Countywide Building Reach Code Adoption

City/ County Association of Governments of San Mateo County

Board Meeting

September 12, 2019

OFFICE OF SUSTAINABILITY
COUNTY OF SAN MATEO

PENINSULA CLEAN ENERGY

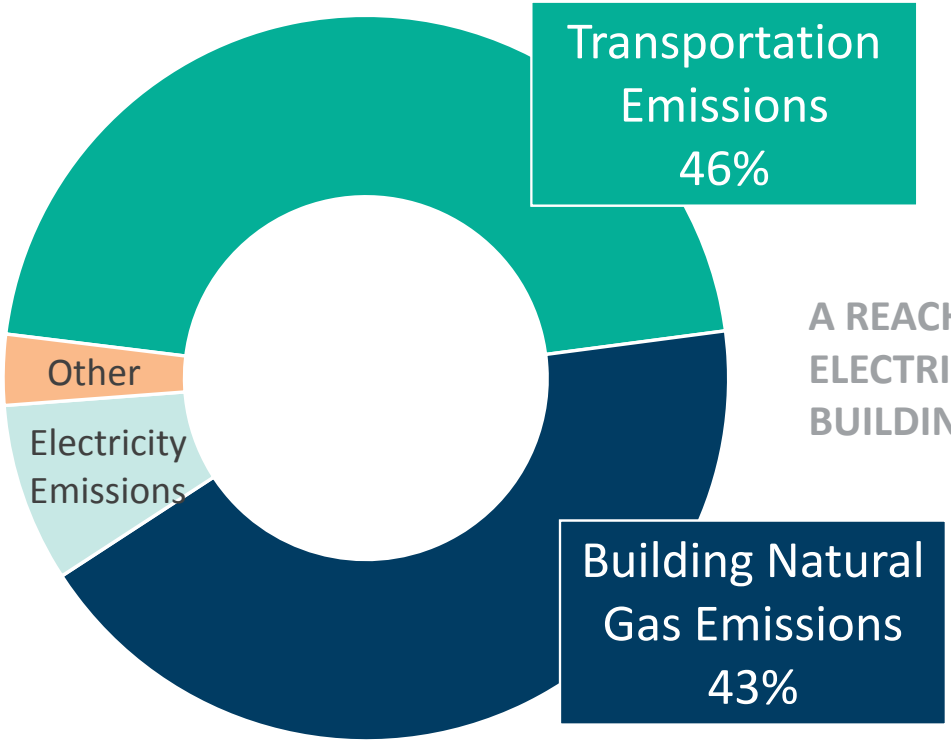
PCE Support for Cities

- Model codes
- Facilitated process
- $10,000 per participating city
- Adoption assistance
- Implementation assistance

www.PeninsulaReachCodes.org

Help Cities Meet Community GHG Emission Goals

COUNTYWIDE GREENHOUSE GAS EMISSIONS



A REACH CODE WILL ENCOURAGE MORE ELECTRIC VEHICLES AND CLEAN ELECTRIC BUILDINGS

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Benefits of Reach Codes

- Safer and healthier homes – no combustion gases
- Support city climate goals
- Enable much faster EV adoption
- Fiscal prudence – more cost effective to address **now** at new construction, than to retrofit later

1-2 tons CO2
avoided per year for every home

Health Benefits

- Gas stoves in homes increase children's asthma risk by 42%
- Total electric living eliminates risk of carbon monoxide poisoning
- Induction ranges automatically turn off when not in-use, eliminating a leading cause of house fires

Source: https://www.forbes.com/sites/sherikoones/2019/02/11/why-go-induction/#4312d9482492

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Single Family Residence – 2019 Base Code

All-Electric (1)

Meet Title 24 requirements

Electric & Gas (2)

Meet Title 24 requirements, including:

- Pre-wire water heater location for future electric heat pump

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Single Family Residence – ~~Base~~ Reach Code

All-Electric (1)

Meet Title 24 requirements

No Changes

Electric & Gas (2)

Meet Title 24 requirements, including:

- Pre-wire water heater for future electric heat pump
- Pre-wire for future electric appliances (+$ 750)
- Additional Energy Efficiency measures (+$1500)
- Solar thermal or Battery Storage (+ $6000)

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Model EV Charging Infrastructure Summary

Residential



Single Family: Complete L1 + L2 EV Ready circuits

Multifamily Buildings (<=20 units):

- One L2 EV Ready circuit per dwelling unit

Multifamily Buildings (>20 units):

- 25% of units: L2 EV Ready &
- 75% of units: L1 EV Ready

Affordable Housing (+ PCE/SVCE funding)

