

Proposed Energy Code Amendment to Reduce Greenhouse Gas Emissions from New Buildings

Board of Supervisors

June 4, 2024



Demian Hardman-Saldana

Department of Conservation and Development

Contra Costa County

925-655-2816 · Demian.Hardman@dcd.cccounty.us



Today's Presentation



Background



**Staff Research and Sustainability Committee
Recommendation**



**Title 24 Part 6 - Energy Code
Basics**



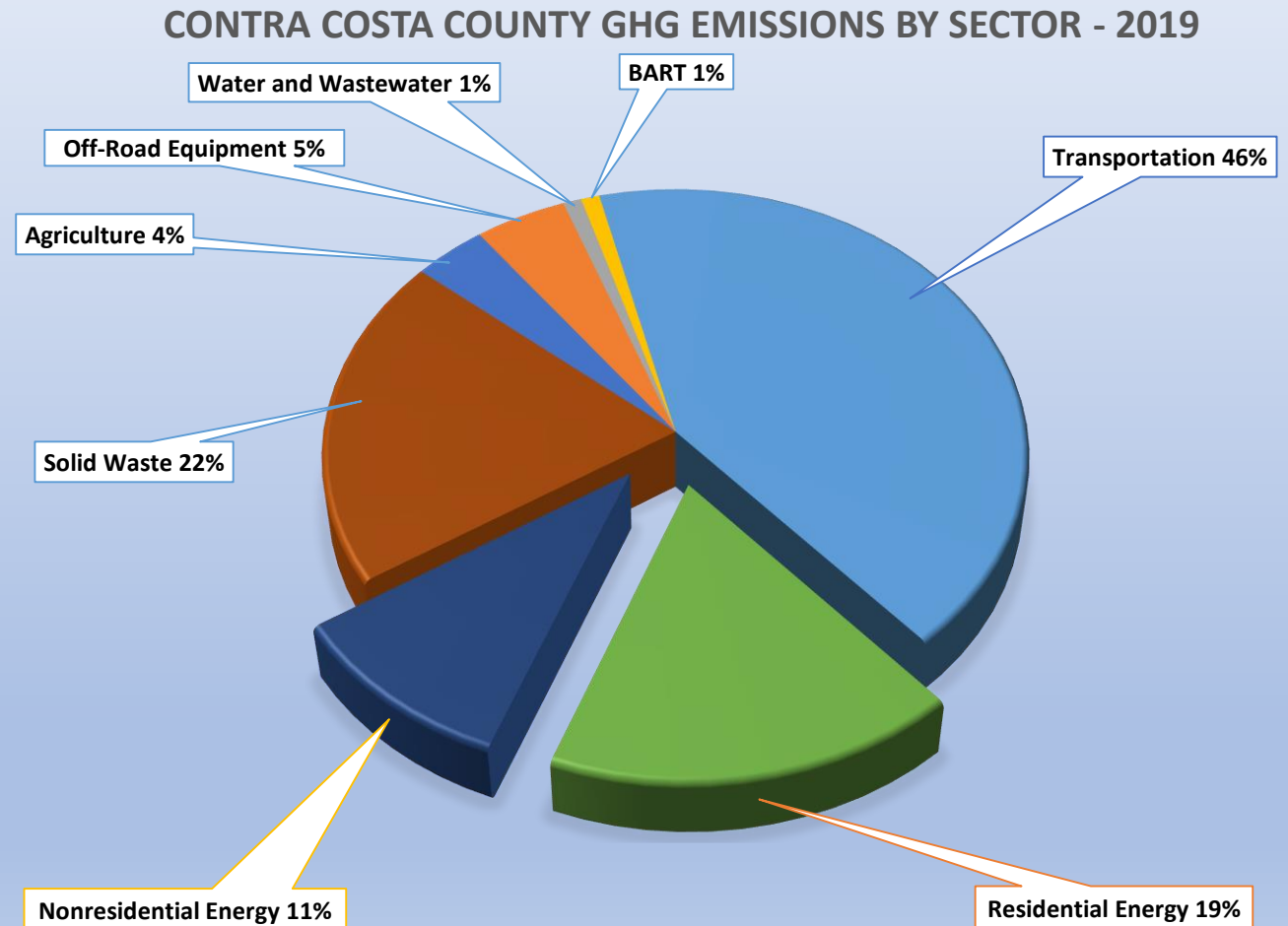
Proposed Energy Code Amendment



Cost Effectiveness

Background

- Contra Costa County to consider adopting the 2024 Climate Action Plan (CAP) update in Fall 2024.
- The plan will establish targets for reducing greenhouse gas (GHG) emissions through 2045.
- Buildings responsible for ~30% of County's GHG emissions making them critical to achieving CAP reduction targets.



