable as ACF milestone vehicles reach term
- Local governments eligible for lower-interest loans

Cons

- Overall payments are higher than an up-front investment
- Loans will increase the County’s debt
- Vehicles depreciate as the County is still paying off the vehicle
- Tax credits may not be available

Utility On-Bill Financing

Utility on-bill-financing (OBF) is the practice of a utility paying a portion of up-front project costs for a customer, and the customer pays the utility back monthly. In energy projects where the project provides utility bill savings, the customer can essentially reimburse the utility in savings, and see no net increase in monthly utility bills. OBF can be used to invest in EVSE, though it is likely that EVSE will cause a net increase in utility bills instead of a net savings, in which case, on-bill financing acts like traditional financing, where up-front capital investment is spread across monthly payments to the utility, where there is an existing financial relationship. OBF can be paired with additional financing strategies, such as leasing. In a Lease/OBF scenario, the utility owns and maintains EVSE at the customer site, and the customer pays a monthly additional fee on their utility bill to reimburse the utility for the cost of the EVSE project.

Utilities can sometimes offer more favorable terms on an OBF proposal if the customer agrees to use the EVSE in a manner that benefits the grid, in vehicle-to-grid (V2G) services. In a V2G/OBF partnership, the utility could assume control over the plugged in EVSE during grid peak events, or the customer could agree to a rate schedule that financially encourages grid-supportive behavior, possibly with “black out” times for charging. If the utility sees the

⁴¹ California Infrastructure and Development Bank, Infrastructure Loans Website:
<https://www.ibank.ca.gov/loans/infrastructure-loans/>

plugged-in EVSE as an asset with value, the customer's OBF obligation would be the cost of the EV chargers, less that value.

Pros	Cons
• Reduces up-front capital required • Leverages existing financial relationship and billing systems with utility • Utility credit ratings tend to be high, adding to trustworthiness as a lender • Can be paired with other financial mechanisms such as leasing and V2G	• Overall payments can be higher than an up-front investment • Loans will increase the County's debt • Vehicles depreciate as the County is still paying off the vehicle • Tax credits may not be available • If EVSE is used for V2G, terms of the V2G may reduce flexibility in charging times for County vehicles

Green Bond Financing

In green bond financing, the County would issue a bond inviting potential purchasers to buy portion of the up-front cost of EVs or EVSE, in exchange for a return that the County would pay back over time. In any type of bond financing, the government issuer can typically capture a lower interest rate than private sector financing, as the full financial balance sheet and credit of that local government is used as collateral.⁴² The current County General Plan includes actions to establish a Green Bank.⁴³

In tax-exempt municipal bonds, the interest paid to the bondholder is exempt from Federal taxes, which further enables the bond issuer to capture lower bond interest rates than in a private sector financing scenario. "Green" bonds may also be tax exempt, and are used to finance projects with environmental or public health benefits. If the local government bond issuer has the responsibility to respond to environmental or public health pollution, a bond project that helps resolve this issue may result in net savings for the local government. In the case of EVSE, public health benefits are a reduction in GHGs and particulate matter, resulting in better air quality for the community. Over time and at a large scale, if local pollutants are significantly reduced, the County may see savings in fewer asthma cases (or other poor air quality ailments) treated at County clinics. Of course, quantifying such savings requires robust accounting.

Pros	Cons
• Reduces up-front capital required • Municipal bonds typically have lower interest payment requirements than private sector financing	• Overall payments can be higher than an up-front investment • Bonds will increase the County's debt • In order to quantify net savings from

⁴² U.S. Environmental Protection Agency, "Energy Resources for State and Local Governments: Municipal Bonds and Green Bonds," <https://www.epa.gov/statelocalenergy/municipal-bonds-and-green-bonds>

⁴³ Contra Costa County General Plan, 2024. See COS A14-11, p.7-49, https://envisioncontracosta2040.org/wp-content/uploads/2025/03/Contra-Costa-County-General-Plan_Final_Adopted_November_5_2024_Optimized.pdf

• Interest payments may be tax exempt for bondholders • In “green” bonds, funded projects may carry public health benefits and potential financial savings for the bond issuer	“green” bond projects, the County must invest in robust accounting of costs and benefits, including externalities
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Charging-as-a-Service with Revenue Share	
Charging-as-a-service (CAAS) enables fleet owners to use EVSE without owning or managing chargers, and pay for vehicle charging through subscription models or pay-as-you-go. Revenue sharing can be added to CAAS if the EVSE are on County-owned sites, and users other than fleet drivers use the chargers, such as employee EVs, other municipal fleets and the public. Since the third-party owner of the EVSE do not have to pay to use the site, they can structure financing to share a portion of revenues with the County every time an outside entity charges their EV. CAAS with revenue share may not completely pay for EVSE at that site, but could create a revolving fund that could be re-invested into more EVSE as more County fleet vehicles are electrified.	
Pros	Cons
• Provides a potential source of funding to re-invest into a revolving fund to pay for future County EVSE • Encourages sharing of EVSE, a cost-effective solution for the broader community	• May increase wear-and-tear on EVSE primarily dedicated for the County fleet • Revenues may be minimal compared to overall EVSE project cost

Recommendation 9.5.1: Assess and pursue innovative financing strategies: Vehicle Leasing, Low-Interest Financing, Utility On-Bill Financing, Green Bond Financing, and Charging-as-a-Service (CAAS) Revenue Sharing

9.6 Grid and Resiliency Services

Since plugged-in EVs may act as electric batteries, great potential exists to utilize EVs to provide grid support services. Typically, an electric grid operator (utility) will seek partnership from EVSE managers where EVSE managers commit to providing capacity (battery discharge) to the grid during specified dates and times of day when the electric grid will be constrained. Examples of vehicle-to-grid (V2G) pilot projects exist around the nation, though large-scale or ubiquitous usage of this strategy has yet to emerge.

Generally, V2G projects work best for vehicle duty cycles that are highly predictable, so that grid operators can be confident that the resources will be plugged-in and available when called.

10. ZEV Transition Workforce Development

10.1 Vision for Workforce Development in ZEV Transition

As the County advances fleet electrification, a trained local workforce is essential to service the growing number of EVs and EVSE and to create quality local jobs.

In January 2025 the Public Works Energy Management Team articulated this workforce vision:

Inspire, educate, train and place program participants in high-road jobs in Electric Vehicle (EV) maintenance and Electric Vehicle Supply Equipment (EVSE) Operation and Maintenance (O&M) within Contra Costa County and beyond. We aim to create a robust local workforce able to meet the growing demand for EV/EVSE services.

The County has identified two primary skillsets: EV mechanics and EVSE O&M specialists. EV mechanics are auto technicians with specialized training in high-voltage systems, lithium-ion battery diagnostics, regenerative braking, and EV/hybrid architectures; they require additional safety training beyond standard auto-mechanic courses.⁴⁴ The County currently employs ten (10) full-service auto mechanics and has delivered two (2) EV mechanic and safety trainings. The Fleet Manager's goal is to train all full-service mechanics to service County EVs and to obtain EV-specific certifications for the Fleet Yard to become a training site.⁴⁵

EVSE O&M specialists perform electrical and mechanical preventive and corrective maintenance, track performance metrics, and maintain uptime and billing systems. Preventive tasks include inspections, cleaning, and diagnostics; corrective work addresses failures such as vandalism, broken plugs, software or network faults, and must be resolved promptly.⁴⁶ EVSE O&M personnel are typically certified electricians; EVSE O&M can be integrated as a module within electrician training programs.

To date the County has relied on private contractors for EVSE installation and maintenance, a model that may persist given the private sector's established networks and billing platforms. Nonetheless, the County anticipates the need to hire at least one dedicated EVSE O&M specialist to ensure reliable fleet fueling and to support in-house operational requirements.⁴⁷

10.2 Federal, State and County Workforce Development Requirements

The first step to assessing workforce development needs is to review requirements for EV mechanics and EVSE operators at the Federal, State and County level.

⁴⁴ Electronics Technicians Association, International (ETAI): <https://etai.org/overview.html>

⁴⁵ Interview with Ricky Williams, Fleet Manager, September 2025.

⁴⁶ U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, "Operation and Maintenance for Electric Vehicle Charging Infrastructure." <https://afdc.energy.gov/fuels/electricity-infrastructure-maintenance-and-operation>

⁴⁷ Interview with Ricky Williams, Fleet Manager, September 2025.

The County already employs journey-level auto mechanics and requires a baseline set of certifications and experience for those positions. County auto mechanics must possess a minimum level of certifications from the National Institute for Automotive Service Excellence (ASE), covering topics such as engine repair, suspension and steering, brakes, electrical systems and heating/ air conditioning.⁴⁸ ASE is an independent nonprofit organization that standardizes and maintains quality vehicle repair and maintenance services by offering certifications to professionals; ASE certifications are becoming more commonly required for auto mechanics in both the public and private sector.⁴⁹ In order to achieve ASE certification, automotive mechanics must either possess two years of on-the-job training, or one year of on-the-job training and an associates' degree in automotive repair. Neither the County nor State currently have requirements specifically for EV maintenance and repair, though there are opportunities for both mandatory and voluntary courses for County employees to gain this skillset.

Generally, installers and operators of EVSE must be licensed electricians, meaning that they must complete an apprenticeship of at least three years, pass an examination that covers knowledge of building codes, the National Electric Code, and electrical theory, and maintain good standing with the California State License Board (CSLB). Additionally, the state of California requires that installers of any EVSE funded by the California Air Resources Board (CARB) or the California Energy Commission (CEC) carry an electrician's license with the state, and employ at least one worker with a certification by the Electric Vehicle Infrastructure Training Program (EVITP).⁵⁰ EVITP is an independent nonprofit borne of collaboration between government and industry partners that offers a comprehensive certification in EVSE installation to electricians, covering battery types, brand-specific installation instruction for different charger types, utility interconnection processes, Internet Protocol (IP) networking of charging stations, electrical safety, EVSE maintenance, and more.⁵¹ To get certified, electricians must take a 20-hour proprietary training and pass a proctored exam. The EVITP certification lasts for three years. EVITP maintains lists of electricians with active certifications in every state and Canada.

10.3 Workforce Development Training and Certification in EVs and EVSE

While on-the-job training, associate's degrees and ASE certifications in automotive repair are a strong foundation for general automotive repair and maintenance expertise, these qualifications alone will not prepare automotive mechanics to address issues specific to EVs. Given the speed at which the County is transitioning fleet vehicles to all-electric, there is an opportunity to encourage and require this new skillset within the County fleet technicians. Fortunately, the ASE

⁴⁸ Sample County Job Description for Lead Fleet Technician: <https://www.governmentjobs.com/careers/contracosta/jobs/newprint/790509>; and for Fire Emergency Vehicle Technician: <https://www.governmentjobs.com/careers/contracosta/>

⁴⁹ U.S. Bureau of Labor Statistics, "Careers in Electric Vehicles."
https://www.bls.gov/green/electric_vehicles/

⁵⁰ California Public Utilities Code 740.20:
https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=PUC§ionNum=740.20.

⁵¹ California EVITP Program: <https://evitp.org/training/>

program has developed a skills test for light-duty hybrid and EV repairs, as well as an industry standard and professional certification for safe handling and basic repairs of high-voltage systems within EVs. These EV-focused ASE courses could be a reasonable additional requirement for County hires or existing technicians assigned to work on EVs.

Recommendation 10.3.1 Require new and existing County technicians to get certified by the National Institute for Automotive Service Excellence's (ASE) Light-Duty Hybrid/Electric Vehicle Specialist Test and ASE xEV safety certifications.

