

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

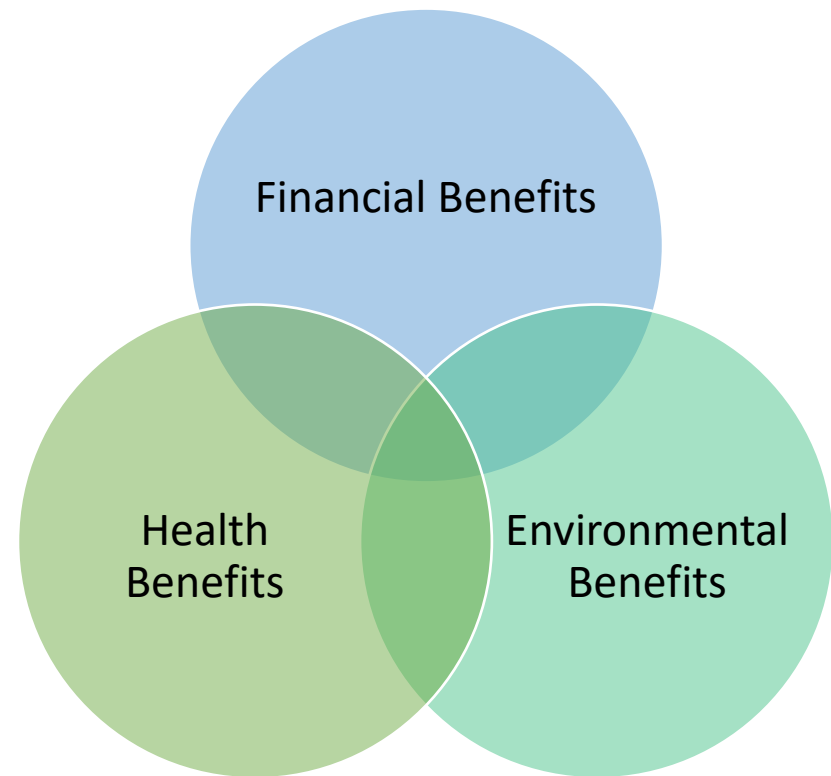


1. Statewide Code updated every three years.
2. New commercial requires Solar PV, Battery, and expanded EV infrastructure.
3. New residential requires electric-readiness and expanded EV infrastructure.
4. Reach Code is a voluntary code that “reaches” beyond baseline requirements
5. Reach codes could 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	• Nonresidential: B, F, H, L occupancies. • Kitchens in places of public accommodation may apply for an exemption. • Hotels/motels with greater than 80 rooms for commercial clothes drying equipment.
Daly City	• ADUs/JADUs • Hotels/motels with greater than 80 rooms for commercial clothes drying equipment. • Nonresidential: Buildings containing kitchens. F, H, L occupancies and Scientific Laboratories are exempt
San Bruno	• Residential: Fan-type central furnaces, fireplaces, pool/spa heaters. • Nonresidential: cooking appliances for restaurants and food services.
San Mateo	• Laboratories or buildings with public kitchens requiring commercial food heat-processing equipment may apply for an exemption.
Menlo Park	• Residential: All buildings that are 3 stories or less may contain non-electric cooking appliances and fireplaces. • 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.

