



# **Council Sustainability Committee**

## **Draft Electrification Reach Codes for 2019 Energy Code & Green Building Standards Code**

October 30, 2019

## REACH CODE INITIATIVE

The City of Hayward is considering the adoption of a reach code to electrify buildings and vehicles. The City is working with East Bay Community Energy to develop result in safer and more comfortable buildings, increase our electric vehicle charging infrastructure, and reduce our carbon footprint.



### WHAT ARE REACH CODES?

Reach codes are building codes that are more advanced than those required by the state. Every three years, cities and counties across California adopt the new Building Standards Code or Title 24 of the Regulations. Cities can also choose to adopt local reach codes, on top of these Standards, at anytime. Reach codes that are related to energy efficiency must be proven to be cost-effective.

Reach codes may include:

- Prescriptive Codes: Require one or more specific energy efficiency measures, solar photovoltaic (PV), electric vehicle (EV) charging, or battery storage
- Performance Codes: Require a building to perform more efficiently based on accepted computer modeling and allow trade-offs between energy efficiency measures, solar PV, EV, or battery storage

Several Bay Area cities have utilized reach codes in the past, including Fremont, Oakland, Palo Alto, and San Mateo.

### WHY ESTABLISH REACH CODES?

As the grid becomes cleaner, the benefits of greenhouse gas (GHG) free electricity can best be realized by electrification of buildings and vehicles. Instead of burning natural gas and gasoline to operate buildings and vehicles, Hayward can reduce emissions by powering buildings and vehicles with clean electricity provided by East Bay Community Energy. All-electric buildings are safer and healthier to live in and are cost effective designed at the new construction stage.

### UPCOMING MEETINGS

October 30, 2019 - Sustainability Committee Meeting

November 19, 2019 - City Council Meeting

### PREVIOUS MEETINGS

September 17, 2019 - Sustainability Committee report titled *Draft Electrification Reach Codes for 2019 California Energy Code and California Green Building Standards Code* - presentation

May 13, 2019 - Sustainability Committee report titled *Update on Possible Reach Code for Building and Vehicle Electrification* - presentation

January 14, 2019 - Sustainability Committee report titled *Natural Gas Use in New Construction* - presentation

July 16, 2018 - Sustainability Committee report titled *Building Electrification & Reducing Natural Gas Use* - presentation