While EV safety training is essential to the safe servicing and repairs of the County's growing EV fleet, the scope of possible repairs and issues that may arise from a diverse electrified fleet goes beyond EV safety. Additional curricula covering EV operations, common EV failures and resolutions, battery maintenance, diagnostic tests, and more will be useful to provide County automotive technicians with the education they need to safely service EV fleets. Fortunately, training and curricula are developing nationwide to train automotive technicians on EVs, and to integrate EV expertise into general trainings for early-career automotive technicians.

Auto mechanics and technicians positions typically require postsecondary non-degree training, most often offered through two-year community colleges.⁵² Electric vehicle repair and servicing expertise could be offered as part of a standard automotive course, and/or as a separate module. Community colleges in Contra Costa County are run by the Contra Costa County Community College District (4CD), with three active colleges, two of which offer degrees in automotive fields:

1. Contra Costa College, located in San Pablo, offers two automotive services Associate of Science degrees, with one course dedicated to EVs and hybrid vehicles.
2. Los Medanos College, located in Pittsburg, offers one automotive services Associate of Science degree, and nine (9) additional skills certificates in automotive repair and technology. However, no courses are offered specific to EVs.

While a partnership with 4CD is discussed further in Section 11.4, the County should consider encouraging potential new hires to seek automotive training through 4CD colleges, and look to re-train existing employees in EV-dedicated courses offered through 4CD.

Recommendation 10.3.2 Leverage EV automotive courses offered through the Contra Costa Community Colleges District (4CD) for new and existing auto technician employees at the County.

Auto mechanics employed by the County have already received training from the Ford Motor Company (Ford) which provides instruction specific to Ford EVs that the County has invested in, such as the Ford F-150 Lightning. Ford's model for providing training is to partner with

⁵² U.S. Bureau of Labor Statistics, Occupational Outlook Handbook, Auto Technicians and Mechanics: <https://www.bls.gov/ooh/installation-maintenance-and-repair/automotive-service-technicians-and-mechanics.htm>

educational institutions throughout the country to provide Ford-specific modules within auto mechanic training and/or certification programs. Auto mechanics with Ford training become more competitive to work at Ford dealerships and repair shops; in fact, the County has hired mechanics with previous work experience at Ford dealerships. Seeking training from EV auto manufacturers is a proven method to ensure County auto mechanics receive training specific to the County fleet.

Recommendation 10.3.3 Supplement auto technician training with automobile manufacturer- provided training, offered through local educational institutions.

Additionally, the U.S. Bureau of Labor Statistics lists the National Alternative Fuels Training Consortium (NAFTC) curricula to automotive professionals looking to expand their expertise into electrified vehicles. The NAFTC is a consortium of two-year community colleges, technical institutes and four-year universities seeking to educate new and existing automotive technicians to support the growing industry of alternative fuel and electric vehicles. The NAFTC offers holistic training and curricula for automotive technicians on EV repairs and servicing, with separate modules for first-responder vehicles.⁵³

The Clean Tech Institute, an eligible training provider of the California Energy Commission, offers curricula on EVSE installation and EV maintenance and repairs. The Certified Electric Vehicle Technician (CEVT) program is a 16-week intensive that offers classroom and hands-on training for automotive technicians to become specialists in EVs.⁵⁴

Recommendation 10.3.4 Modify the curricula and training offered from the National Alternative Fuels Training and Consortium (NAFTC) and the Clean Tech Institute to County-employed automotive technicians.

Multiple organizations offer training, guides and workshops for first responders using EVs in emergency situations, given fire hazards within high voltage systems, and the special functions that emergency vehicle responder vehicles must contain. Key organizations offering resources include the U.S. Department of Energy's Alternative Fuels Data Center,⁵⁵ the National Fire Protection Agency,⁵⁶ the Energy Security Agency⁵⁷ and more. The County's Sheriff office is the largest Departmental fleet within the County, containing the majority of first-responder vehicles. The County has an opportunity to create training curricula for both auto mechanics and County first responders to ensure that safety measures are taken when servicing and operating first responder EVs.

⁵³ Clean Tech Institute CEVT Training: <https://cleantechinstitute.org/Training/CEVT.html>

⁵⁴ NAFTC Training Modules: <https://naftc.wvu.edu/courses-and-workshops/>

⁵⁵ U.S. Department of Energy Alternative Fuels Data Center: <https://afdc.energy.gov/vehicles/electric-maintenance>

⁵⁶ National Fire Protection Agency Training for First Responders Using EVs. <https://www.nfpa.org/product/nfpas-alternative-fuel-vehicles-training-program-ol/evt004>

⁵⁷ Energy Security Agency: <https://energysecurityagency.com/>

Recommendation 10.3.5 Leverage the curricula and training offered from multiple governmental organizations to develop trainings specifically for County auto mechanics and fleet drivers servicing and operating electrified first-responder fleet vehicles.

10.4 Workforce Development Partnership Strategies and Roles

Many stakeholders throughout the County can assist in developing a sustained, local workforce ready to meet the challenge of widespread transportation electrification. Collaboration and clarity of stakeholder roles will be essential to long-term success of workforce development region-wide.

Contra Costa Community College District

As mentioned in Section 11.3, educational institutions within the region are key stakeholders in developing a new and existing workforce. The Contra Costa Community College District (4CD) has been coordinating with the County's Energy Management team on leveraging their institutions' courses to serve the needs of the County's growing EV fleet. A first step would be a deep-dive assessment to determine if the current curricula offered through Contra Costa College meets the scope and trainee capacity needed by the County, as well as other jurisdictions.

Recommendation 10.4.1 Partner with the Contra Costa Community College District (4CD) to assess current course offerings against future County training needs to identify additional resource or capacity needs.

If further curricula is needed, there are multiple avenues to add to courses, such as the resources mentioned in Section 11.3. Additionally, the Electric Truck Research and Utilization Center (eTRUC), maintains a list of California-based community colleges offering courses and certifications on EV repair and servicing, including several in the 9-County Bay Area.⁵⁸

Joint Powers Authority

As covered in Section 8.2, the County could consider leveraging a Joint Powers Authority (JPA) to coordinate procurement and funding for EVs and EVSE. One potential function of a Countywide JPA is to support large-scale solicitations for customized workforce training programs, or a joint hiring solicitation, as many governments will need workers with similar training.

A JPA could coordinate on quantifying the regional demand for EV mechanics and EVSE O&M specialists to work on municipal fleets throughout the region, and partner with 4CD and other training organizations to sponsor trainings that will meet that need. If a solicitation is required, a JPA-led solicitation streamline the administrative burden and provide workforce benefits for all participating agencies.

⁵⁸ Electric Truck Research and Utilization Center (eTRUC): <https://etruc.org/>

Recommendation 10.4.2 Leverage an existing Joint Powers Authority to define and quantify demand for municipal EV workers, lead solicitations for workers and workforce trainings as needed.

MCE

MCE, the electric community choice aggregator (CCA) that serves Contra Costa County has programs and initiatives that could support Countywide workforce development on EVs. MCE recognizes that there is a growing demand for workers versed in electrification in general, as California moves towards a cleaner economy. Additionally, MCE is in the process of electrifying its own fleet, thus the CCA will directly benefit from a pool of trained EV auto mechanics and EVSE installers and O&M specialists.

In 2021, MCE launched its Green Workforce Pathways (GWP) program, an initiative to train local workers on emerging needs within the clean energy economy, with electrician training included among other fields. Since 2021, the GWP Program has trained 80 job seekers in clean energy skillsets and placed 33 job seekers with local contractors. In addition to technical skills, GWP provides no-cost networking opportunities with employers and general career-readiness training. MCE funds the first 160 hours of each new hire's wages, amounting to one month of full-time work.⁵⁹ GWP is a potential add-on to a degree or ASE certification in a new worker's journey to become an EV automotive technician or EVSE specialist. MCE may have the opportunity to expand their GWP offering with California Jobs First, a multi-state agency effort to expand regional job networks with grant funding and technical assistance.⁶⁰

Recommendation 10.4.3 Partner with MCE to offer and expand the Green Workforce Pathways (GWP) program to train and hire emerging electricians as EV auto mechanics at Contra Costa County.

Teamsters Union

The County auto technicians are represented by the Teamsters Union (Teamsters). For each new employment contract, the County and the Teamsters collaborate to set salary, benefits and policies for existing and new auto technicians at the County.

The Teamsters are an essential stakeholder in the County's workforce development journey, as they directly represent the needs of the automobile sector and existing employees, and will help shape training requirements and funding mechanisms, in alignment with County employment

⁵⁹ MCE, Green Workforce Pathways: <https://mcecleanenergy.org/building-the-workforce-for-our-clean-energy-future/>

⁶⁰ Note that Pacific Gas and Electric Company serves Contra Costa County as well, and offers PowerPathway, a program to train a local workforce in utility jobs. This opportunity may assist with EV worker efforts, however 90% of graduates of that program will work directly at PG&E as utility workers: https://tbcndn.talentbrew.com/company/29673/v2_0/documents/powerpathway_information_flyerdoc.pdf

contracts. Since the Teamsters are a nationwide union, they likely will bring resources and best practices used by other jurisdictions to educate the County.

Recommendation 10.4.4 Collaborate closely with the Teamsters, seeking feedback early on any training recommendations, certification requirements, and funding for workforce development related to EV auto technicians.

Automotive Service Councils of California (ASCCA)

ASCCA is an essential stakeholder in supporting the County's ZEV transition, as it is the largest independent automotive repair organization in California, with more than 800 chapters statewide. ASCCA represents the interests of the automotive repair industry businesses and workers at the state and Federal level through advocacy as well as connections to trainings, legal services and Human Resources (HR) advice.

For the County's purposes, ASCCA serves as a powerful voice for the emerging needs of automotive technicians and businesses that represent them. In 2019, ASCCA provided feedback to the County that more community colleges and high schools need to offer EV-specific trainings to the local workforce.⁶¹ ASCCA supports this effort directly by offering a vast library of online trainings, providing links to additional training institutions, and managing the ASC Educational Foundation, a nonprofit providing scholarships each year to lower-income high school seniors and undergraduates interested in pursuing careers in the automotive field.

The County spans two active chapters of ASCCA: the East Bay Chapter (16) and the Mount Diablo Chapter (20). The County's engagement in these two ASCCA Chapters could connect the County with a strong pipeline for trained workers, as well as supply resources for training existing County automotive technicians.

Recommendation 10.4.5 Consider a County membership in local chapters of the Automotive Service Councils of California (ASCCA) to support a pipeline of trained workers and the ongoing education of County employees.

Contra Costa County Workforce Development Board (WDBCCC)

The Contra Costa County Workforce Development Board (WDBCCC) is a unique public-private partnership that oversees workforce programs to develop strong pipelines of trained workers to meet the changing needs of industries represented within the County. The WDBCCC's Board consists of private industry, local government and union; both the County library and 4CD have board seats on the WDBCCC.

⁶¹ See ASCCA's feedback on specific training needs related to the ZEV transition, captured in the Contra Costa County EV Readiness Blueprint, Workforce Training Program Framework & Strategic Plan, 2019: <https://ccta.net/wp-content/uploads/2022/06/Contra-Costa-EV-Readiness-Workforce-Training-Program-Framework-Strategic-Plan-Auto-Mechanics.pdf>

The WDBCCC is in the early stages of launching a regional Displaced Oil and Gas Worker Fund (DOGWF) Initiative, aimed to re-train workers previously employed in the fossil fuels industry to emerging sustainability fields, including electrification and renewable energy. The DOGWF aligns with California's Just Transition plan, ensuring that workers from Impacted Communities are not left behind in the clean energy transition. The WDBCCC has received \$3.8M to fund training and other initiatives to prepare and deploy a growing sustainable workforce. Relatedly, the WDBCCC connects young adults interested in construction-related fields to FutureBuild, a regional partnership offering a 16-week no-cost pre-apprenticeship program which includes electrician training, which could be a foundation for transitioning into a career in EVs or EVSE servicing. The WDBCCC's role as a connector and potential funder of workforce programs in the County will be critical to ensuring a strong workforce to support the County's ZEV transition.