- 10% of units: L2 EV Ready &
- 90% of units: L1 EV Ready

Non-Residential


Workplace/ Office

- 10% of parking spaces L2 EVSE &
- 10% of parking spaces L1 EV Ready &
- 30% of parking spaces: EV Capable or EV Ready

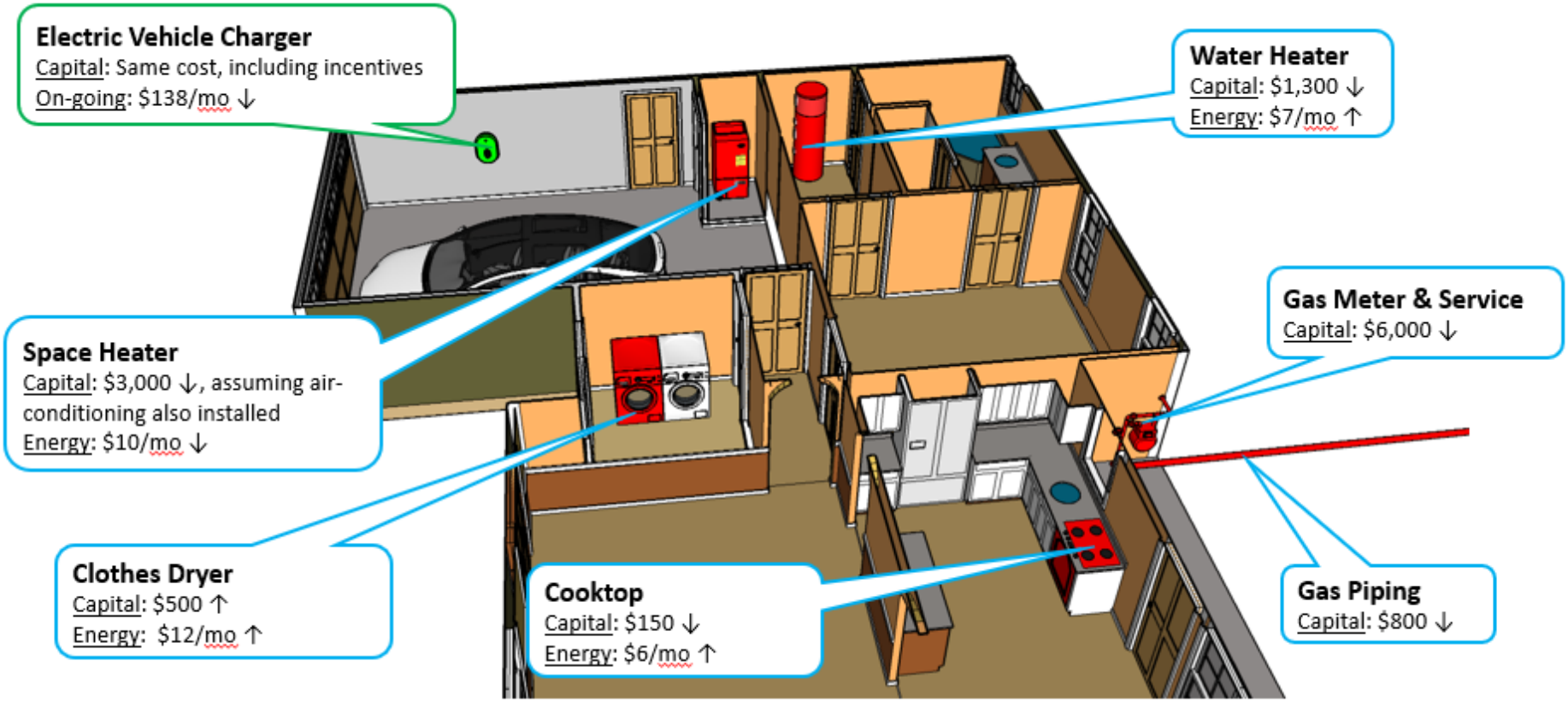
Other Non-Residential Buildings

- 6% of parking spaces: L2 EVSE &
- 5% of parking spaces: L1 EV Ready &
- DC Fast Charging Option over 100 spaces

Model Code Summary

Code Element	Approach
Building Electrification	• Provides 2 tracks for developers: All-Electric or Mixed-Fuel • All-Electric (preferred) is less expensive, delivers more benefit • Mixed-Fuel allows natural gas but has higher efficiency requirements • Details vary by building segment
Electric Vehicle Readiness	• Provides “plug and play” access to vehicle charging • Provides for both Level 2 (dryer outlet power) and Level 1 (standard 110v outlet) • Multi-unit dwellings include one “EV Ready” space per unit

PCE plans to provide gap funding support for affordable housing to address EV measures