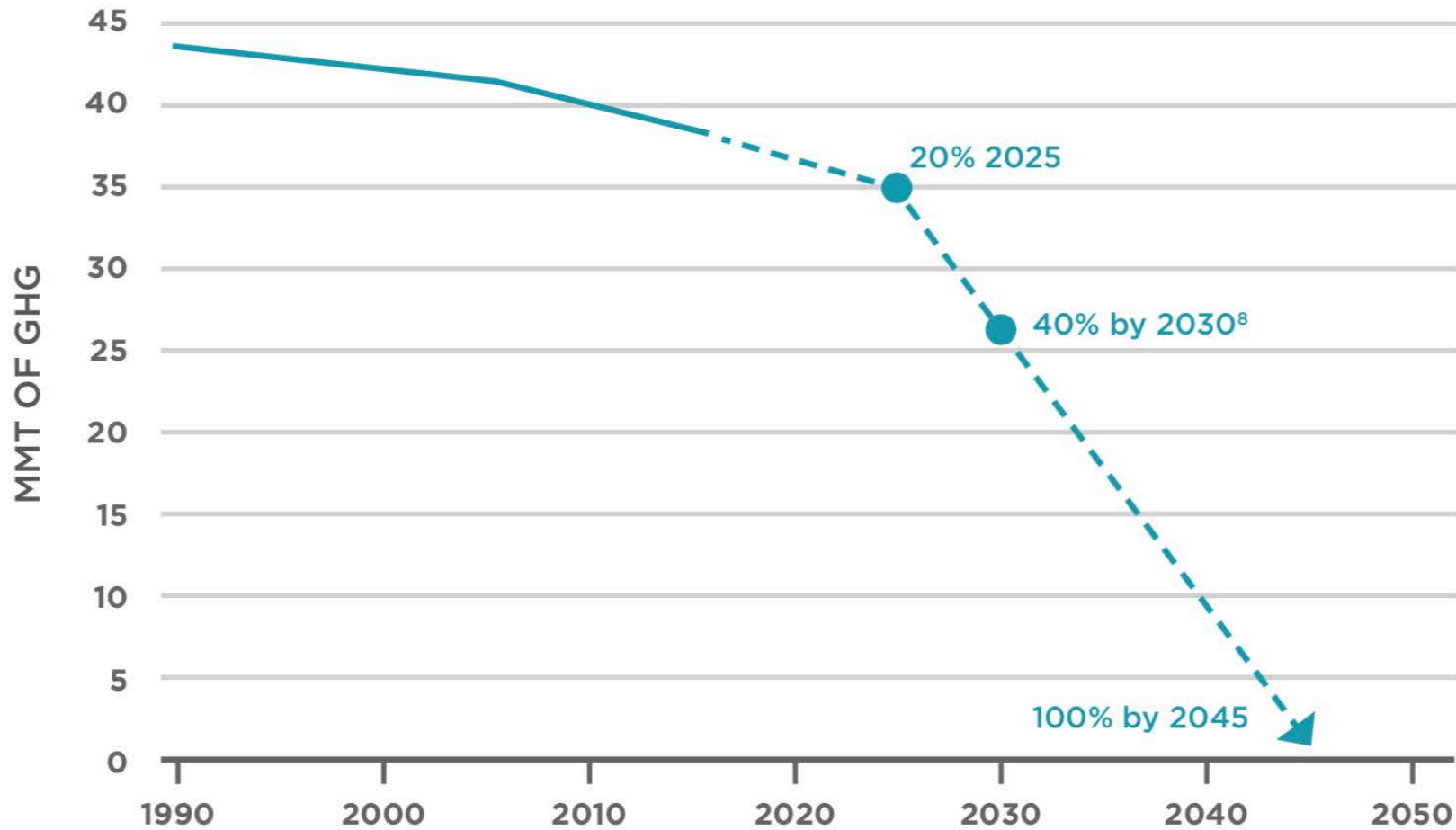
### RESOURCES

- BayREN Guide to Understanding and Adopting Reach Codes

Previous reports  
available at  
<https://www.hayward-ca.gov/reach-code>

# Pathway to Meet Statewide Goals

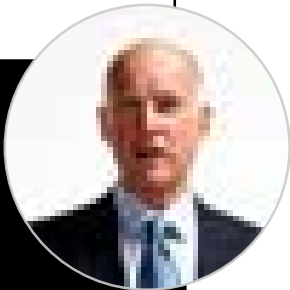
## DECARBONIZATION OF THE BUILDING SECTOR<sup>7</sup>



Source: Building Decarbonization Coalition

- Carbon neutrality by 2045

Gov. Exec Order (2018)