Recommendation 10.4.6 Partner with the Contra Costa County Workforce Development Board (WDBCCC) to connect to new and existing initiatives to train local workforces in construction and electrical fields, with a focus on equity.

Contra Costa County Departments

The County government itself has the potential to be a powerful workforce development facilitator within the region. Many departments already have initiatives and resources that could be leveraged to support workforce development for the ZEV transition. Table 7 below captures potential roles for the ZEV transition within the County government.

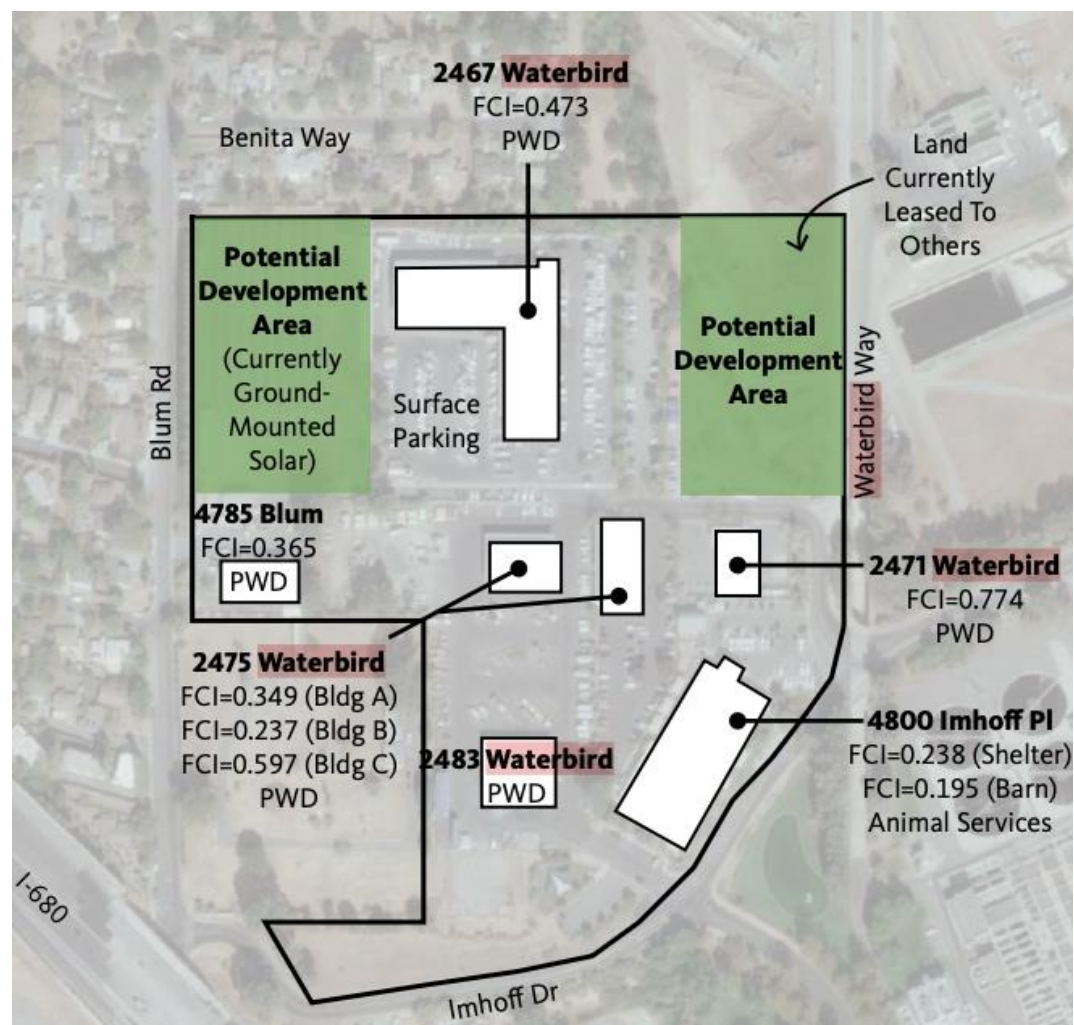
Table 7: Recommended County Department Roles in ZEV Transition Workforce Development

Department	ZEV Transition Workforce Role
Public Works/ Fleet	- Act as lead convener of County stakeholders to plan and implement workforce development initiatives that will support the ZEV transition - Host hands-on training and learning workshops at the County Fleet Yard located at 2467 Waterbird Way, which is slated for expansion and development.⁶²
Department of Conservation and Development (DCD)	Conduct outreach to community-based organizations (CBOs) within the County to gauge input on training approach, workforce gaps and ensuring equitable access to career opportunities.
Racial Equity &	Advise the overall ZEV transition workforce development initiative

⁶² Contra Costa County County Capital Facilities Master Plan, 2022: https://www.contracosta.ca.gov/DocumentCenter/View/77500/Contra-Costa-County_Facilities-Master-Plan-2022_Report

Social Justice	to build equity into the foundation of new programs and/or training approaches.
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Figure 20: Fleet Yard Campus and Potential Development Areas from 2022 Capital Facilities Master Plan



With an expanded training area located in the County Fleet Yard at 2467 Waterbird Way in Martinez, the County could enable trainees to work on EVs and EVSE owned by the County, while strengthening a workforce that would in turn benefit the County as well as other fleets within the region. Existing educational programs offered through 4CD and other providers could utilize the Fleet Yard for hands-on learning, adding to content that students learn in the classroom or independent study. There are already 220 EVs and 44 EV chargers located at 2467 Waterbird Way, with additional EVs and EVSE planned for the future; this infrastructure could become educational resources for students to gain real-world understanding of transportation electrification technologies.

Recommendation 10.4.7 Utilize underdeveloped areas at the County Fleet Yard (2467 Waterbird Way) for training and hands-on learning, enabling students to hone their expertise on County EVs and County EVSE.

10.5 Funding Workforce Development

Developing a skilled workforce in a growing, new technology will require funding for new curricula, training spaces, trainer compensation, scholarships and more. Unfortunately, there are fewer grant opportunities to fund workforce development initiatives than there are grants to support clean technologies, such as EVs and EVSE. The collective knowledge of the stakeholders mentioned will be helpful in identifying funding sources.

As an initial step, the County and stakeholders could explore the Foundation for California Community Colleges (FCCC) as a source of resources and potential funding to supplement and expand programs for emerging EV and EVSE workers trained at the 4CD colleges. The FCCC acts as both a connector to funding and an expert advisor and program developer for workforce development initiatives in a variety of fields. For example, in 2024, the FCCC worked with the Contra Costa Workforce Development Board to apply for and win \$750,000 for early-career healthcare workers facing barriers to employment.⁶³

Recommendation 10.5.1 Partner with the Foundation for California Community Colleges (FCCC) as a connector to workforce development grants to support programs dedicated to EV and EVSE workers offered through the Contra Costa Community College District (4CD).

In 2024, the California Energy Commission published a Zero-Emission Vehicle Workforce Training and Development Strategy, in which it listed several statewide grant opportunities to fund workforce development efforts in EVs specifically. Of note is the Electric Vehicle Infrastructure Training Program (EVITP) Fund, a grant program that offered \$2.7 million in 2025 to 17 regional public and private entities to offset the costs of training their electricians in EVITP to install and maintain EV chargers. Since EVITP is now a statewide requirement for electricians installing and operating most EV chargers, this funding source is likely to be released in later years, and could support a local workforce of EVSE Operations and Maintenance (O&M) Specialists.

Recommendation 10.5.2 Encourage local County grants from the Electric Vehicle Infrastructure Training Program (EVITP) Fund to bolster a local workforce to install, repair and maintain EVSE.

⁶³ AB 628: Breaking Barriers to Employment Initiative Grant Program via FCCC Fact Sheet: <https://foundationccc.org/wp-content/uploads/2024/02/Breaking-Barriers-to-Employment-Awardee-List.pdf>

11. EV Transition Toolkit

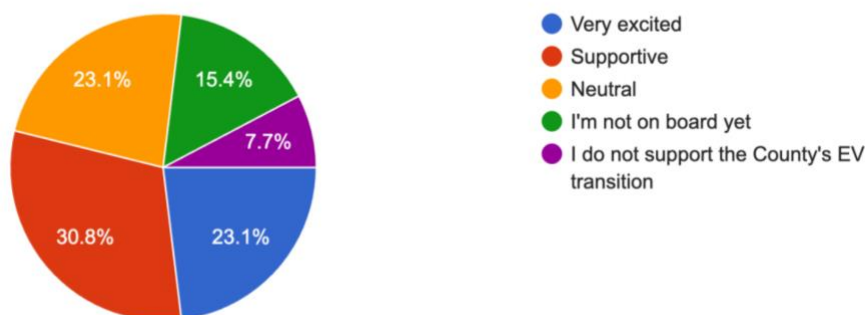
As outlined in Chapter 3, people are one of the primary drivers of the County's ZEV transition. People are truly a "make or break" factor in the ZEV transition, as this important work will only be accomplished with the engagement and commitment of all stakeholders in the ZEV transition, both inside the County and in the community.

Workshops held within the County have indicated that there is a wide spectrum of attitudes and education about the ZEV transition. In May 2025, the Public Works Fleet and Energy team held a meeting with 14 Department Fleet Liaisons, where participants filled out a survey that asked how they view the County's ZEV transition. More than half the participants were very excited or supportive of the transition, 23% reported feeling "neutral," and roughly one quarter were concerned or not supportive of the ZEV transition.

Figure 21: County Fleet Liaison Survey Result: Attitudes on the ZEV Transition

How excited are you about the County's EV transition?

13 responses



One year prior to the Fleet Liaison meeting, the County Energy Team held two internal workshops to solicit County employee feedback on the Strategic Energy Management Plan (SEMP), and several workshop prompts specifically targeted the ZEV transition. During a workshop in downtown Martinez where 24 employees from eight departments were present, participants were asked to rate their excitement for EVs, with a score of 10 as very excited, and 0 as not excited at all. Responses averaged a 5, right in the middle. Interestingly, the standard deviation was a 4, meaning that there were significant clusters of employees at a very high excitement level, and at a very unsupportive stance. A similar workshop was held in the Public Works Department, with 22 Public Works employees answering the same questions. The average EV excitement rating within Public Works was a 7, solidly supportive, with a standard deviation of 2, meaning that most employees were supportive to neutral of the ZEV transition.

These varying attitudes within the County towards the ZEV transition underscores the need for education on the purpose of the ZEV transition, as well as a need for resources for new EV drivers to ease uncertainty and concerns.

11.1 EV Toolkit Modules

In 2025, the County is developing an EV Toolkit targeting internal stakeholders impacted by the ZEV transition: Fleet Liaisons, County EV drivers, potential EV drivers, and employees driving their personal EVs to work. Each of these stakeholders will find materials and resources valuable to their position and interests within the ZEV transition. The EV Toolkit will exist primarily online, leveraging the *InsideContraCosta.Org* intranet site where all employees have access to files and resources. However, in some cases, there will be hard copies of key resources that employees can take away, and/or will exist within the EVs themselves for any driver to access.

The section below maps out the key components of the EV toolkit, with key audience members and platform (online or hard copy) listed.