County's All-Electric Ordinance for New Construction & Recent Decision Impacting Ordinance



County's All-Electric Ordinance

Adopted January 18, 2022, with operative date of June 1, 2022, amended the 2019 & 2022 California Energy Codes to require new construction to be All-Electric for residential buildings, hotels, offices and retail buildings.



California Restaurant Association v. City of Berkeley

Berkeley's ordinance requiring all-electric new construction invalidated

Pre-empted by federal Energy Policy and Conservation act of 1975 (EPCA)



Action by Board of Supervisors on February 27, 2024

Suspended enforcement of Ordinance 2022-02 requiring most new construction to be all-electric. The BOS directed staff to look into other approaches to replace the suspended ordinance.



Sustainability Committee

On March 19, 2024, staff received instruction from Committee to explore and identify alternatives to replace the County's all-electric ordinance (2022-02).

On May 20, 2024, staff recommended to Committee proposed new Energy Code Amendment to Reduce Greenhouse Gas Emissions from New Buildings

Staff Research and Committee Recommendation



Staff met with other jurisdictions and energy code experts (Sacramento, San Jose, San Luis Obispo) to learn how they are approaching building decarbonization



Staff attended Workshop with Building Official of Los Altos Hills, and staff from City of Santa Cruz



Two approaches identified:

1. Amend the energy code to require higher energy compliance margins (City of San Luis Obispo and City of Santa Cruz), and/or
2. Amend CALGreen Building Standards to require zero NOx emission equipment for new construction (Los Altos Hills)



Sustainability Committee recommends ordinance amending County building code to require higher energy efficiency standard than State

California Title 24 Part 6 Energy Code Basics

California Energy Code can be utilized by local governments to help reduce greenhouse gas (GHG) emissions by regulating the way energy is used in buildings.