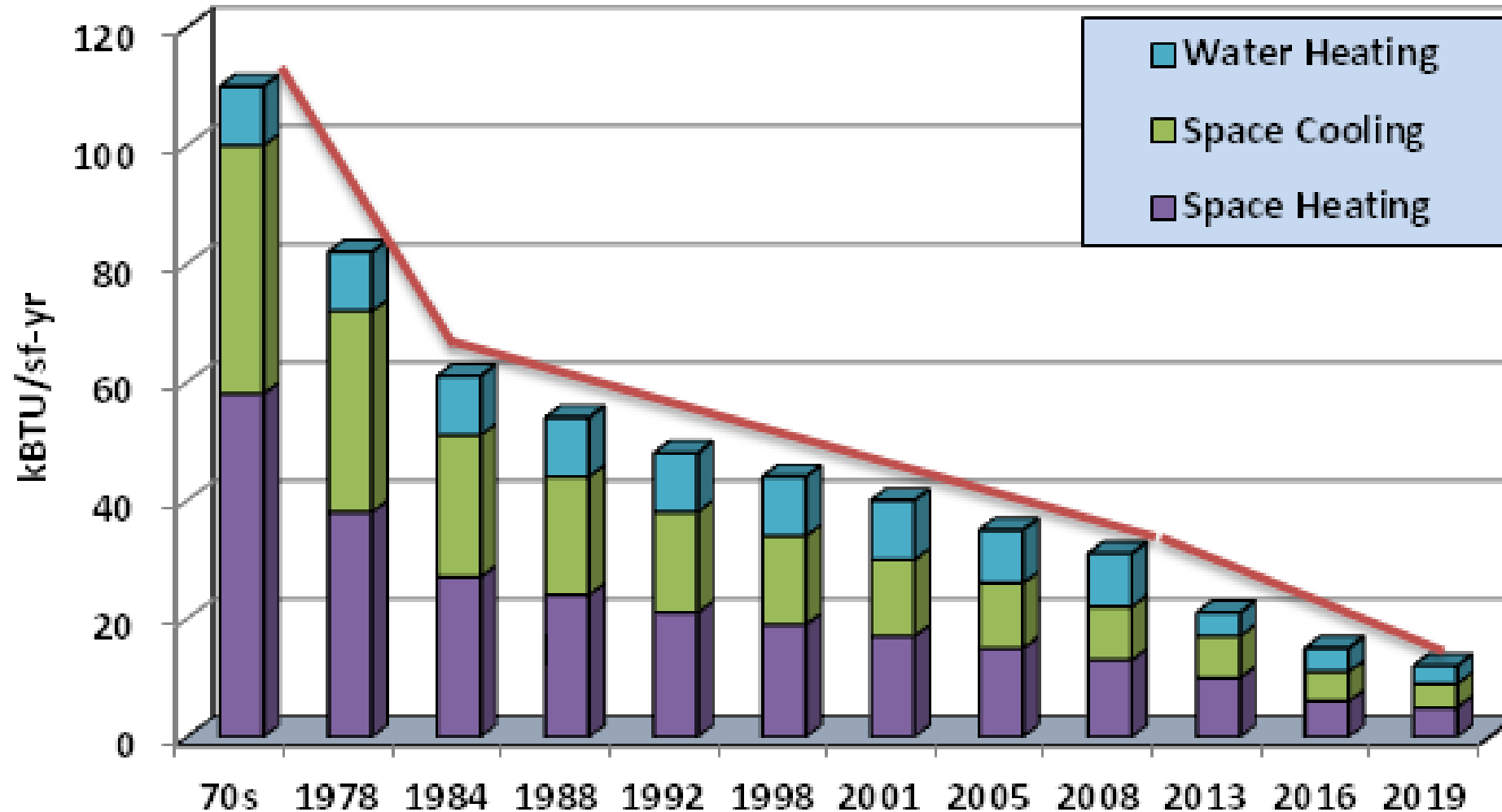
# California Building Standards Code

(Title 24 of CA Code of Regulations)

- Part 1: California Building Standards Administrative Code
- Part 2: California Building Code
- Part 2.5: California Residential Building Code
- Part 3: California Electrical Code
- Part 4: California Mechanical Code
- Part 5: California Plumbing Code
- Part 6:** [California Energy Code](#)
- Part 7: currently vacant (formerly Elevator Safety Code)*
- Part 8: California Historical Building Code
- Part 9: California Fire Code
- Part 10: California Existing Building Code
- Part 11:** [California Green Building Standards Code \(CALGreen\)](#)
- Part 12: California Reference Standards Code

Reach Codes  
Recommended  
for Parts 6 & 11

# Three-year Building Code Cycle



Source: California Energy Commission

# Revised Reach Code - Energy Code

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## Low-Rise Residential

- All new residential buildings (single-family & multi-family up to 3 stories) must be all-electric
- The option for a Mixed-fuel buildings has been removed.

# Revised Reach Code - Energy Code

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## Non-residential (includes High-Rise Residential)

Code still favors all-electric buildings (must meet minimum state code).