Toolkit Module 1: EV Welcome Kit

Audience: Fleet Liaisons, County Fleet Drivers

Tools in Module and Location

Tool Name	Description	Location	Update Frequency
"Welcome to your EV!" One-pager	Colorful one-page document (or web landing page on <i>InsideContraCosta.Org</i> that welcomes first-time and curious County EV drivers, and orients drivers to online and physical resources, such as maps, how-to guides and videos for further learning.	Prominent display or landing page of the online EV Charger Toolkit on <i>InsideContraCosta.Org</i> and one-pager for drivers, and Fleet Liaisons, laminated copies in EVs.	Annually
"What is an EV?" Brochure	3-Fold laminated brochure that defines an EV as all-electric or plug-in hybrid, summarizes the basics of charging an EV, and describes the differences between a Level 1, Level 2 and DCFC charger. Includes several bullets on County's investment in EVs and EV chargers.	<i>InsideContraCosta.Org</i> , printouts handed to drivers and Fleet Liaisons, laminated copies in EVs	Annually
Welcome to	Colorful one-pager that describes	<i>InsideContraCosta.Org</i> ,	Every two

your [vehicle type] One-pager	specifications of specific EVs owned by the County (e.g. Chevy Bolt, Toyota BZ4X, Ford F-150, etc) including range in miles, timing of full charge, top speed and capacity (in kW)	laminated copies in EVs	years
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Toolkit Module 2: Locating EV Chargers

Audience: Fleet Liaisons, County Fleet Drivers, Employees with Personal EVs

Tools in Module and Location

Tool Name	Description	Location	Update Frequency
EV Charger Map	EV Charger Map that shows location of charger, charger type (Level 2, DCFC), and a color code for County charger or public charger. A list of chargers and addresses will also be provided on back of the map or a separate sheet.	<i>InsideContraCosta.Org</i> , printouts handed to drivers and Fleet Liaisons, laminated copies in EVs	Every 6 months
EV Charger List	EV Charger List that reflects the EV Charger Map, with additional information such as the full address, operator of the charger, charger type <i>and</i> speed, hours of operation and pricing information (if available)	<i>InsideContraCosta.Org</i> , printouts handed to drivers and Fleet Liaisons, laminated copies in EVs	Every 6 months

Toolkit Module 3: EV Charging Policies and Etiquette

Audience: Fleet Liaisons, County Fleet Drivers, Employees with Personal EVs

Tools in Module and Location

Tool Name	Description	Location	Update Frequency
EV Charging Policies and Etiquette Booklet	Colorful guide with pictures on general best practices for charging at Level 2 and DCFC chargers, including ranges of charging time and factors that may slow down charging times, such as multiple EVs using ports or extreme weather. Guide shall include advice to	<i>InsideContraCosta.Org</i> , printouts handed to drivers and Fleet Liaisons, laminated copies in EVs	Every 6 months

	generally keep EV batteries between a 20% and 80% state of charge, ⁶⁴ charging planning before long trips (e.g. reviewing charger maps and potentially “topping off” charge before starting the trip), safety practices for chargers, and County workplace charging policies (see Chapter 10).		
EV Charging Policies and Etiquette Video Training Series	Series of short videos that can be viewed online, featuring real County EVs and County drivers. Short trainings shall include: Maintaining a Healthy State of Charge, Planning my Trip, Charging Safety, County Workplace Charging Policies and Etiquette, and more.	<i>InsideContraCosta.Org</i>	Annually

Toolkit Module 4: Planning for the Unexpected

Audience: Fleet Liaisons, County Fleet Drivers

Tools in Module and Location

Tool Name	Description	Location	Update Frequency
What to do When I’m Stranded - Laminated Index Card	Very short index card starting with a short sentence on “How do I know when I’m out of battery power” and then enumerated steps on what to do (e.g. 1. Pull the car over somewhere safe; 2. Call Fleet Management; 3. Wait for Assistance). Card should include steps to take after work hours and on weekends.	<i>InsideContraCosta.Org</i> , printouts handed to drivers and Fleet Liaisons, laminated copies in EVs	Annually
What to do When I’m Stranded - Video Training	Short video as part of the general video training series (Module 3) featuring a County driver modeling how to get assistance when stranded. Video should end with best practices for not getting stranded in the future.	<i>InsideContraCosta.Org</i>	Annually

⁶⁴ EnergySage, “EV charging best practices: How can you keep your battery healthy?” May 2024: <https://www.energysage.com/ev-charging/ev-charging-best-practices/>

Recommendation 11.1.1 Develop trainings for County EV Drivers with four (4) Modules: EV Welcome Kit; Locating EV Chargers; EV Charging Policies and Etiquette; Planning for the Unexpected

12. County ZEV Policies

12.1 Workplace Charging Policies

As the County fleet, County employees and the public adopt increasing numbers of EVs, there will be higher demand for EV chargers at County parking lots. While the County is striving to provide enough EVSE in its facilities to meet growing demand over time, there is a need to refine, clarify, and communicate workplace charging protocols and charging etiquette for all drivers using County facilities, both EV drivers and drivers of gasoline and diesel vehicles.

Fortunately, the County has an existing baseline of workplace charging protocols. After internal review, the County Energy Management Team and Fleet Manager have determined that some of these existing workplace charging protocols should remain in place, and some policies warrant changes or refinement.

Policies covering EV parking and charging at County facilities and at employee homes are covered through several Administrative Bulletins at the County. A summary of *current* EV parking and charging rules is as follows:

Table 8: Current County EV and EVSE Policies

Policy Reference	EV Rule Summary
Admin Bulletin 507.10 Vehicle Operations	Take-home EVs may only be charged at Fleet or commercial EV chargers. The County will not install EV chargers at the employee's home.
Admin Bulletin 507.10 Vehicle Operations	Personal employee EVs are charged the average rate of the County's \$/kWh plus an overage fee of \$3/hour if EV remains plugged in for more than 5 hours.
Chapter 82-16 - Off-Street Parking	EVs parked in designated EV spaces must be actively charging.

As the County progresses in its transition to ZEVs, a need has arisen to review and improve current EV charging policies at County facilities, with three principles in mind:

- 1. Transparency:** Policies must be clear, straightforward, and communicated effectively to all drivers using County facility parking.
- 2. Access:** EV drivers must have adequate access to charging and parking at County facilities and at home, and gasoline vehicle drivers must maintain access to parking spots.

- 3. Integration:** The growing portion of EVs charging and parking at County facilities and employee homes must be seamlessly integrated, without cumbersome impacts to any group of drivers.

Current County policies do not differentiate between Level 2 chargers and DCFC in terms of authorized users and charging protocols. Given that these types of chargers are significantly different in the speed it takes to charge, differentiating policies are warranted.

Generally, County sites that host DCFC were selected because those sites serve as domiciles for many County fleet vehicles, and/or they are on commonly-used routes for County vehicles needing a quick charge during daytime hours. DCFC are also a great option for fleet vehicles from other municipalities such as Cities and Special Districts needing a quick charge while on their daily duty cycles. Personal employee EVs are not a logical fit for County-sited DCFC, because personal employee vehicles tend to park in one location for many hours, while an employee works at a facility. Thus, DCFC should be prioritized for County fleet vehicles and municipal fleet vehicles only.

The decision of whether to restrict County-sited DCFC to only County fleet vehicles is a decision that should be made on a site-by-site basis. For example, some County Sheriff facility parking lots are secure behind a fence, and are not open to municipal partner charging. There are some County facilities with such a high demand for quick charging services that it may warrant barring personal employees from charging at DCFC. These site-by-site decisions should be made by Fleet Liaisons, or persons designated by Departments to analyze and manage fleet needs on a departmental level. Fleet Liaisons have a direct line of communication to their Department's drivers, and possess deep knowledge of their Department's site locations where EV chargers are located.

Recommendation 12.1.1 County-sited DCFC should be prioritized for County and other agency fleets.

Recommendation 12.1.2 County Fleet Liaisons should be empowered to decide whether their Department's DCFC should be restricted to only County Fleet usage.

Because Level 2 chargers typically take four to ten hours to charge up to 80%,⁶⁵ County-sited Level 2 chargers are a good fit for vehicles that will remain parked on site during the entire workday and/or overnight. Employees' personal EVs will remain parked at their worksites during the workday, so it is appropriate to allow employees to charge their vehicles during the workday. There may also be County fleet vehicles domiciled at worksites, and those fleet vehicles could charge at Level 2 chargers either during the workday or overnight. It is less appropriate to allow other agency fleet vehicles to charge at County-sited Level 2 chargers, since those vehicles will not stay overnight and it is unlikely that an external agency employee would spend many hours at a County worksite on a regular basis.

⁶⁵ U.S. Department of Transportation, EV Toolkit, Charger Speeds and Types: <https://www.transportation.gov/rural/ev/toolkit/ev-basics/charging-speed>

Thus, County fleet vehicles and County employee personal EVs should have access to County-sited Level 2 chargers. It may be appropriate to reserve County-sited Level 2 chargers only for personal employee vehicles during daytime work hours, especially if there is a DCFC on site to serve County fleet vehicles. It may also be appropriate to reserve County-sited Level 2 chargers for County fleet vehicles during evening hours after the typical workday, and on weekends, so that domiciled County fleet vehicles can receive a charge when not driven. These decisions should be made on a site-by-site basis by Fleet Liaisons.

Recommendation 12.1.3 County-sited Level 2 chargers should be reserved for County fleet vehicles and personal employee EVs. Fleet Liaisons should be empowered to set reserved hours, if appropriate, for personal employee EVs and County fleet vehicles on a site-by-site basis.

The current County policy to charge personal employee EVs a fee if they remain plugged in to an EV charger for more than five hours creates a disincentive for employees to commute to work with their EVs. The standard workday is eight hours long, so in order to avoid a fee, an employee on a County site would have to move their vehicle at some point during the workday, a task that employees with gasoline vehicles do not have to do. Moreover, a vehicle may need more than five hours to charge up to 80%, depending on the energy rating of the EV and available capacity at the Level 2 charger. Some County Level 2 chargers have multiple ports, and when two or more vehicles charge concurrently, the charging speed is reduced. Thus, the five-hour overage fee should be eliminated from County policy.

Recommendation 12.1.4 Remove the overage fee of \$3/hour for personal employee EVs plugged into County-sited Level 2 EV chargers for more than five hours.

Of course, there is a potential risk in eliminating the overage fee that a vehicle may stay plugged in to the charger past a full charge, thereby blocking the charger from other vehicles needing a charge. It is unlikely that a personal employee EV would be plugged in for more than ten hours, given the typical length of a workday. If any type of vehicle is plugged into a Level 2 charger for more than 24 hours, or a DCFC for more than one hour, there should be a mechanism for other users of the parking lot to contact Fleet Maintenance to address the issue via a posted phone number.

Recommendation 12.1.5 Post prominent signage in County parking lots advising drivers not to charge EVs at Level 2 chargers for more than 24 hours or a DCFC for more than one hour, or risk being towed.

The potential risk of vehicles plugged in too long at County-sited chargers could further be addressed with training and clear communication, both to employees with personal EVs and fleet drivers. While County fleet driver training can be delivered through the EV Toolkit (Chapter 9), all EV drivers can benefit from clear communication of EV Charging Etiquette.

12.2 EV Charging Etiquette

While some EV charging practices rise to the level of importance of requiring a County policy , other charging practices could fall into a category of etiquette: a best practice to be encouraged across all EV drivers, but not requiring a policy change.

The County does not currently publish and distribute EV charging etiquette, so County EV drivers - both fleet drivers and employees with personal EVs - may have differing expectations around charger use, which could lead to confusion and conflict.