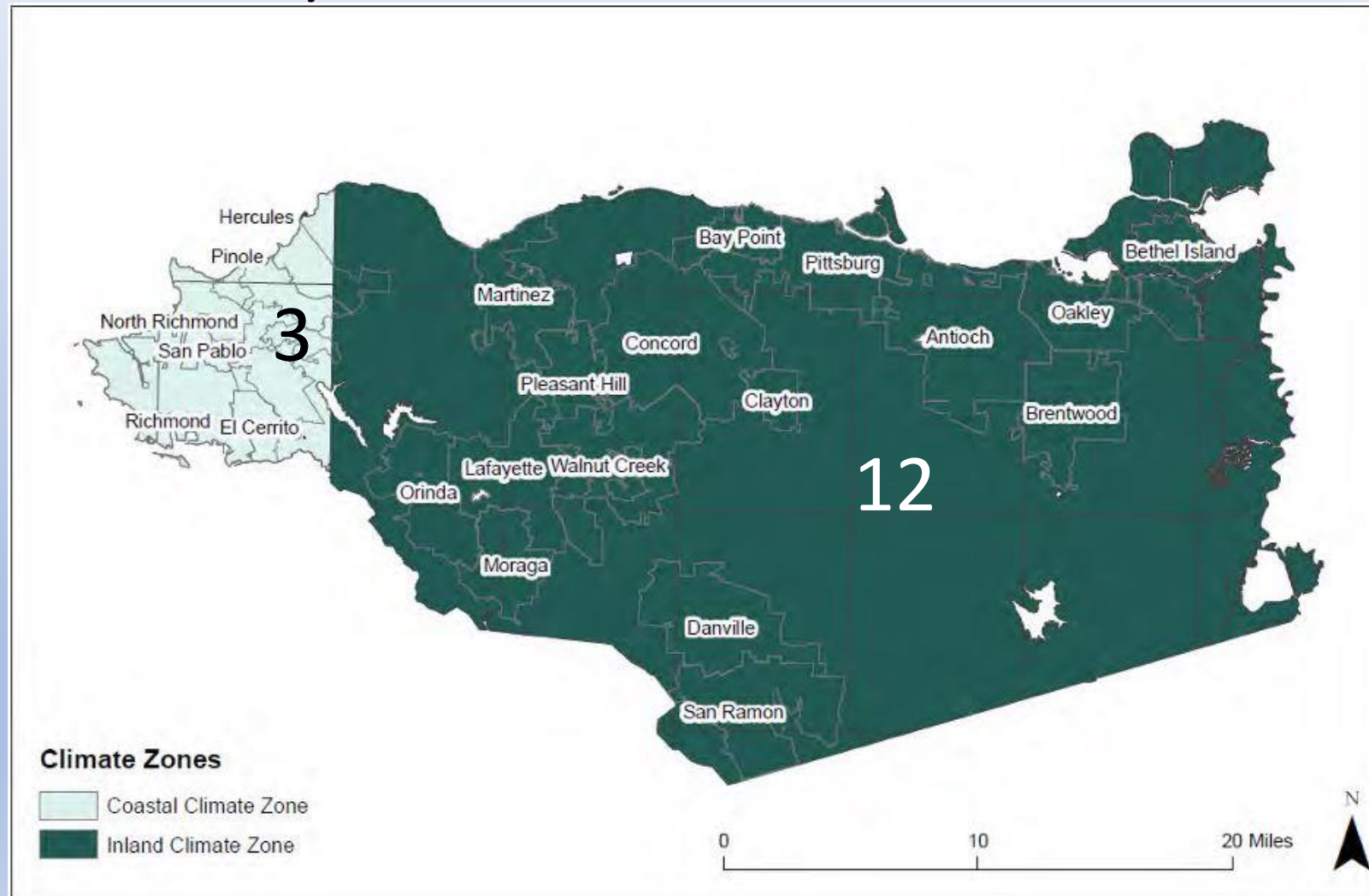
Definitions

- Reach Code: Local amendments to energy standards for new buildings that are more stringent than Statewide requirements.
- Source Energy: In buildings, source energy represents the underlying fuel sources used to power building systems and equipment.

Examples include:

- Electricity
- Natural Gas
- Solar
- Propane

Building Code Climate Zones (CZ) for Contra Costa County



Energy Code Scoring Systems for New Single-Family and Non-Residential Buildings



Energy Design Rating (EDR) Score for Single-Family homes and Accessory Dwelling Units.

More stringent (or more energy efficient) Energy Code would require a lower EDR score.

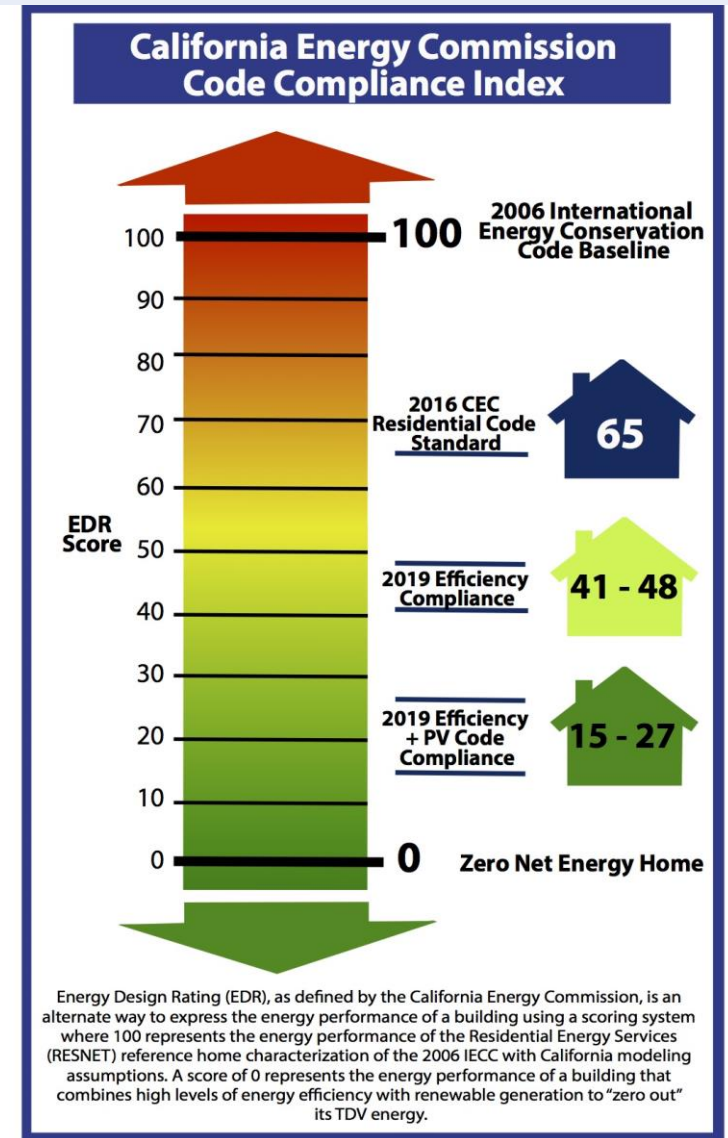


Energy performance calculations are required for Non-Residential Buildings (this includes multi-family buildings and all other non-residential buildings).