Mixed-fuel buildings must:

- Install solar panels on the entire Solar Zone; and
- Meet a minimum EDR margin of 10% (or 15% for office and retail); or
- Comply with a prescriptive list of energy efficiency requirements
- Solar requirement revised to prevent a system that would exceed the building's needs. PV size may be reduced so that annual electrical output does not exceed the building's annual electric load

# Reach Code for Existing Buildings

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Requirements were considered, but are not recommended


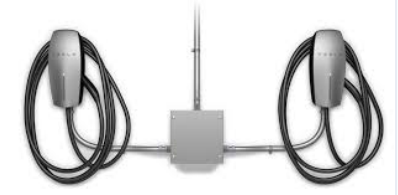

Electric Panel – When replacing panel in a single-family home, the new panel must have a minimum 200-amp service

Space Heating – When replacing an air conditioner or when installing a new air conditioner, a heat pump must be installed.

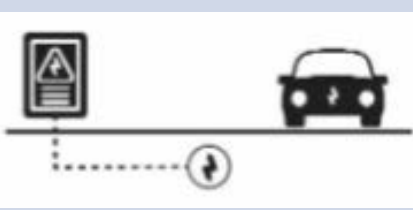
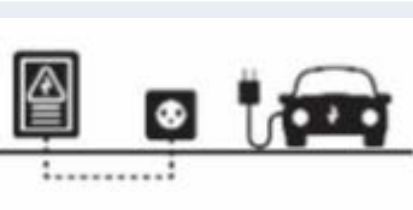

Water Heating – Not cost-effective. Replacing a gas water heater with a heat pump water heater may require a solar PV installation to be cost effective.



# Electric Vehicle Charger Types

Level 1		15-20 Amp, 120v AC (standard household outlet) Driving Distance provided: 3-4 miles/hour
Level 2		40+ Amp, 208/240v AC Driving Distance provided: 25-30 miles/hour
DC Fast Charge		80-400 Amp, 200-600v DC Driving Distance provided: 125-1000 miles/hour

# EV Parking Space Options

<p>EV Capable</p>		<p>Raceway (conduit), electrical capacity (breaker space)  <i>(Amended draft code to specify 208/240V and 40 amp)</i></p>
<p>EV Ready</p>		<p>EV Capable + overcurrent protection devices, wiring and outlet (i.e. full circuit)</p>
<p>EVCI (electric vehicle charger installed)</p>		<p>All equipment to deliver electricity to EV</p>

# Other Cities in Alameda County

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Albany - Ordinance similar to Berkeley gas ban. City Council in December.

Berkeley – Council on 11/12, second reading on 12/3

Emeryville – study session on 11/19

Fremont – Sustainability Commission on 9/5 & 10/17. Council in Jan. or Feb.

Livermore – will explore during of CAP update, which is just starting

Oakland – Council in winter. Effective date sometime in 2020

# Berkeley & Hayward Draft Codes

	Berkeley	Hayward
Residential	Allow Mix-Fuel	Electric Only
Commercial	Allow Mix-Fuel	Allow Mix-Fuel
EV Charging	1 per SFR	2 per SFR
Concrete	Low carbon	NA
C&D Recycling	Require 65% Recycling	65% Recycling Adopted in 2017

# Public Comments

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- Majority of California's electricity is not carbon free.
  - State's energy mix is getting cleaner every year.
  - Buildings built today will be around for 100 years or more
  - Will become cleaner over time
- Safety and security of the electrical grid.
  - PG&E is responsible for maintaining the grid
  - EBCE also wants to ensure electricity is delivered in a safe and reliable (working with CPUC)
- Western Propane Gas Association -- "Propane provides affordable, clean energy for low income communities as well as a vital back-up power..."

# Timeline

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November 19	City Council Meeting
December 3	City Council Meeting
Early January	File with CA Building Standards Commission
March 2020	Reach Code would be Effective

# Recommendation

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That the Committee recommends to Council:

1. Adoption of Reach Codes to modify Part 6 (California Energy Code) for Building Electrification
2. Adoption of the Reach Code for Part 11 (CALGreen) to increase requirements for EV charging equipment

# Questions

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