Electric Vehicle Charger
Capital: Same cost, including incentives
On-going: $138/mo ↓
Water Heater
Capital: $1,300 ↓
Energy: $7/mo ↑
Gas Meter & Service
Capital: $6,000 ↓
Space Heater
Capital: $3,000 ↓, assuming air-conditioning also installed
Energy: $10/mo ↓
Clothes Dryer
Capital: $500 ↑
Energy: $12/mo ↑
Cooktop
Capital: $150 ↓
Energy: $6/mo ↑
Gas Piping
Capital: $800 ↓


Capital Cost of Thermal Systems
Mixed-Fuel Home
$23,200
All-Electric Home
$13,200
Annual Energy Use & Generation
Mixed-Fuel Home
13,800 kWh
All-Electric Home
8,100 kWh
Title 24 Solar Requirement
4,000 kWh
Electricity
Gas

Participation to-date by Agency

Jurisdiction	Letter of Intent	Council Briefing	Council First Reading	Council Vote
Belmont		Oct 8 or Oct 22		
Brisbane	Yes		Oct 3	
Burlingame	Yes	Sep 3		
Colma		Jul 10 & Sept 25		
County of SM	Yes			
Daly City				
East Palo Alto	Yes		Oct 8	Nov 5
Foster City				
Half Moon Bay				
Hillsborough	Council approved	Aug 12		
Menlo Park	Yes	Jul 16	Aug 27 and Sept 11	Sept 24
Millbrae	Yes	Jul 23		
Pacifica	Yes	Jul 8	Oct 14 or Nov 11	
Portola Valley	Yes	Sept 25	Oct 9	Oct 23
Redwood City	Yes	Sept 23	Oct 28	
San Bruno				
San Carlos		Oct 14		
San Mateo	Yes	Jun 3	Aug 19	Sep 3
South San Francisco		2020		
Woodside		Oct 8		

Based on communications with City Staff (may change)

Timeline

Date/Timeframe	Activity
Dec. 2018	PCE, SVCE and County of San Mateo initiate reach code initiative
January	Reach Code kickoff event for city staff
February	Statewide Cost-Effectiveness study
March	Building Reach Code Workshops
April 11 and 24	Draft Model Reach Codes Measures available
April & May	City-specific stakeholder engagements
15-May	Last input into model code measures
June 30	Final model reach code language shared
Summer	Outreach and adoption technical assistance
Summer & Fall	City Councils vote on desired reach codes
Fall	Submit Code Packet for CEC approval
Jan. 1, 2020	New codes go into effect

Multifamily New Construction (≤3 stories)

1 + 2 OR

Performance Path	Prescriptive Path
1. All Electric. Demonstrate that the proposed home will be all electric, OR	**Build All-Electric** and Meet 2019 Title 24 Part 6.
2. Mixed Fuel Building. Proposed Design Building shall be at least 10 EDR points less than the Total Energy Design Rating calculated for the Standard Design Building, OR	**Mixed Fuel Building** a. low leakage ducts in conditioned space b. 0.25 ASR cool roof c. R-10 slab insulation d. compact Hot Water distribution e. 0.35 W/cfm HVAC fan d. Either 1) 2.75 kWh battery/dwelling OR 2) A solar water heating system.

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Single and Two-family New Construction

1 + 2

Performance Path	Prescriptive Path
1. All Electric. Demonstrate that the proposed home will be all electric, OR	**Build All Electric.** Meet 2019 Title 24 Part 6.
2. Mixed Fuel Building. Proposed Design Building shall be at least 10 EDR points less than the Total Energy Design Rating calculated for the Standard Design Building, OR	**Mixed Fuel Building** a. Low leakage ducts b. R-10 perimeter slab insulation c. Compact hot water distribution d. Fan efficacy of 0.35 Watts/cfm e. Either 1) 5 kWh battery OR 2) A solar water heating system.

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Nonresidential (Commercial or Multifamily)

1 + 2 OR

Performance Path	Prescriptive Path
1. All Electric. Demonstrate that the proposed building will be all electric, OR	**Build All Electric** and meet 2019 Title 24 Part 6.
2. Mixed Fuel Building, All Occupancies. Demonstrate that the energy use of the proposed building is 9% more efficient than the 2019 State Energy Code, OR	**Mixed Fuel Building** a. Fenestration with a solar heat gain coefficient ≥ 0.22. b. Airflows to be equal to the zone ventilation minimums. c. Economizers in air handlers ≥ 33,000 Btu/h d. Reduced the lighting power density (Watts/ft2) by ten percent (10%) e. In common areas, improve lighting: 1) Daylight dimming plus off AND 2) Institutional Tuning f. Install drain water heat recovery.

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