A more stringent (or more energy efficient) Energy Code would require the building perform a certain percentage (%) lower than the current building energy code standard requirements.

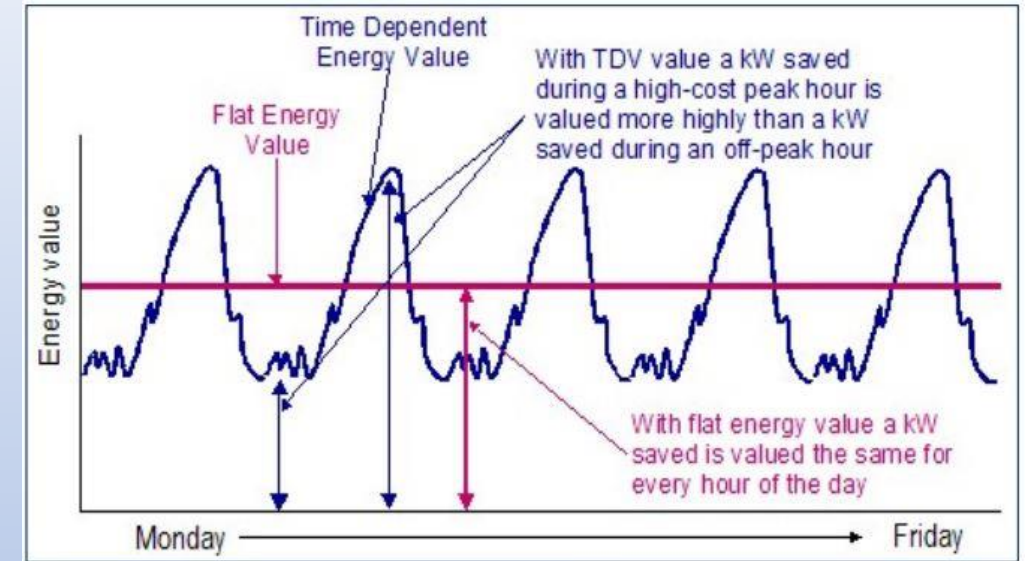
Energy Code Scoring System for Single Family and Accessory Dwelling Units

- Requires an Energy Design Rating (EDR) score for each home. Scoring is 0-100. A zero score is a building that has zero net energy consumption; a lower score is better. A score of 100 would meet the 2006 International Energy Conservation Code.
- Recommend an EDR score lower than State standard for all new single-family homes and only in Zone 12 for Accessory Dwelling Units.



Energy Code Scoring System for Non-Residential Buildings

- Non-residential buildings use a complex modeling software approved by the California Energy Commission to determine energy code compliance. The energy modeling uses a Time Depend Valuation (TDV) approach.
- Staff recommends an energy efficiency performance that is a certain percentage (%) lower than the current State standard for each Climate Zone.



Source: California Energy Commission

Time Dependent Valuation Energy

Time dependent valuation (TDV) energy starts with the energy used at the building site as shown on utility bills (i.e., electricity kWh, natural gas therms, and fuel oil or LPG gallons). To convert site energy to TDV energy, the site energy for each fuel type is multiplied by a TDV multiplier. TDV multipliers vary for each hour of the year and by energy type (electricity, natural gas or propane), by Climate Zone and by building type. This reflects regional and hourly differences in the cost and availability for different energy sources. TDV energy assessments in the Performance Approach support the idea that energy efficiency measure savings have different impacts depending on when the savings occur. This helps reflect the actual costs of energy to consumers, the utility system and society.

