

# 2022 Building Electrification & Electric Vehicle Reach Code

City Council First Reading

**DATE:** March 22, 2023





# Outline

1. Reach Code Background
2. Overview of Proposed Reach Code Requirements
  1. Building Electrification for New Nonresidential Construction
  2. Electric Vehicle Charging Infrastructure for New Construction
3. Recommendation

# Reach Code Background





# Climate Action Initiatives

1. October 2022: Council passed an update to the Climate Action Plan (CAP).
2. CAP sets bold targets and strategies for reducing GHG emissions while increasing resilience.
3. Two main approaches to reduce emissions in buildings: electrification and improving energy efficiency.
4. Adopted first all-electric reach code and EV reach code for residential construction in 2021.
5. Joined Peninsula Clean Energy (PCE) to give the community cleaner energy and renewable source options.
6. Committed to reducing greenhouse gas (GHG) emissions, protecting community resources, and resiliency.

# Background

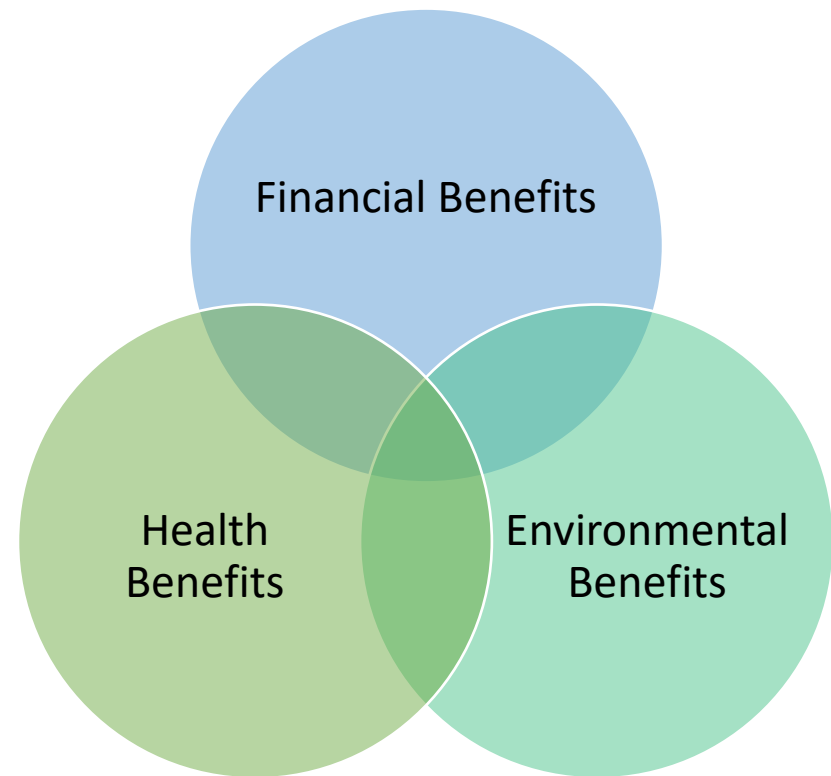


1. Statewide Code updated every three years.
2. New commercial requires Solar PV, Battery, and expanded EV infrastructure.
3. New residential requires electric-readiness and expanded EV infrastructure.
4. Reach Code is a voluntary code that “reaches” beyond baseline requirements
5. Reach codes could impact new construction and/or existing buildings.
6. Reach codes can amend the Energy Code, CALGreen Code or Health & Safety Code.

# Why Building Electrification?



- Offers financial, health, and environmental benefits.
  - Better for indoor air quality
  - Electric appliances are more efficient than gas counterparts (saves money)
  - Electric appliances can be powered by clean energy (carbon-free/renewable)



# Policy Development & Outreach Timeline

*January 27, 2021*

Study session on potential residential reach code pathways and EV reach codes for 2019 code cycle.

