REACH CODE STAKEHOLDER ADVISORY COMMITTEE

MEETING #3: NEW CONSTRUCTION

TOWN OF TRUCKEE

DATE: August 8, 2022

ID 360°

Housekeeping

- Each policy question polling session will be prefaced with background context slides to guide the questions and discussion.
- Everyone will have the opportunity to vote and add additional written comments.
- Open floor discussion is welcome during each polling session.
- Any questions or comments not addressed in today's meeting will be followed up on separately.

Scan QR Code for access to presentation materials and supplemental resources.

AGENDA

1. Goals for Today's Meeting
2. Statewide C/E & Custom Studies Update
3. Policy Questions & Discussion
4. Next Steps

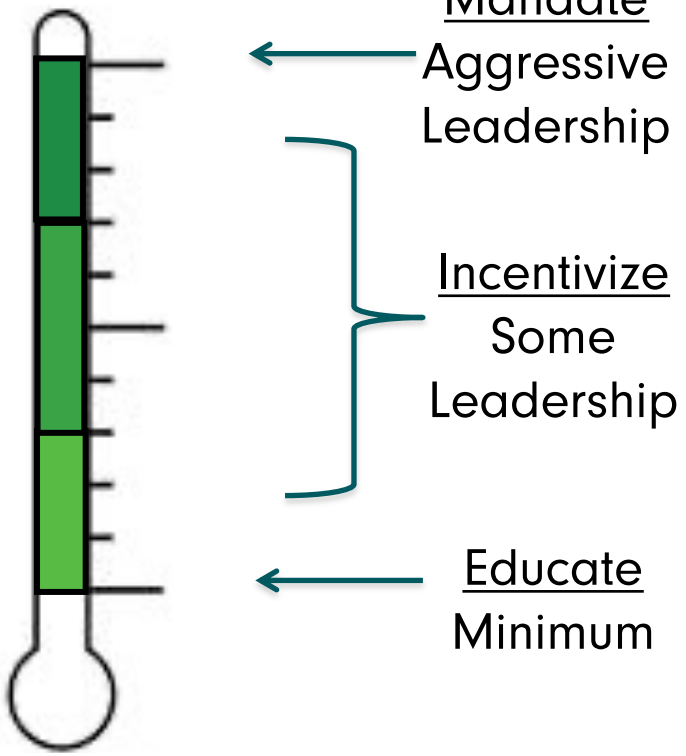
GOALS

- Explore policy pathways and model codes for new buildings
- Gather your recommendations/input:
  - Energy Reach Code
  - EV Reach Code
- Respond to your questions and comments

Leadership Scale

- Temperature gauge "reading" and timeframe for each policy question.
  - How "far" (Educate, Incentivize, Mandate)
  - How "fast" (2022 Code Cycle, Next Code Cycle, By 2040, Phased)
  - An emphasis on feasibility for items slated for the 2022 code cycle
  - Polling will inform policy direction

Voting Scale



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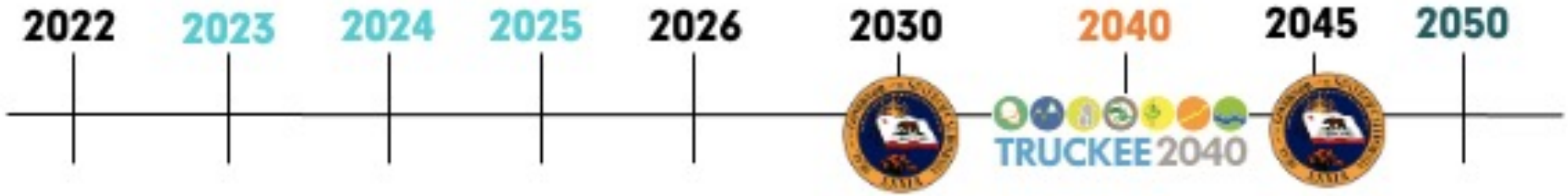