EV Charging Etiquette should include guidance on best practices on charging with Level 2 and DCFC, as the County has both types of chargers at County facilities. When appropriate, EV Charging Etiquette should also differentiate between employees with personal EVs and fleet drivers with County EVs. The guide below contains recommended practices and guidance to include in published County EV Charging Etiquette

Table 10: EV Charging Etiquette by Category

Safe EV Charging • Never use an EV charger with obvious signs of damage and wear. Call Fleet Maintenance for assistance, and move your vehicle to another charger.⁶⁶ • If an EV charger outlet or plug is wet, do not use that charger. Call Fleet Maintenance for assistance. • Never let a child operate an EV charger. • Do not unplug an EV charger from another vehicle to charge your own vehicle. If a vehicle appears to be plugged in for longer than authorized (24 hours for Level 2, one hour for DCFC), call Fleet Maintenance for assistance.
General EV Charging Best Practices • EVs should remain in a state of charge (SoC) between 20% and 80%. It is not recommended to charge past 80% using a County EV charger, as the charging speed slows down after 80% is reached, and other vehicles with a lower SoC likely need to use chargers. • If a long trip is anticipated, “topping off” a charge can ensure that the vehicle has the range needed to complete the trip. Topping off refers to charging the vehicle up to 80%, even if the current SoC is not as low as 20%.
Level 2 EV Charging Etiquette • Refer to guidance for specific practices for your facility, published by the Fleet Liaison. Facility-specific guidance may include restricted hours on using Level 2 chargers. • Select a Level 2 charger if you are leaving your vehicle at the facility for hours at a time. • Do not leave a vehicle plugged in for more than eight (8) hours. Move the vehicle as soon as possible after the SoC reaches 80%. Note that the vehicle may be towed if plugged in for longer than 24 hours.
DCFC Charging Etiquette

⁶⁶ Federal Emergency Management Agency Fact Sheet: Electric Vehicle Safety:
<https://www.usfa.fema.gov/downloads/pdf/publications/electric-vehicle-safety-handout.pdf>

- Refer to guidance for specific practices for your facility, published by the Fleet Liaison. Facility-specific guidance may include restrictions on DCFC only for fleet vehicles.
- Select a DCFC if you need a quick charge (15 - 20 minutes) during the workday.
- Stay near your vehicle while it is charging. Note that the vehicle may be towed if plugged in for longer than 20 minutes.

Personal Employee EV Etiquette

- Refer to guidance for specific practices for your facility, published by the Fleet Liaison. Facility-specific guidance may include restrictions on what chargers employees may use, and restricted hours on those chargers.
- If there is a County fleet vehicle needing to use a charger that an employee would like to use, the County fleet vehicle has priority. Charger sharing may be an option with multi-port chargers.
- Proactively communicate with other employees with EVs at your facility about charging needs and preferences through an Affinity Group (see Chapter 9) or more informally. A well-connected network of EV drivers will result in higher charger use optimization, and fewer cars plugged in for excessive periods of time.

EV Fleet Driver Etiquette

- If there is more than one fleet driver needing to use a charger, communicate with one another about vehicle SoCs and trip needs. Generally, vehicles with a lower SoC should take priority with limited EV chargers. Charger sharing may be an option with multi-port chargers.
- If another fleet vehicle is plugged in past 80% or for an excessive amount of time, attempt to contact the driver before calling Fleet Maintenance.

Recommendation 12.2.1 Create an EV Charging Etiquette Guide (Table 10)

12.3 Take-Home Fleet EV Charging Policy

County policy currently prohibits charging fleet vehicles at employees' homes, which limits operational efficiency for roles that rely on take-home vehicles with unpredictable duty cycles; for example, inspectors with the Department of Conservation and Development (DCD).⁶⁷

Gasoline vehicles can refuel at many commercial stations; EV charging infrastructure is sparser and charging takes longer, so enabling home charging with reimbursement would remove a key barrier to electrifying variable-duty vehicles and save employees time.

Home charging introduces risks that must be managed. The County should require employee training, approved charger specifications or an approved equipment list, warranties for equipment, and a signed waiver limiting County liability for misuse or personal equipment damage. An initial step is to review existing fueling reimbursement practices (fleet fuel cards and IRS mileage reimbursement for personal-vehicle business use) to establish a consistent approach.

⁶⁷ Interview with Jason Crapo, Deputy Director of Contra Costa County Department of Conservation and Development (DCD), February 2025.

Table 11: Recommended Policies, Risks and Mitigations - Take Home EV Charging

Policy Change	Potential Risks	Mitigations
Allow employees to take fleet EVs home and charge them via at-home chargers. Employees may seek reimbursement for at-home charging costs by mileage (Admin Bulletin 507.10 Vehicle Operations)	Employees may seek reimbursement for more mileage than they drove for work duty cycles	Samsara software tracks vehicle locations at all times, enabling audits
	Employees may seek reimbursement for at-home charging when no at-home charging occurred	Samsara software tracks when and where vehicles are plugged in, enabling audits
	Employees may damage County fleet vehicle with malfunctioning at-home chargers	Clear specifications and safety certifications for at-home chargers Employees must sign waiver releasing County of liability for vehicle damage from take-home chargers

The County can reimburse home EV charging by kilowatt-hour (kWh) or by mileage. Reimbursement by kWh is most precise but administratively complex, requires meter-level or smart-charger reporting, and would diverge from the County's established mileage-based processes and complicate treatment of plug-in hybrid electric vehicles (PHEVs).⁶⁸ Reimbursing by mileage is simpler to administer and aligns with existing County procedures.

To avoid reimbursing employees for fixed vehicle costs the County does not bear—such as insurance, depreciation, and routine maintenance—the County should use the IRS variable-cost mileage rate (the medical/charitable/moving rate), which in 2025 is \$0.21 per mile.⁶⁹ That rate is explicitly designed to cover only variable operating costs, primarily fuel, and therefore aligns with the County's objective of reimbursing home charging energy rather than vehicle ownership. Analysis using PG&E tariff rates shows the IRS variable rate slightly exceeds estimated per-mile home charging costs for typical County EVs, even when some charging occurs during on-peak periods; this modest premium compensates employees for using personal charging equipment without covering full fixed ownership costs. The County should account for utility territory differences, such as lower MCE rates, which will increase the margin between reimbursement and actual charging costs for some employees.

⁶⁸ Federal Internal Revenue Service (IRS), "IRS increases the standard mileage rate for business use in 2025; key rate increases 3 cents to 70 cents per mile" December 2024: <https://www.irs.gov/newsroom/irs-increases-the-standard-mileage-rate-for-business-use-in-2025-key-rate-increases-3-cents-to-70-cents-per-mile>

⁶⁹ [Motus.Com](https://www.motus.com), "2024 IRS Mileage Rate: What Businesses Need to Know" <https://www.motus.com/news/2024-irs-mileage-rate/>

Table 12: Fueling Cost and Reimbursement Comparison Between EV Models

EV Make and Model	Range (miles)	Actual Fueling Cost	IRS Reimbursement Cost	Difference
Nissan Leaf (40 kWh)	150	\$19	\$32	\$13
Ford F-150 EV (98 kWh)	300	\$45	\$63	\$18

Assumptions:

- EV fueling cost = \$0.46/kWh⁷⁰
- IRS reimbursement rate = \$0.21/mile

The analysis above indicates that County employees charging fleet vehicles at home will still be overpaid slightly when receiving the IRS mileage rate for variable vehicle costs, evening when charging on-peak for part of the charging time. A slight overpayment may be appropriate, given that the County vehicle would be using an employee's personal asset (the charger) to charge. The employee's charger has its own fixed costs such as maintenance, insurance, and depreciation, and the slight overpayment on fleet vehicle charging could be contributed to those fixed costs borne by the employee. It should be noted that the above analysis is based on PG&E rates. Some County employees may live within MCE territory, which offers lower rates for EV owners. In those cases, County employees would receive a larger difference in their fleet vehicle charging reimbursement.

Recommendation 12.3.1: Modify Admin Bulletin 507.10 to allow employees to charge County fleet EVs at home and reimburse them at the IRS variable-cost mileage rate.

12.4 EV Charging Pricing and Rates

While the County does operate several gasoline fuel pumps at the Waterbird maintenance facility, the County can largely rely on public gasoline and diesel pumps in the community to fuel the fleet. This is not the case for ZEVs, as the County must rely both on public EVSE as well as EVSE installed on County facilities in every geographic corner of the County.

Installing and operating EVSE at County sites will bring a significant cost. However, the County can see returns on this investment by charging users outside the fleet to use the EVSE. Estimating and shaping overall demand for EVSE at County sites will keep optimization rates high, maintain a steady revenue source for the County from user charging, and minimize wait times. Customer rates for EVSE are a primary way of shaping demand, as overly high rates will deter users and leave EVSE as an underused stranded asset. Overly low rates will attract users to the EVSE, but may create long wait times and challenges for County fleet vehicles to use the EVSE.

⁷⁰ Based on blend of peak, partial peak, and off peak rate of PG&E's EV2 rate
[https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHS_EV2%20\(Sch\).pdf](https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_SCHS_EV2%20(Sch).pdf)

Thus, setting principles for customer rates is crucial both for budgeting and for effectively managing demand at County-sited EVSE. The following sections describe principles for setting rates for various stakeholders:

County EVs

As outlined and recommended in Chapter 5, County EVs must generally have priority access to EVSE installed on County sites. There may be some exceptions to this principle, as with parking lots where there is large public demand and few domiciled EVs. However, almost every County site with EVSE has County fleet EVs domiciled that must charge while employees are at work. Additionally, every County EVSE site with DCFC was selected to serve as a hub in a larger EV charger network where County vehicles can charge on-the-go, even if the fleet vehicle is not domiciled at that site.

For fleet vehicles, the cost to charge is billed directly to the County and not to the user. If the County owns the EVSE, the rate that vehicles will use to charge will be the rate paid by the facility to the electric utility, in this case MCE. In this case, the best strategy will be to select the MCE rate(s) best fitting the charging load curve at each site.

It is advised that the County work directly with MCE to negotiate EV charging rates that are lower than the typical residential rate for charging, given that the County plans to install EVSE on a very large scale, and the County does have the option to select a competitor provider for electric service (PG&E). Charging a lower rate for County fleet vehicle charging than the average residential rate will keep costs down for the County's overall fleet transition, and will open up the possibility that the County earns a return when users outside the County fleet charge at County sites.

Recommendation 12.4.1: Work directly with MCE to negotiate a rate structure with a lower average price than residential rates for EVs.

For EVSE installed and owned by a third-party under a CAAS model, the County is advised to select the best-fit-lowest-cost CAAS provider, to keep rates as low as possible for County vehicles. This is not necessarily the best principle for rates charged to other users (see below), but in a CAAS business model, there is no downside to keeping rates charged to County vehicles as low as possible.

County Personal Employee EVs

Employee EV drivers are a vocal and important group of stakeholders to serve with County-sited EVSE. Accommodating employee EVs with access to charging fits strongly with the County's Strategic Energy Management Plan as well as the County's Climate Action and Adaptation Plan (CAAP). As the broader community adopts ZEVs at higher levels, the County will see an increase in employee EVs as well. The County must carefully consider rates charged to employee EVs, as rates will strongly influence: 1) employee EV demand for chargers; 2) employee satisfaction (or lack thereof) with on-site EVSE; and 3) fleet vehicle access to EVSE.