*November 2, 2021*

Study session to update council on outreach conducted to inform nonresidential new construction reach code policy

*October 26, 2022*

Study session to update council on additional outreach and get direction on reach code pathway for nonres and 2022 EV reach code policy.

*2021*

*2023*

*June 9, 2021*

2019 residential reach code adopted by council, direction to conduct additional nonresidential outreach.

*January – Fall 2022*

Additional outreach and surveys released to large developers and local business owners on potential reach code policies.

*March 16, 2023*

Planning commission meeting to receive feedback on proposed policy and limited exemptions.

**Effective  
30-Days  
After  
Second  
Reading**



# Stakeholder Engagement



Biotechnology/Life  
Sciences Town Hall

Business  
Community Town  
Hall

1:1 Stakeholder  
Outreach

Gas Dependence  
Survey

Promotores survey  
from local business  
owners

Commercial Reach  
Code Survey

Planning  
Commission

# What we heard...



## Life Sciences & Developers

1. Phase in requirements or include a grace period for entitled projects.
2. Include specific exemptions for commercial cooking, labs, industrial.
3. Concern over power outages and reliability of electric grid.
4. Lead time is critical due to PG&E requests to bring power to a new area taking up to two years.

## Local Business Owners

1. Majority of existing businesses rely on natural gas for ovens, stovetops, water heaters.
2. Hesitation to transition due to unfamiliarity with electric technology.
3. Increased EV requirements may increase parking demand.
4. Concerns about increasing panel capacity to meet EV requirements.
5. Willingness to transition if City provides incentives or rebates and C/E.

# How does that translate?

## Provide

- Provide a runway or a long enough implementation period

## Apply

- Apply to only new construction

## Take

- Take into consideration unique industry make up including life sciences and commercial kitchen needs

## Public Health & Safety

- Consider back-up power for public health and safety in the event of outages

## Consider

- Consider technical infeasibility & discretion of building officials

# Similar Neighboring Ordinances

| Jurisdiction | Exemption                                                                                                                                                                                                                                                                                                                                                                         |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emeryville   | <ul style="list-style-type: none"> <li>• Nonresidential: B, F, H, L occupancies.</li> <li>• Kitchens in places of public accommodation may apply for an exemption.</li> <li>• Hotels/motels with greater than 80 rooms for commercial clothes drying equipment.</li> </ul>                                                                                                        |
| Daly City    | <ul style="list-style-type: none"> <li>• ADUs/JADUs</li> <li>• Hotels/motels with greater than 80 rooms for commercial clothes drying equipment.</li> <li>• Nonresidential: Buildings containing kitchens. F, H, L occupancies and Scientific Laboratories are exempt</li> </ul>                                                                                                  |
| San Bruno    | <ul style="list-style-type: none"> <li>• Residential: Fan-type central furnaces, fireplaces, pool/spa heaters.</li> <li>• Nonresidential: cooking appliances for restaurants and food services.</li> </ul>                                                                                                                                                                        |
| San Mateo    | <ul style="list-style-type: none"> <li>• Laboratories or buildings with public kitchens requiring commercial food heat-processing equipment may apply for an exemption.</li> </ul>                                                                                                                                                                                                |
| Menlo Park   | <ul style="list-style-type: none"> <li>• Residential: All buildings that are 3 stories or less may contain non-electric cooking appliances and fireplaces.</li> <li>• Nonresidential: Scientific laboratory buildings, emergency centers. For-profit kitchens may apply for an exemption for gas use. Granted exceptions must pre-wire for future electric appliances.</li> </ul> |

# Green Building Ordinance Proposed Requirements



# Types of Construction Impacted

## All-Electric Building

1. New Nonresidential Construction

## EV Charging Infrastructure

1. New One- and two-family dwellings and town-houses
2. New Multi-Family Dwellings
3. New Nonresidential Office Building
4. All Other New Nonresidential Buildings
5. New Hotels and Motels

*Note: All-electric requirements for New Residential and qualifying alterations projects is amended under Ord. 1648-2022.*

# All-Electric New Construction

1. Newly constructed nonresidential buildings shall be designed and constructed as all-electric buildings.
2. Limited exceptions for new nonresidential projects.