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



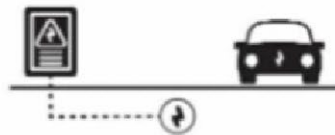
Level 3

150+ miles per charging hour



Readiness

EV Capable



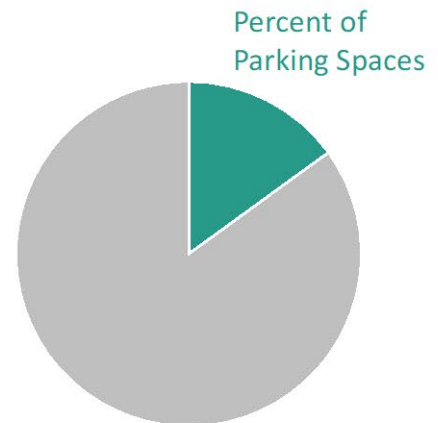
EV Ready



EV Charging Station

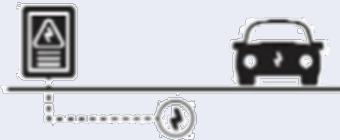
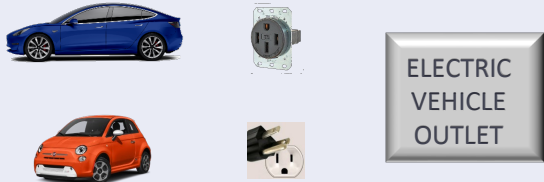