Employees with EVs will naturally compare the EV charging rates they are charged at the workplace with EV charging rates at public sites and the EV charging rates that they pay if they are able to charge at home. If County rates are competitive with these benchmarks, employees with EVs are likely to charge on-site without many complaints. If rates go too far above these benchmarks, employees may express dissatisfaction at the prices and assume that the County does not support their personal decision to drive all-electric vehicles. If rates are too much lower than at home or at public charging facilities, the County may see long wait times and potential conflict between County fleet charging and County employee charging.

Recommendation 12.4.2: Regularly benchmark average public EVSE rates and average local residential EV charging rates (\$/kWh), and strive to keep rates charged to employees EVs within 10% of those rates.

13. Innovation Opportunities

While the primary use of the County's ZEV fleet is to transport personnel and other resources to perform County tasks, the growing volume of EVs and EVSE on County sites could be harnessed to provide additional value in the form of facility resilience and potential additional sources of income. These opportunities are emerging and may not be fully available at present, but are likely to become more ubiquitous as the County and state progress on their ZEV transitions.

13.1 Vehicle-to-Grid (V2G) and Vehicle-to-Everything (V2X) Opportunities

California is a leader nationwide in piloting vehicle-to-grid (V2G) and vehicle-to-everything (V2X) opportunities. Vehicle-to-Grid (V2G) is a technology that enables EVs to not only draw electricity from the power grid for charging but also send stored energy back to the grid, helping balance supply and demand and support grid stability. Fleets of grid-connected EVs that send energy to the grid during times of peak energy can receive payments for this critical service from grid operators, including utilities and Independent System Operators (ISOs).

Vehicle-to-Everything (V2X) expands upon the concept of V2G, allowing EVs to exchange energy and data with a wide range of systems, including homes (V2H), buildings (V2B), and other infrastructure, enabling flexible energy use, emergency backup power, and integration with smart cities. Both technologies are key to maximizing the value of EV batteries beyond transportation.

Policy momentum, new interconnection pathways for aggregations of grid-connected EVs, and rapid standardization are converging to unlock near-term value, especially for fleets. In 2019, the California legislature directed the California Investor-Owned Utilities (IOUs) to maximize achievable V2G benefits by 2030.⁷¹ In early 2022, the California Public Utilities Commission (CPUC) approved three PG&E-led V2G pilot programs totaling \$11.7 million, aimed at exploring

⁷¹ Senate Bill (SB) 676, Bradford, October 2, 2019: <https://legiscan.com/CA/text/SB676/id/2055659>

how bidirectional EV charging can benefit both customers and the grid. Included in these is a commercial pilot targeting medium- and heavy-duty EV fleets at workplaces with monthly incentives and a microgrid pilot enabling up to 200 EVs (residential and commercial) to charge and discharge within local microgrids—providing resiliency during Public Safety Power Shutoff (PSPS) events.⁷²

In 2025, PG&E launched its fleet V2G pilot with a fleet of electric school buses in Fremont Unified School District (FUSD). PG&E and FUSD enabled 14 electric school buses to discharge energy back to the grid via bidirectional DCFCs, and site infrastructure upgrades to handle new electric demand. Managed by an intelligent software platform, the fleet participates in PG&E's Emergency Load Reduction Program (ELRP), contributing to grid resilience during peak demand.⁷³

Mechanisms to receive financial compensation for V2G are emerging in California and the Bay Area, though several exist today. Aggregations of V2G-enabled vehicles can stack several revenue streams: the ELRP, run by the investor-owned utilities (IOUs), pays performance-based incentives—commonly \$2/kWh—for discharging to the grid or curtailing charging during emergency events, with no penalties for non-performance. ELRP is scheduled to sunset in 2027, though a version of the program is likely to continue beyond this date, as climate-driven grid constraints have become commonplace. ELRP is activated on average 20 times per year throughout the summer, providing participants multiple opportunities to provide energy to the grid to earn revenue.⁷⁴

Beyond emergencies, fleets can enroll resources in the California Independent System Operator's (CAISO) market as a Proxy Demand Resource, a mechanism for distributed energy resources (DERs) to participate in day-ahead/real-time energy and ancillary services markets, independent of utilities. For vehicles, PDR creates ongoing market-set revenues when vehicles are aggregated, connected and qualified.⁷⁵ Fleets participating under CAISO-aligned programs like the California Energy Commission's (CEC) Demand Side Grid Support pathway can also receive payments when registered as PDRs, expanding monetization beyond utility programs.

The fleet vehicles most suited to V2G are those with predictable duty cycles, because vehicles must be plugged into chargers at specific times in order to discharge energy back to the grid.

⁷² "California regulators set to approve PG&E-proposed V2G pilots" Factor This, April 5, 2022: <https://www.renewableenergyworld.com/electric-vehicle/vehicle-to-grid/california-regulators-set-to-approve-pge-proposed-v2g-pilots/>

⁷³ "PG&E, "In Fremont, PG&E Helps Launch Another Vehicle-to-Grid Electric School Bus Fleet," August 11, 2025: <https://www.pge.com/en/newsroom/currents/future-of-energy/in-fremont--pg-e-helps-launch-another-vehicle-to-grid-electric-s.html>

⁷⁴ "California Public Utilities Commission:, Emergency Load Reduction Program Website: <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/demand-response-dr/emergency-load-reduction-program>

⁷⁵ "Demand and Distributed Energy Market Integration Working Group" presentation, CAISO, July 29, 2025

Peak grid hours in California are between 4pm and 9pm;⁷⁶ thus fleet vehicles that are reliably plugged in during early evening hours will be the most likely vehicles to select for V2G. Finally, a concentration of reliable-duty-cycle fleet vehicles should be clustered at one domicile with multiple bidirectional DCFC chargers.

Using the above criteria, it is possible to identify the most ideal domicile locations and vehicles within the County for V2G within the next ten years. See Table 13 below for a priority-ranked list of County facilities that could potentially serve V2G needs in the next ten years:

Table 13: Priority Ranked County Facilities for V2G

V2G Area Name	County Departments	Facility Addresses	# Vehicles Domiciled	Grid Peak Load (%)	Vehicle Duty Cycle Information	# DCFC Need by 2035
Public Works Fleet Yard	Public Works, Animal Services	2467 Waterbird Way; 4800 Imhoff Pl. - Martinez, CA	249	86%	Public Works has 70 heavy-duty trucks; Animal Services has 22 ¾-ton trucks - all likely to be parked during grid peak	20
South Martinez	Public Works, Sheriff, Health Services Juvenile Hall, Emergency Operations Center	Glacier Dr.: 30, 50, 202, 220, 255; Muir Rd.: 1960, 1980, 1850 - Martinez, CA	187	84%	Sheriff has 16 prisoner vans and 64 sedans domiciled; Health Services has seven (7) outpatient buses; Fleet Liaisons to inform on parking hours.	28
Douglas Dr. Martinez	Health Services, Employment & Human Services (EHS); Information Technology; District Attorney	Douglas Dr.: 10, 30, 40, 50 - Martinez, CA	97	86%	28 Vans and box trucks assigned to the County Administrator and EHS are likely to be driven during the day and parked at peak grid hours.	7
Downtown Martinez	Sheriff and Jail	901 Court St.; 900 Ward St.; 1000 Ward St.; - Martinez, CA	56	86%	14 prisoner transit vans and coach buses domiciled across addresses, Fleet Liaisons to inform on parking hours	7
West	Sheriff	5555 Giant	61	91%	Majority of vehicles	10

⁷⁶ "Time-of-Use Residential Transition Frequently Asked Questions" PG&E
<https://www.pge.com/assets/pge/docs/account/billing-and-assistance/TOU-Transition-FAQs.pdf>

Detention Center		Hwy, Richmond, CA			are Sheriff sedans and SUVs, likely to have unpredictable duty cycles	
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The Public Works Fleet Yard (2467 Waterbird Way) and adjacent Animal Services (4800 Imhoff Place) are prioritized first because of the large concentration of heavy-duty trucks and construction equipment domiciled, most of which is expected to leave the site during the day and plug in reliably in the evening. The site also has the second-largest need for DCFC, a concentration of dispatchable energy within the next ten years. The South Martinez and Douglas Drive domicile locations are potentially well suited for V2G with large clusters of transport vans and buses in both locations, though Fleet Liaisons must inform as to whether these vehicles have reliable duty cycles with plug-in hours overlapping with grid peak times. Despite being in the most grid-constrained location, the West County Detention Center in Richmond is prioritized last because Sheriff sedans and SUVs tend to be assigned to investigators, which have highly unpredictable duty cycles and operate at all hours of the day and night.⁷⁷ Still, the Fleet Liaison may be able to identify a subset of vehicles driven by Sheriff administrators with regular hours, and thus more likely to be plugged in during evening grid peak hours. Figures 22 and 23 show maps of potential aggregations of V2G areas. These V2G aggregations are initial estimates and should be modified with a grid operator partner, either PG&E or the CAISO.

⁷⁷ Multiple interviews with Sheriff Fleet Liaison Joyce Hayes, May 2025.

Figure 22: Map of Martinez V2G Areas

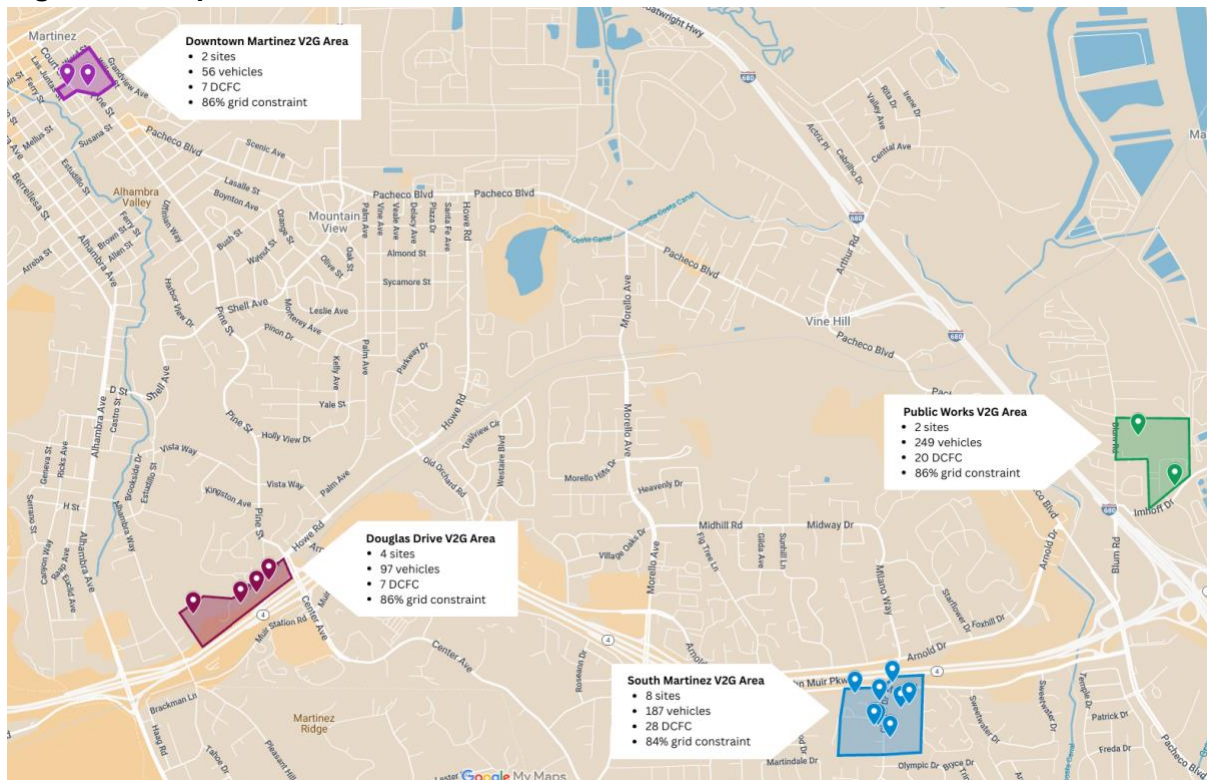


Figure 23: Map of Richmond V2G Area



Recommendation 13.1.1 Partner with PG&E and the CAISO to explore V2G opportunities for plugged in-vehicles at priority locations throughout the County (Table 13).