# Proposed All-Electric Exemptions

1. Specialized equipment for Industrial processes, laboratories, and medical uses.
2. Commercial Food Heat-Processing Equipment.
3. Back-up power for Critical Facilities necessary to protect public health or safety in the event of an electric grid outage.
4. Nonresidential building projects with valid entitlements before the effective date of the ordinance.
5. If there is not an all-electric prescriptive pathway and the building is unable to achieve the Energy Code's performance compliance pathway.

# EV Infrastructure: Terminology

## Speed

### Level 1

3-4 miles per charging hour



### Level 2

10-20 miles per charging hour



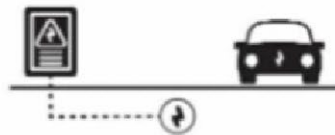
### Level 3

150+ miles per charging hour



## Readiness

### EV Capable



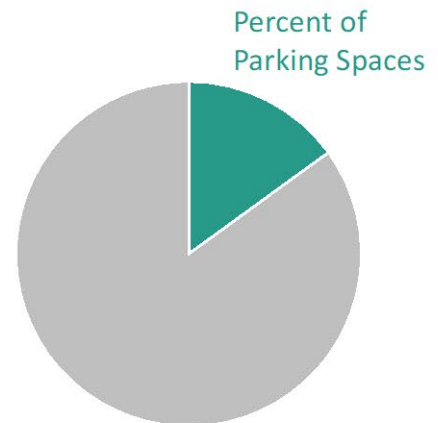
### EV Ready



### EV Charging Station

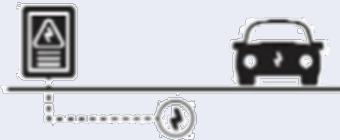
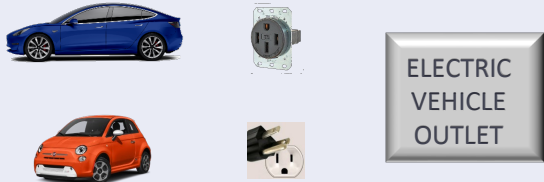