Statewide C/E & Custom Studies Update

- Statewide reach code analyses anticipated publication mid-August
  - Statewide Custom Jurisdiction Analysis typically published after
  - Includes Liberty Utilities, Truckee Donner Public Utility District, Southwest Gas
- Supplemental Cost-Benefit & Economic Analysis
  - Cost data collection and analyses can begin once statewide results are final
  - Methodology and interim progress updates will be shared
  - Key concerns identified from stakeholder advisory committee will be incorporated

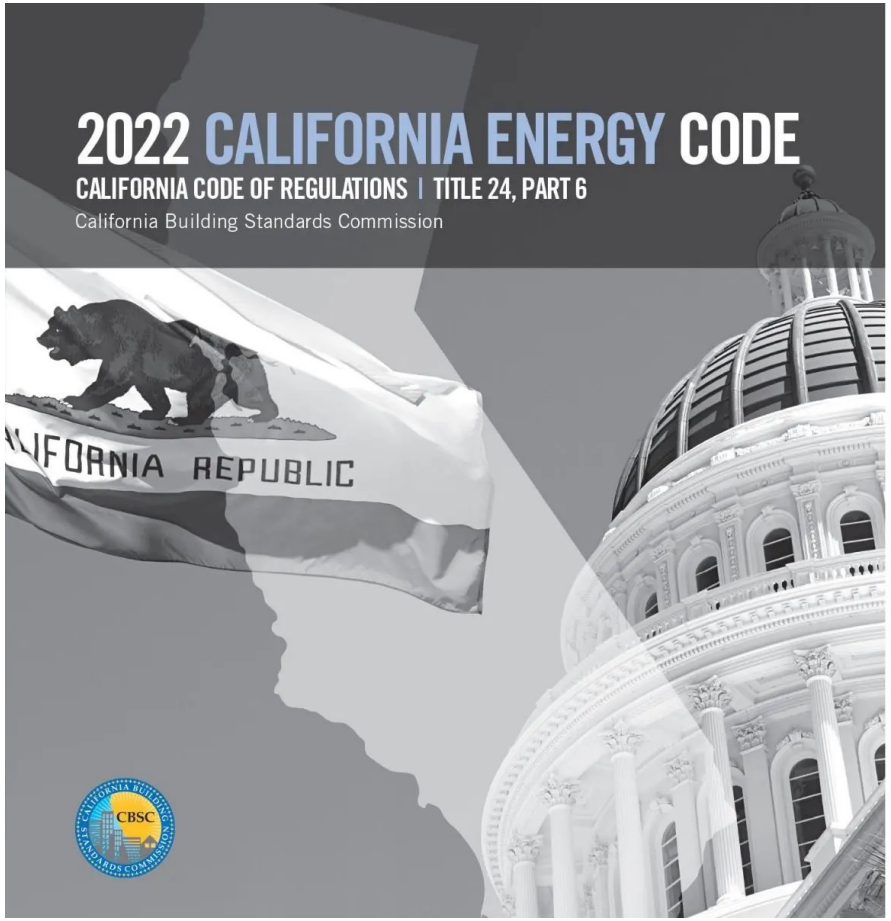
POLL

POLL QUESTION

Topic #8: Residential New Construction

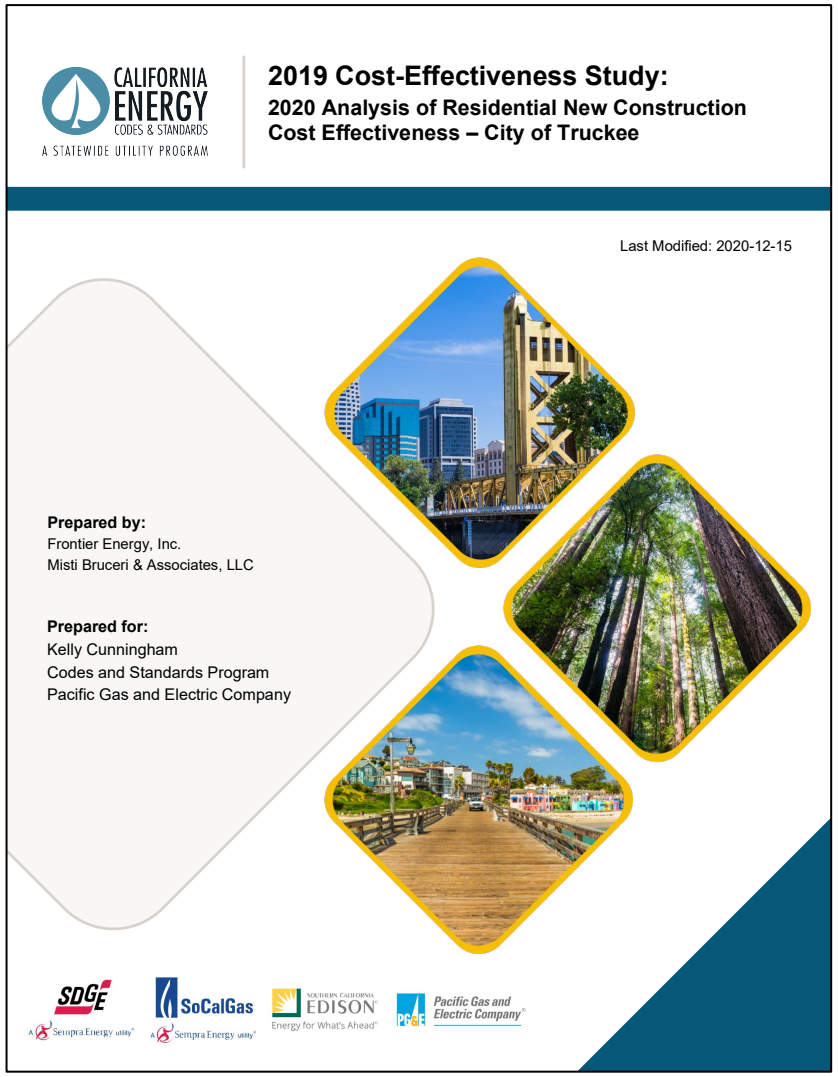
2022 California Energy Code: Residential Highlights

- 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



C/E Study Overview

- C/E Study required for local amendments to California Energy Code
  - Not required for CALGreen All-Electric only amendment
- Two metrics/methodologies
  - "On-bill" (individual consumer, utility rates)
  - "Time Dependent Valuation" (code, societal)
- Jurisdiction makes final determination if reach code is cost-effective
- May not preempt Federal appliance standards
- Measures assembled into packages


CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

2019 Cost-Effectiveness Study:
2020 Analysis of Residential New Construction Cost Effectiveness – City of Truckee

Last Modified: 2020-12-15

Prepared by:
Frontier Energy, Inc.
Misti Bruceri & Associates, LLC

Prepared for:
Kelly Cunningham
Codes and Standards Program
Pacific Gas and Electric Company

SDGE A Sempra Energy utility | SoCalGas A Sempra Energy utility | Southern California Edison Energy for What's Ahead | PG&E Pacific Gas and Electric Company

2019 Residential New Construction Study - Truckee

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

New Construction Reach Codes: Res Exemptions

- Emergency backup power
- MF residential building projects that have approved entitlements before the effective date
- When combustion equipment is allowed, require electric ready
- Other exemptions:
  - By building occupancy
  - By appliance type
  - By % of remodel
- Waivers
  - For cost burden
  - For technical infeasibility

Residential Reach Code: Example Jurisdictions

Seattle, WA

Trigger	Requirements
New Multifamily 3+ stories	No use of fossil fuel combustion or electric resistance appliances for purposes of space heating or domestic water heating. Exceptions for electric resistance.

Ojai, CA

Trigger	Requirements
New Single-Family, low-rise multifamily, and high-rise multifamily	All-electric design Exceptions for ADUs, pool/spa, for-profit kitchen cooking equipment

Ojai is split between two climate zones: CZ 16 and CZ 9.

April 2022: Washington State Building Code Council approved all-electric space and water heating in new commercial and multifamily construction.