13.2 EVs as Resilience Resources

Aggregations of plugged-in EVs could potentially offer a resilience resource to County facilities during power outages. When the power goes out at a facility, either from a Public Safety Power Shutoff (PSPS) event or an unplanned outage, plugged-in vehicles can discharge electricity back to the building, powering critical building loads such as air conditioning, lighting, refrigeration, and outlets to charge phones and laptops. The County may have certain facilities that would benefit from continuous power, even when the grid goes down. For example, the Central County Service Center planned in Martinez will have a Data Center that must be continuously powered, otherwise the County may risk data loss.⁷⁸

According to the California Governor’s Office of Emergency Services (CalOES), extended power outages are most likely to be caused by natural disasters or extreme heat. If a power outage occurs during an extreme heat event, community members are likely to need a safe place to cool off, rehydrate, and charge their devices.⁷⁹ The County may decide to provide this service to the community, especially within planned Service Centers that already feature public-facing community services. Table 14 provides a prioritized list of County facilities for V2X resilience solely based on the available capacity from plugged-in EVs, though all sites should be integrated with existing County plans and teams focused on Countywide resilience.

Table 14: Prioritized List of County Facilities for V2X Resilience

Public-Facing Service Center	Address	Development Status	Estimated EVSE Planned	Estimated Resilience Capacity (kW)⁸⁰
East County Service Center	Technology Way, Brentwood, CA	Planned	8 Level 2 Chargers 1 DCFC 1 microgrid ⁸¹	538
Central County Service Center	2530 Arnold Drive, Martinez, CA	Planned	16 Level 2 Chargers 1 DCFC	454
West County Service Center	San Pablo Corridor (TBD)	Planned	24 Level 2 Chargers	906

⁷⁸ Contra Costa County Capital Facilities Master Plan, 2022.

https://www.contracosta.ca.gov/DocumentCenter/View/77500/Contra-Costa-County_Facilities-Master-Plan-2022_Report

⁷⁹ California Governor’s Office of Emergency Services, “Power Outages Can Make Your Summer Go Dark. Here’s How You Can Prepare,” July 14, 2024: <https://news.caloes.ca.gov/power-outages-can-make-your-summer-go-dark-heres-how-you-can-prepare/>

⁸⁰ Assumes that Level 2 chargers are 19 kW and DCFC are 150 kW of available capacity.

⁸¹ Assumes battery power for 50% of building loads for 12 hours, at 236 kW/2825 kW. Webcor, Perkins & Will, and County Department of Public Works draft designs for East County Service Center, August 2025.

			3 DCFC ⁸²	
Employment and Human Services - Workforce and Family Services	300, 400 and 500 Ellinwood Way, Pleasant Hill, CA	Existing	20 Level 2 Chargers 1 DCFC	530
Community Services Bureau, George Miller Children's Center	3068 Grant Street, Concord, CA	Existing	4 Level 2 Chargers	376
Veteran's Services Office	10 Douglas Drive, Martinez, CA	Existing	8 Level 2 Chargers 1 DCFC	302
Children & Family Services (CFS) Independent Living Skills Program (ILSP)	1875 Arnold Drive, Martinez, CA	Existing	2 Level 2 Chargers 1 DCFC	188

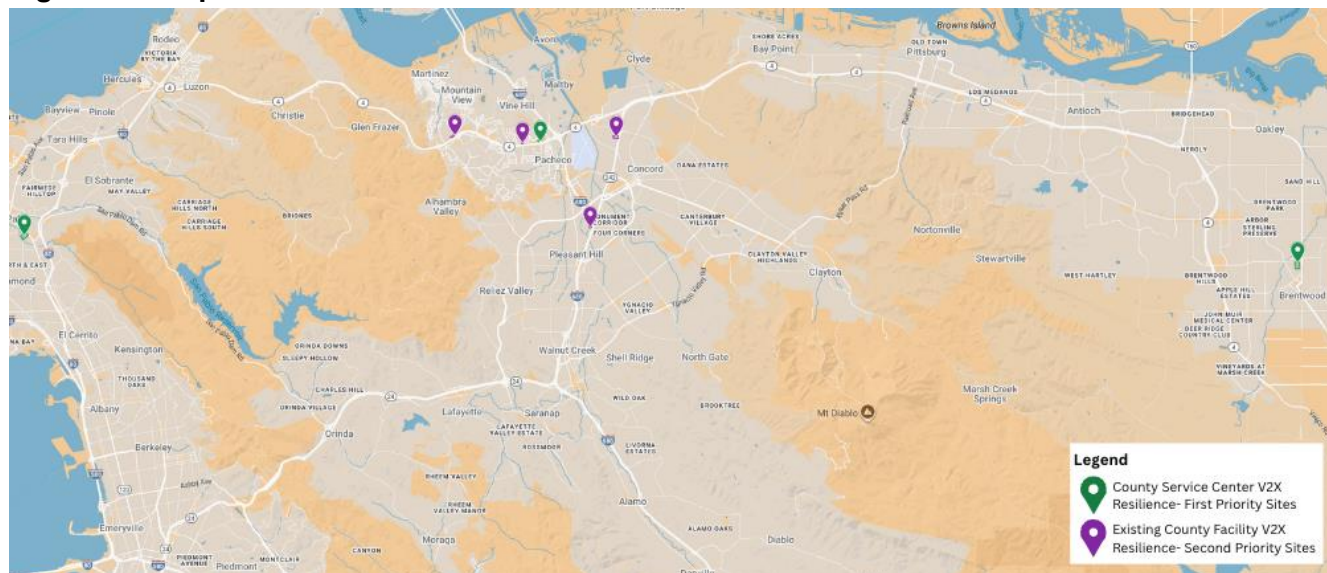
Resilience is already built into the design for the East County Service Center, as it will feature a microgrid. The nine estimated EV chargers at that site could further contribute to the building's ability to power certain loads during an outage. The Central County Service Center is prioritized next, as it has been designated as a facility with specialized resilience needs because it houses a Data Center. Finally, the planned West County Service Center is expected to host the highest volume of EVSE. At nearly a megawatt of plugged-in EVSE capacity, the West County Service Center is a strong candidate to be a resilience center. Planning for a V2X-based resilience design at these three County Service Centers additionally provides potential for community safety services at the West, Central and East regions of the County, ensuring that no population is left behind.

Following the planned County Service Centers, there are several existing County facilities that already provide public-facing services with a future need for EVSE that may be additional candidates for facility resilience and community safety services during outages. These existing facilities, captured in Table XX, offer workforce development services, child care, independent living skills training, and other community services. These facilities that offer services to the community are likely to have large rooms with seating and electrical outlets, meaning that they can easily transform into public safety cooling centers during power outages.

⁸² Assumed relocation of ½ of Level 2 chargers planned for the Public Defender's office at 800 Ferry, since 31 Public Defender staff will move to the East County Service Center. Contra Costa County Capital Facilities Master Plan, 2022.

Figure 24 maps potential facilities where plugged-in vehicles (and potentially additional devices) could be used to power critical on-site loads during a power outage. The planned County Service Centers are marked as first priority, and the existing County facilities offering community services are marked as second priority.

Figure 24: Map of Potential Facilities for On-Site V2X Resilience



Recommendation 13.2.1 Design for Vehicle-to-Everything (V2X) resilience as a community service at Planned County Service Centers and prioritized existing facilities (Table 14).

14. Conclusion

Contra Costa County is committed to achieving a fully zero-emission fleet by 2035. This plan provides a roadmap for navigating the transition, addressing key challenges, and leveraging opportunities for cost savings, grid resilience, and workforce development.

Successful implementation hinges on:

Consistent Stakeholder Engagement: Continued collaboration with County departments, employees, community partners, utilities, and regional stakeholders will be critical to ensuring the plan remains responsive and effective.

Adaptive Planning and Progress Tracking: This plan will be updated regularly to reflect technological advancements, policy changes, and lessons learned. Progress will be tracked through key performance indicators (KPIs) and reported transparently to the Board of Supervisors and the community.

In closing, Contra Costa County extends its sincere gratitude to the many partners who contributed to this Zero Emission Vehicle Plan. The expertise and dedication of Glumac, Hunter Strategies, the Energy Management Team, and Fleet Manager Ricky Williams were invaluable in developing this comprehensive roadmap for a cleaner, more sustainable future for the County. Their collaborative spirit and commitment to innovation have laid a solid foundation for achieving the ambitious goals outlined in this plan.

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Appendix A: Site by Site EVSE Needs

Appendix A is a site-by-site estimate of EVSE charging needs and budget for every annual budget cycle through the year 2031. Project phases were prioritized according to vehicle transition timelines, driven by vehicle replacement cycles and the Advanced Clean Fleet (ACF) regulations. Sites that have existing EVSE have been identified, and the remaining number of required EVSE ports have been calculated accordingly.

Install Year	Facility	Required EVSE Ports		Existing EVSE Ports		EVSE Gap		Budget to Cover Gap
		Level 2	DCFC	Level 2	DCFC	Level 2	DCFC	
2026	1980 Muir Rd., Martinez	4	13	0	0	4	13	\$2.2M
	2380 Bisso Ln., Concord	30	2	0	0	30	2	\$1.3M
	900 Ward St., Martinez	20	1	0	0	10	1	\$801K
	1275-A Hall Ave., Martinez	10	1	0	0	10	1	\$478K
	1330 Arnold Dr., Martinez	6	1	0	0	6	1	\$349K
	40 Douglas Dr., Martinez	6	1	0	0	6	1	\$349K
	13585 San Pablo Ave., San Pablo	4	1	0	0	4	1	\$285K
	1420 Willow Pass Rd., Concord	6	0	0	0	6	0	\$193K
TOTAL 2026 EVSE Budget								\$5.9M
2027	30 Glacier Dr., Martinez	1	4	0	0	1	4	\$682K
	30 Douglas Dr., Martinez	4	3	0	0	4	3	\$620K
	150 Alamo Plaza, Alamo	1	3	0	0	1	3	\$520K
	2500 Alhambra Ave., Martinez	4	2	0	0	4	2	\$459K
	3017 Walnut Blvd., Brentwood	4	1	0	0	4	1	\$296K
	550 Sally Ride Dr., Concord	2	1	0	0	2	1	\$229K

	1875 Arnold Dr., Martinez	2	1	0	0	2	1	\$229K
	595 Center Ave, Martinez	2	1	0	0	2	1	\$229K
	595 Center Ave, Martinez	2	1	0	0	2	1	\$229K
	847 Brookside Dr., Richmond	2	1	0	0	2	1	\$229K
	12000 Marsh Creek Rd. Clayton	1	1	0	0	1	1	\$196K
	1011 Las Juntas St., Martinez	1	1	0	0	1	1	\$196K
	4491 Bixler Rd., Byron	1	1	0	0	1	1	\$196K
	3068 Grant St., Concord	4	0	0	0	4	0	\$134K
	4585 Pacheco Blvd., Martinez	4	0	0	0	4	0	\$134K
	651 Pine St., Martinez	2	0	0	0	2	0	\$67K
TOTAL 2027 EVSE Budget								\$4.4M
2028	1850 Muir Rd., Martinez	6	6	6	0	0	6	\$1.0M
	901 Court St., Martinez	1	4	0	0	1	4	\$709K
	50 Glacier Dr., Martinez	4	3	4	0	0	3	\$506K
	1026/1126 Escobar St., Martinez	0	2	0	0	0	2	\$337K
	9100 Brentwood Blvd., Brentwood	10	3	10	2	0	1	\$168K
	1092 Eagle Nest Pl., Danville	0	0	0	0	0	1	\$168K
	4061 Port Chicago Hwy, Concord	7	1	7	0	0	1	\$168K
	10 Douglas Dr., Martinez	8	1	8	0	0	1	\$168K
	800 Ferry St., Martinez	12	1	12	0	0	1	\$168K
	202 Glacier Dr., Martinez	12	1	12	0	0	1	\$168K