## Number

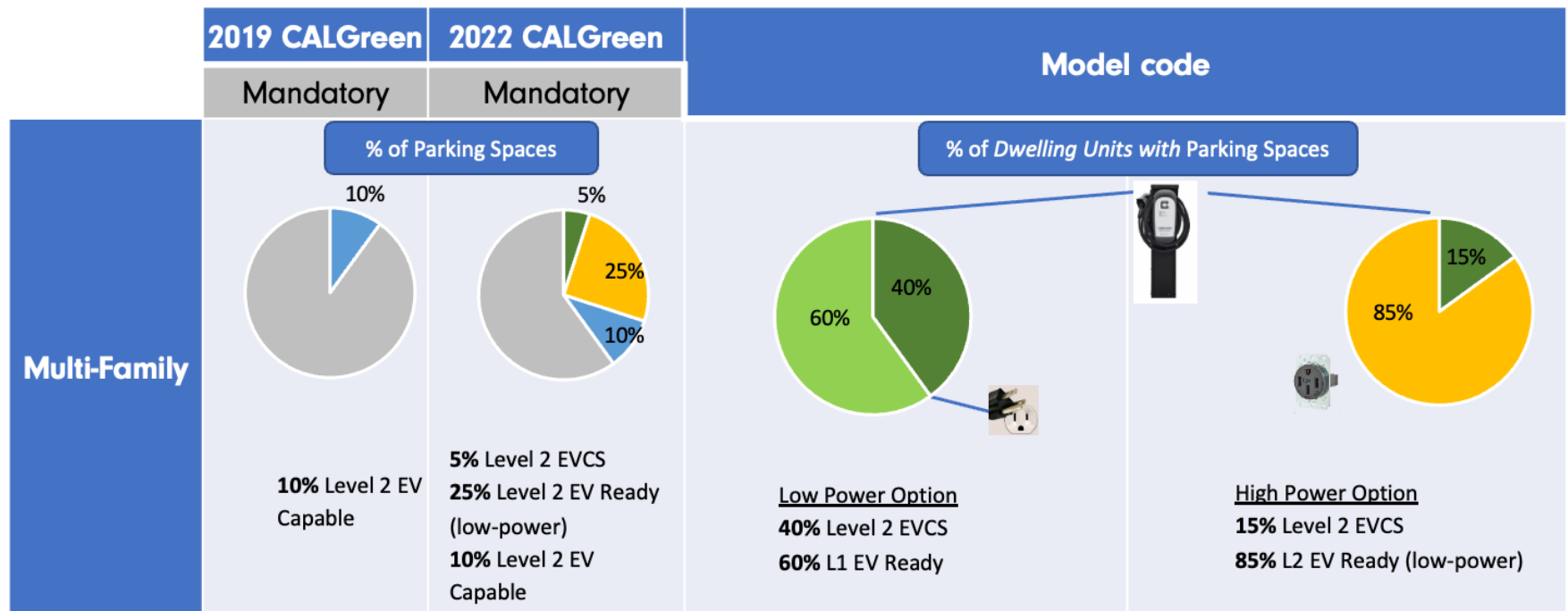


Source: Bay Area Reach Codes Initiative

# New Residential Construction: Single-family EV Charging

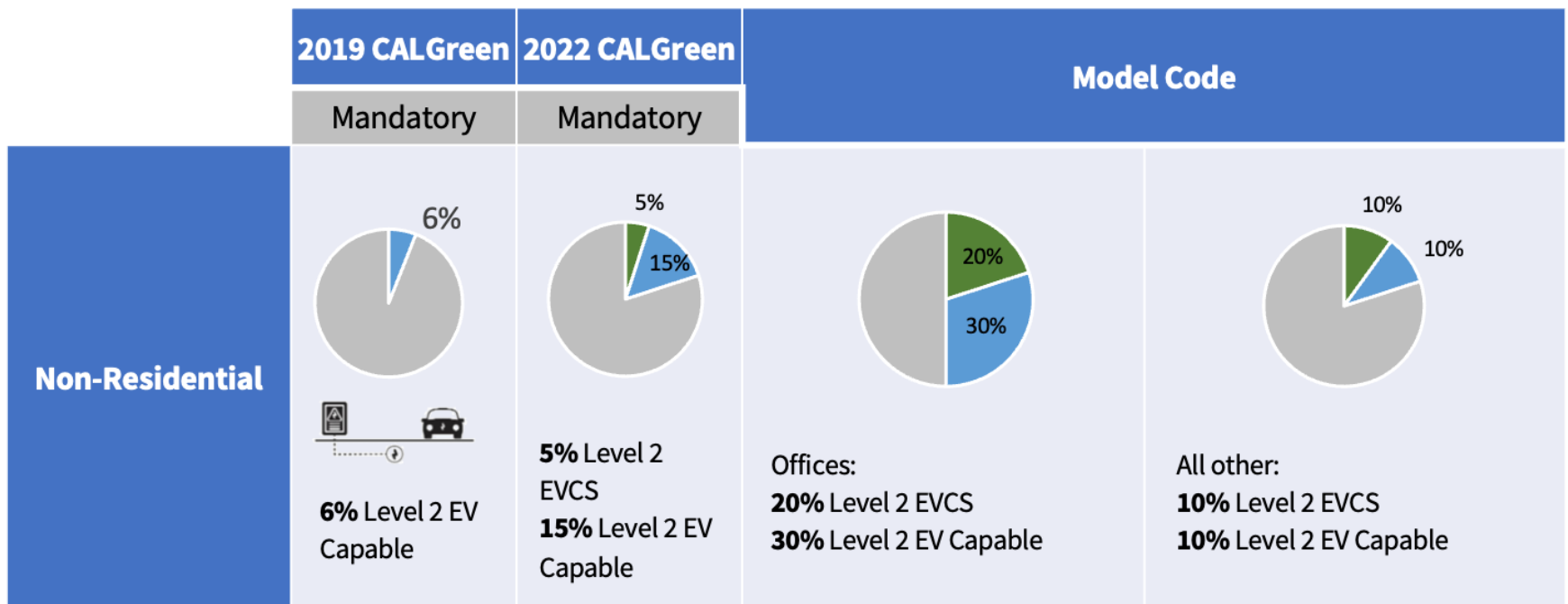
|                                              | 2019 CALGreen                                                                                                                                            | 2022 CALGreen | Model Code                                                                                                                                                                                                                       |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              | Mandatory                                                                                                                                                | Mandatory     |                                                                                                                                                                                                                                  |
| Single Family Homes and Two-Family Townhomes | <p>(1) Level 2 EV Capable for one parking space per dwelling unit</p>  |               | <p>2 EV spaces total:</p> <ul style="list-style-type: none"><li>• 1 Level 2 EV Ready circuit</li><li>• 1 Level 1 EV Ready circuit</li></ul>  |