Proposed More Energy Efficient Energy Code Compliance Margins

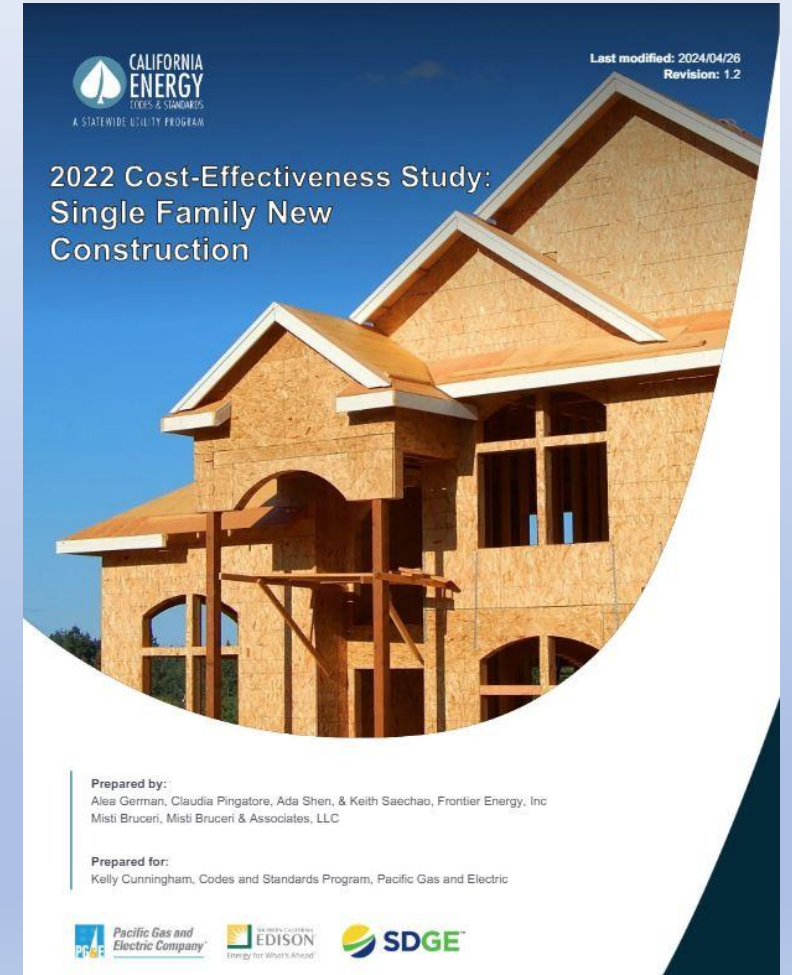
Building Type	Climate Zone 3, West County EDR ¹ /TDV ² Margin	Climate Zone 12, Central and East County EDR ¹ /TDV ² Margin	Cost-effective Design Options
Single-Family Homes ¹	9	11	Install second heat pump system, or install battery storage and additional solar.
Accessory Dwelling Units (ADUs) ¹	Not yet proven cost-effective. No change recommended.	6.6	Only for Climate Zone 12, Install second heat pump system, or install battery storage and additional solar.
Low-rise Multifamily (up to 3 habitable stories) ²	10%	11%	More heat pump system(s), or install battery storage and/or additional solar
High-rise Multifamily Residential (4 or more habitable stories) ²	4%	4%	Would need additional solar above current code requirement(s).
Non-residential (Office, Retail, and Hotel) ₂	5%	4%	Would need additional solar above current code requirement(s).

¹ **Energy Design Rating (EDR)** - Rates the building energy efficiency based on hourly source energy use for the home measured in kBtu/ft²-yr. It includes energy use for the building envelope, indoor air quality (IAQ), HVAC, water heating and unregulated loads. The metric approximates the building's greenhouse gas (GHG) emissions to support California's GHG reduction goals.

² **Time Dependent Valuation (TDV)** - Is a metric constructed from a long-term forecast of hourly electricity, natural gas, and propane costs to building owners consistent with the latest California Energy Commission (CEC) forecasts and outlook for California's energy sectors. It includes energy use for the building envelope, indoor air quality (IAQ), HVAC, water heating and unregulated loads. This also include PV, battery storage and precooling, when added.

Cost-Effectiveness

- The County is required to illustrate cost-effectiveness and energy savings
- Cost-Effectiveness Studies are developed by the State for use by local jurisdictions
- The proposed amendments to the County's energy code meet the State requirements.



Recommendations and Next Steps



CONSIDER authorizing the Department of Conservation and Development to prepare an ordinance amending the County building code to increase energy efficiency standards for newly constructed residential buildings, offices, hotels, and retail buildings to meet the County's Climate Action Plan goals, and provide related direction to staff, as recommended by the Sustainability Committee.



Staff proposes to bring draft ordinance back to Board in approximately September 2024 with proposed operative date of January 1, 2025, to meet Draft 2024 Climate Action Plan and General Plan timeline.

Questions?



Contact:

Demian Hardman-Saldana

Principal Planner

demian.hardman@dcd.cccounty.us

P: 925-655-2816