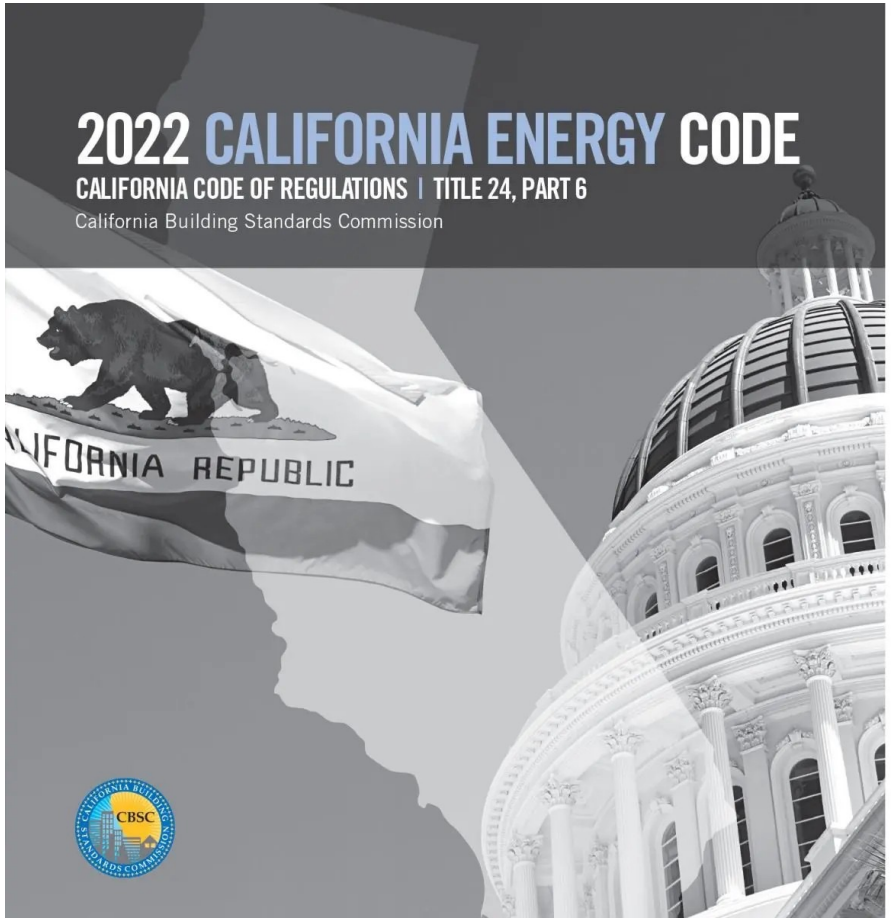
POLL

Policy Question #8: Residential New Construction

Topic #9: Commercial New Construction

2022 California Energy Code: NonRes Highlights

- 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

New Construction Reach Codes: NonRes Exemptions

- Emergency backup power
- Commercial kitchens located in a place of public accommodation
- Hotels/motels w/ 80+ guestrooms may utilize fuel gas in on-site commercial clothes drying equipment
- When combustion equipment is allowed, require electric ready
- Other exemptions:
  - By building occupancy
  - By appliance type
  - By % of remodel
- Waivers
  - For cost burden
  - For technical infeasibility

Nonresidential Reach Code: Example Jurisdictions

Seattle, WA

Trigger	Requirements
New Commercial Buildings	No use of fossil fuel combustion or electric resistance appliances for purposes of space heating or domestic water heating. Exceptions for electric resistance.

Ojai, CA

Trigger	Requirements
New Nonresidential	All-electric Exception: for-profit kitchen equipment

April 2022: Washington State Building Code Council approved all-electric space and water heating in new commercial and multifamily construction.

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Policy Question Set #9: Commercial New Construction