# New Residential Construction: Multi-family EV Charging



*AUTOMATIC LOAD MANAGEMENT ENCOURAGED*

# New Nonresidential Construction: EV Charging



*AUTOMATIC LOAD MANAGEMENT ENCOURAGED*

# Recommendation

Staff respectfully recommends that the City Council waive reading and introduce a proposed ordinance amending the 2022 California Green Building Standards Code to:

1. Require newly constructed nonresidential buildings to be all-electric, with limited exceptions and;
2. Establish electric vehicle (EV) charging infrastructure requirements for new construction that are more stringent than statewide standards.

# Supplemental Slides



# EV Charging Exemptions for Residential

1. A determination of infeasibility by local enforcing agency.
2. When Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) do not have additional parking or panel upgrade/installation included in the project's scope of work.
3. Multi-family residential (R-2) building projects approved within six months of the effective date of the proposed ordinance are subject to CALGreen Mandatory requirements.

# EV Charging Exemptions for Nonresidential

1. A determination of infeasibility by local enforcing agency.
2. Parking spaces accessible only by automated mechanical car parking systems.
3. Projects approved within six months of the effective date of the proposed ordinance are subject to the CALGreen Mandatory requirements only.

# National & Statewide Context

1. EO 14008: President Biden called for “government-wide approach to climate change”
2. Inflation Reduction Act: Federal rebates and tax credits for decarbonization efforts
3. EO B-30-15: Gov. Brown issued to reduce emissions 40% below 1990 levels by 2030
4. EO B-55-18: Gov. Brown set statewide goal for carbon neutrality by 2045
5. EO N-79-20: Gov. Newsom required 100% in-state sales of new passenger cars/trucks to be zero-emission by 2035
6. CA Climate Commitment: Gov. Newsom signed climate legislation and plan to invest \$54 billion to fight climate change
7. **SIP Strategy: CARB voted to ban sale of new gas furnaces + water heaters by 2030**
8. CPUC Decision 19-01-011: CPUC voted to eliminate subsidies that incentivize gas lines to new buildings starting July 1, 2023

# 2022 California Energy Code: Highlights



## **New Residential**

- Heat pumps = prescriptive baseline
  - Residential: space heating or water heating
  - Performance credit for all-electric design
- Pre-wiring required for gas appliances
- Higher ventilation rate for gas stoves
- Energy storage systems (ESS) ready