TOTAL 2028 EVSE Budget								\$3.6M
2029	2467 Waterbird Way, Martinez	64	18	40	4	24	14	\$3.3M
	5555 Giant Hwy., Richmond	14	10	14	2	0	8	\$1.4M
	30 Muir Rd., Martinez	26	2	26	0	0	2	\$351K
	4785 Blum Rd., Martinez	2	1	0	0	2	1	\$248K
	1960 Muir Rd., Martinez	20	1	20	0	20	1	\$175K
	1340 Arnold Dr., Martinez	0	0	0	0	2	1	\$248K
	4653 Pacheco Blvd., Martinez	2	0	0	0	2	0	\$72K
	825 Arnold Dr., Martinez	2	0	0	0	2	0	\$72K
	550 Eagle Ct., Byron	1	0	0	0	1	0	\$36K
	2400 Bisso Ln., Concord	10	1	1	0	9	1	\$501K
	2440 Stanwell Dr., Concord	1	0	0	0	1	0	\$36K
TOTAL 2029 EVSE Budget								\$6.4M
2030	4800 Imhoff Pl., Martinez	18	2	8	0	10	2	\$742K
	300 Ellinwood Wy., Pleasant Hill	20	1	0	0	20	1	\$937K
	4545 Delta Fair Blvd., Antioch	26	0	12	0	14	0	\$528K
	220 Glacier Dr., Martinez	4	1	1	0	3	1	\$295K
	1220 Morello Ave., Martinez	2	1	0	0	2	1	\$257K
	255 Glacier Dr., Martinez	16	1	16	0	0	1	\$182K
	40 Muir Rd., Martinez	7	0	0	0	7	0	\$264K
TOTAL 2030 EVSE Budget								\$3.2M

2031	1535 Fred Jackson Way, Richmond	2	1	0	0	2	1	\$268K
	555 Escobar St., Martinez	1	1	0	0	1	1	\$229K
	1430 Danzig Plz., Concord	4	0	0	0	4	0	\$156K
	2120 Diamond Blvd., Concord	16	0	0	0	16	0	\$65K
	2301 Rumrill Blvd., San Pablo	1	0	0	0	1	0	\$39K
	625 Court St., Martinez	1	0	0	0	1	0	\$39K
	3501 Lone Tree Way, Antioch	1	0	0	0	1	0	\$39K
	1450 Sally Ride Dr., Concord	1	0	0	0	1	0	\$39K
	3052 Willow Pass Rd., Concord	1	0	0	0	1	0	\$39K
	To Be Determined ⁸³	17	3	0	0	17	3	\$1.2M
TOTAL 2031 EVSE Budget								\$2.7M
GRAND TOTAL EVSE BUDGET								\$26.3M

⁸³ There are 42 vehicles with unassigned domiciles at the time of this report. These 42 vehicles require the number of chargers listed in the To Be Determined space. As vehicle data continues to be refined, the County may choose to assign these chargers to a domicile.

Appendix B: Departmental ZEV Transition Plans: CAAP Achievement

Appendix B displays a Department- by- Department breakdown of investments in ZEVs, maintenance costs and fueling costs in order to reach the CAAP goal of a complete County ZEV transition by 2035. The percentage of ZEV costs that is currently covered by the ISF system is also included because, generally, non-ISF vehicles are paid for directly by their Department. Please note that the total number of vehicles in this Appendix does not exactly match the 1,368 vehicles within the Fleet, because to date, some vehicles are not assigned a Department. Additionally, this Appendix is limited to Departments with more than five (5) vehicles.

Department	# of Vehicles	ZEV Cost	Maintenance Cost	Fueling Cost	Total TCO Cost	% ISF Cost Coverage
Administrator	27	\$3.4M	\$602K	\$469K	\$4.5M	87%
Agriculture-Weights & Measures	73	\$6.7M	\$2.8M	\$1.2M	\$10.7M	86%
Animal Services	27	\$3.6M	\$1.4M	\$688K	\$5.1M	90%
Clerk/ Recorder	5	\$315K	\$65K	\$19K	\$400K	50%
Conservation & Development	38	\$2.1M	\$1.7M	\$716K	\$4.5M	4%
District Attorney	40	\$1.9M	\$1.5M	\$652K	\$4.0M	91%
Employment & Human Services	126	\$6.9M	\$3.5M	\$1.8M	\$12.2M	67%
General Services	106	\$11.3M	\$5.6M	\$2.4M	\$19.3M	79%
Health Services	191	\$15.8M	\$5.8M	\$3.0M	\$24.6M	59%
Library	5	\$820K	\$378K	\$439K	\$1.6M	0%
Probation	84	\$4.6M	\$1.9M	\$895	\$7.4M	88%
Public Defender	23	\$1.0M	\$692K	\$318K	\$2.0M	100%
Public Works	222	\$35.9M	\$15.1M	\$5.1M	\$56.0M	26%
Sheriff	377	\$33.7M	\$7.4M	\$3.6M	\$44.6M	73%

Appendix C: Consolidated Recommendations Supporting the ZEV Transition

Below is a consolidated list of recommendations to support the County's ZEV transition. These recommendations focus on actions to ensure the success of County staff and drivers after major investments in EVs and EVSE (Chapters 5–7) and do not address the EV or EVSE capital investments themselves.

Recommendation #	Recommendation Text
7.3.1	Require County-sited EVSE to comply with the Open Charge Point Protocol (OCPP) 2.0, in keeping with California's CalEVIP standard.
7.3.2	Invest in a Charging Station Management System (CSMS) to control, monitor and coordinate EVSE for rapid diagnostics and reporting.
7.3.3	Adopt a 97% uptime requirement for all County-sited EVSE.
7.4.1	Partner with owners of County-leased facilities to install jointly beneficial EVSE at leased sites to prevent ~20% of County vehicles from being stranded without overnight chargers.
8.2.1	Leverage an existing Joint Powers Authority (JPA) to jointly procure EVs and EVSE at scale and coordinate grant-seeking.
8.3.1	Maintain and expand partnerships with MCE and PG&E to secure grants, receive technical assistance, and coordinate long-term planning of EVSE against grid capacity.
9.1.1	Pursue outside grant funding at the state and local level (Tables 5 and 6).
9.2.1	Pursue tax equity financing (if available) for third-party owned EVSE.
9.2.2	Pursue Elective Pay to take tax credits on EV purchases directly, if available, in Fiscal Year 2026 and 2027.
9.3.2	Activate contractor FuSe to monetize Low Carbon Fuel Standard credits for County-sited EVSE.
9.4.1	For each bulk EV or EVSE purchase, assess alignment with existing municipal agency purchasing collaboratives to leverage administrative efficiency and bulk pricing.
9.5.1	Assess and pursue innovative financing strategies: Vehicle Leasing, Low-Interest Financing, Utility On-Bill Financing, Green Bond Financing, and Charging-as-a-Service (CAAS) Revenue Sharing.
10.3.1	Require new and existing County technicians to get certified by the National Institute for Automotive Service Excellence's (ASE) Light-Duty Hybrid/ Electric Vehicle Specialist Test and ASE xEV safety certifications.
10.3.2	Leverage EV automotive courses offered through the Contra Costa Community Colleges District (4CD) for new and existing auto technician employees at the

	County.
10.3.3	Supplement auto technician training with automobile manufacturer-provided training, offered through local educational institutions.
10.3.4	Modify the curricula and training offered from the National Alternative Fuels Training and Consortium (NAFTC) and the Clean Tech Institute to County-employed automotive technicians.
10.3.5	Leverage the curricula and training offered from multiple governmental organizations to develop trainings specifically for County auto mechanics and fleet drivers servicing and operating electrified first-responder fleet vehicles.
10.4.1	Partner with the Contra Costa Community College District (4CD) to assess current course offerings against future County training needs to identify additional resource or capacity needs.
10.4.2	Leverage an existing Joint Powers Authority to define and quantify demand for municipal EV workers, lead solicitations for workers and workforce trainings as needed.
10.4.3	Partner with MCE to offer and expand the Green Workforce Pathways (GWP) program to train and hire emerging electricians as EV auto mechanics at Contra Costa County.
10.4.4	Collaborate closely with the Teamsters, seeking feedback early on any training recommendations, certification requirements, and funding for workforce development related to EV auto technicians.
10.4.5	Consider a County membership in local chapters of the Automotive Service Councils of California (ASCCA) to support a pipeline of trained workers and the ongoing education of County employees.
10.4.6	Partner with the Contra Costa County Workforce Development Board (WDBCCC) to connect to new and existing initiatives to train local workforces in construction and electrical fields, with a focus on equity.
10.4.7	Utilize underdeveloped areas at the County Fleet Yard (2467 Waterbird Way) for training and hands-on learning, enabling students to hone their expertise on County EVs and County EVSE.
10.5.1	Partner with the Foundation for California Community Colleges (FCCC) as a connector to workforce development grants to support programs dedicated to EV and EVSE workers offered through the Contra Costa Community College District (4CD).
10.5.2	Encourage local County grants from the Electric Vehicle Infrastructure Training Program (EVITP) Fund to bolster a local workforce to install, repair and maintain EVSE.
11.1.1	Develop trainings for County EV Drivers with four (4) Modules: EV Welcome Kit; Locating EV Chargers; EV Charging Policies and Etiquette; Planning for the Unexpected
12.1.1	County-sited DCFC should be prioritized for County and other agency fleets.

12.1.2	County Fleet Liaisons should be empowered to decide whether their Department's DCFC should be restricted to only County Fleet usage.
12.1.3	County-sited Level 2 chargers should be reserved for County fleet vehicles and personal employee EVs. Fleet Liaisons should be empowered to set reserved hours, if appropriate, for personal employee EVs and County fleet vehicles on a site-by-site basis.
12.1.4	Remove the overage fee of \$3/hour for personal employee EVs plugged into County-sited Level 2 EV chargers for more than five (5) hours.
12.1.5	Post prominent signage in County parking lots advising drivers not to charge EVs at Level 2 chargers for more than 24 hours or a DCFC for more than one hour, or risk being towed.
12.2.1	Create an EV Charging Etiquette Guide (Table 10).
12.3.1	Modify Admin Bulletin 507.10 to allow employees to charge County fleet EVs at home and reimburse them at the IRS variable-cost mileage rate.
12.4.1	Work directly with MCE to negotiate a rate structure with a lower average price than residential rates for EVs.
12.4.2	Regularly benchmark average public EVSE rates and average local residential EV charging rates (\$/kWh), and strive to keep rates charged to employees EVs within 10% of those rates.
13.1.1	Recommendation 13.1.1 Partner with PG&E and the CAISO to explore V2G opportunities for plugged in-vehicles at priority locations throughout the County (Table 13).
13.2.1	Design for Vehicle-to-Everything (V2X) resilience as a community service at Planned County Service Centers and prioritized existing facilities (Table 14).