Number

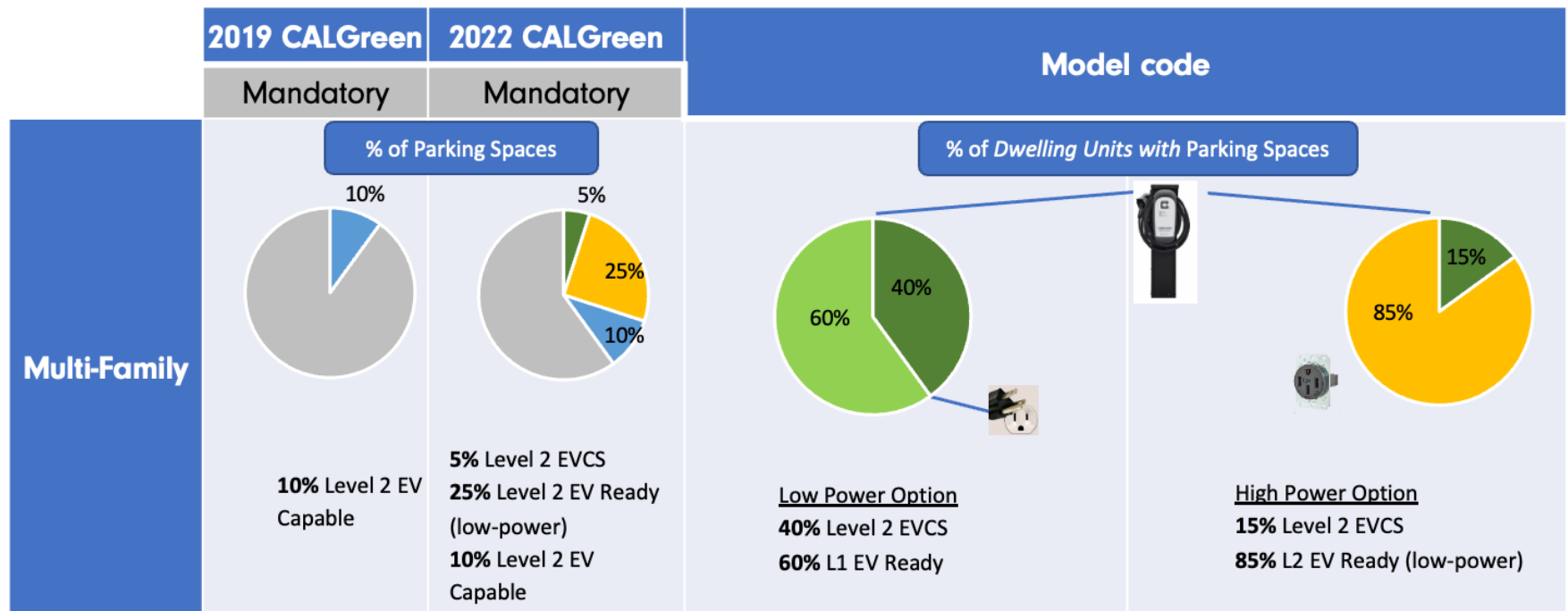


Source: Bay Area Reach Codes Initiative

New Residential Construction: Single-family EV Charging

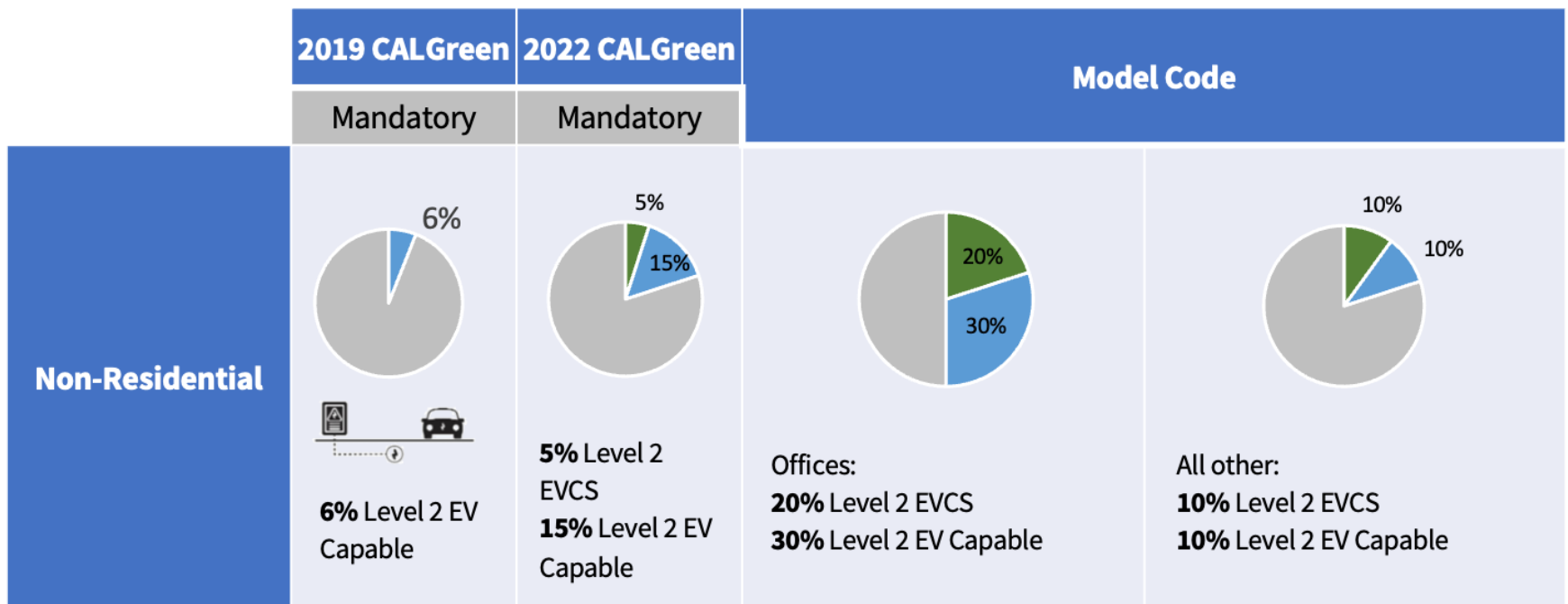
	2019 CALGreen	2022 CALGreen	Model Code
	Mandatory	Mandatory	
Single Family Homes and Two-Family Townhomes	(1) Level 2 EV Capable for one parking space per dwelling unit 		2 EV spaces total: • 1 Level 2 EV Ready circuit • 1 Level 1 EV Ready circuit 

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

	 Efficiency	 Electric-Preferred	 Electric Only	 Electric Only	 Electric Only Plus Efficiency
			Electric Only	Natural Gas Moratorium	
Mechanism 	Energy Code	Energy Code	CALGreen	Jurisdictional authority	Jurisdictional authority or CALGreen plus Energy Code
Requires 	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
Considerations 	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

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