## **New Nonresidential**

- Heat pumps = prescriptive baseline
  - Nonresidential: water and/or space heating for most building types
  - Performance credit for all-electric design
- Solar PV prescriptive
  - Requirements based on building type
- Battery Storage system prescriptive
  - Requirements based on building type

# Ordinance Pathways: New Construction

|                                                                                                              |  <b>Efficiency</b> |  <b>Electric-Preferred</b> |  <b>Electric Only</b> |  <b>Electric Only</b> |  <b>Electric Only Plus Efficiency</b> |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
|                                                                                                              |                                                                                                     |                                                                                                             | Electric Only                                                                                            | Natural Gas Moratorium                                                                                   |                                                                                                                          |
| <b>Mechanism</b><br>        | Energy Code                                                                                         | Energy Code                                                                                                 | CALGreen                                                                                                 | Jurisdictional authority                                                                                 | Jurisdictional authority or CALGreen plus Energy Code                                                                    |
| <b>Requires</b><br>        | All new construction exceeds minimum energy code                                                    | Only mixed fuel buildings exceed minimum energy code                                                        | All new construction is electric only                                                                    | No new gas infrastructure (Hookups or Piping)                                                            | All new construction is electric only AND exceeds minimum                                                                |
| <b>Considerations</b><br> | Simplicity, preserves choice, specific measures                                                     | Preserves choice, lower GHG savings                                                                         | Must be renewed                                                                                          | Longest lasting                                                                                          | Biggest impact, must be renewed                                                                                          |

# Equipment

## Space Heating

Residential



Commercial



## Water Heating



## Cooking



## Clothes Drying



Source: [BayAreaReachCodes.Org](http://BayAreaReachCodes.Org)

# EV Charging Incentives

Source: [Peninsula Clean Energy Incentives](#)

| Property Category | Property Type                                     | Port Type              | Port Incentive | Applicable Cap                                     |
|-------------------|---------------------------------------------------|------------------------|----------------|----------------------------------------------------|
| Existing          | Multi-Unit Dwelling                               | L1 outlet or L2 outlet | \$2,000        | No cap                                             |
|                   |                                                   | L2 EVSE port           | \$5,500        | 75% of costs, up to \$90k                          |
|                   |                                                   | Main panel upgrade     | \$5,000        | Up to \$5,000 per property                         |
|                   | Affordable Housing Multi-Unit Dwelling            | L1 outlet or L2 outlet | \$2,500        | No cap                                             |
|                   |                                                   | L2 EVSE port           | \$5,500        | Up to 100% of project cost, max \$90k per property |
|                   |                                                   | Main panel upgrade     | \$5,000        | Up to \$5k per property                            |
|                   | Employee Parking                                  | L1 or L2 outlet        | \$2,000        | No cap                                             |
|                   |                                                   | L2 EVSE port           | \$5,000        | 75% of cost, max \$90k                             |
|                   | All publicly accessible non-residential locations | L1 or L2 outlet        | \$2000         | No cap                                             |
|                   |                                                   | L2 EVSE port           | \$5,000        | 75% of cost                                        |
|                   | Any                                               | Make Ready circuit     | \$2,000        | Up to \$20k per property                           |
| New               | Market Rate Multi-Unit Dwelling (Above Code)      | L1 outlet or L2 outlet | \$1,000        | No cap                                             |
|                   |                                                   | L2 EVSE port           | \$2,000        | Up to \$40,000                                     |
|                   | Affordable Housing Multi-Unit Dwelling            | L1 outlet or L2 outlet | \$1,500        | No cap                                             |
|                   |                                                   | L2 EVSE port           | \$2,500        | Up to \$100,000                                    |
|                   | Public Agency                                     | L1 or L2 outlet        | \$1,000        | No cap                                             |
|                   |                                                   | L2 EVSE port           | \$2,000        | Up to \$250k per property                          |

# 100% access is cost comparable

## EV Infrastructure Cost for 100-Dwelling Multifamily Building