Topic #10:
Electric Vehicle Charging Station (EVCS) for New Residential

EV Infrastructure: Terminology

Speed

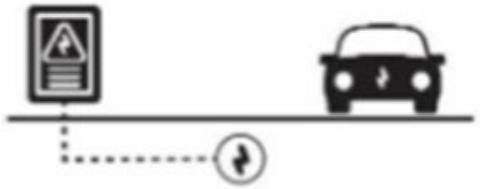
Level 1
3-4 miles per charging hour

Level 2
10-20 miles per charging hour

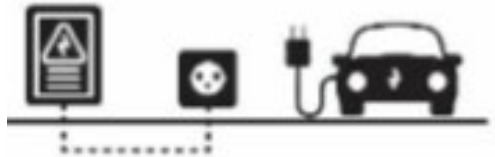
Level 3
150+ miles per charging hour

Readiness

EV **Capable**



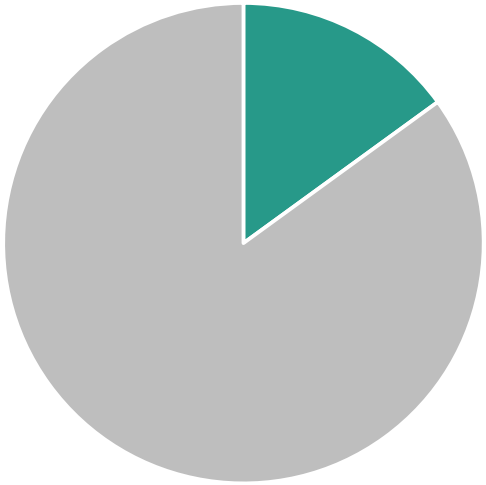
EV **Ready**



EV **Charging Station**

Number

Percent of Parking Spaces



Source: Bay Area Reach Codes Initiative

EV Infrastructure: Exemptions

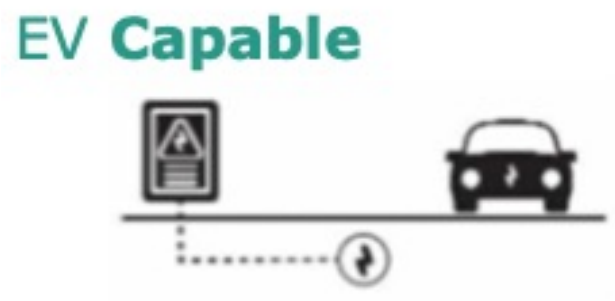
- Areas of parking facilities served by parking lifts
- Infeasibility due to local utility power supply
- Increases to construction cost (i.e., increase cost by an average of $4500 per parking space)
- Separate requirements for affordable housing
- One Direct Current Fast Charging Station (DCFC) may be substituted for up to five (5) EVCS
- ADU or JADU without additional parking facilities and without electrical panel upgrade or new panel installation
- Multifamily residential (R-2) building projects that have approved entitlements prior to effective date

EV Reach Code: Residential New Construction

Occupancy Type	2022 CALGreen Mandatory	2022 CALGreen Tier 1	2022 CALGreen Tier 2	EV Model Reach Code

One- and Two-family homes, Town-homes with Private Garages	• All EV Capable
	• Raceway
	• Service Panel and/or Subpanel Capacity and Space(s)
		• None	• None	• 2 EV spaces total[1]
				  • 1 Level 2 EV Ready Space
				  • 1 Level 1 EV Ready Space

[1]If a second parking space is provided, it shall be provided with a Level 1 EV Ready space



EV Reach Code: Residential New Construction

Occupancy Type	2022 CALGreen Mandatory	2022 CALGreen Tier 1	2022 CALGreen Tier 2	EV Model Reach Code

Multi-family Dwellings, Hotels and Motels[1]	• **10%** of parking spaces to be EV Capable
	• **25%** of parking spaces require EV Ready w/Low Power Level 2 Receptacles*
	• **5%** of parking spaces in buildings with 20 + units require Level 2 EV Supply Equipment (EVSE)*
		• **35%** of parking spaces require EV Ready w/Low Power Level 2 Receptacles
		• Projects w/ 20+ units must offer **10%** of total parking spaces w/level 2 EV Supply Equipment (EVSE)**
			• **40%** of parking spaces require EV Ready w/Low Power Level 2 Receptacles
			• Projects w/ 20+ units must offer **15%** of total parking spaces w/level 2 EV Supply Equipment (EVSE)**
				• Affordable housing
				  • **15%** Level 2 EVCS
				  • **25%** Level 2 EV Ready (low-power)
				  • **60%** Level 1 EV Ready
				• Other
				  • **40%** Level 2 EVCS
				  • **60%** Level 1 EV Ready

[1]EV Model Reach Code amends hotels/motels under CALGreen Chp 5

% of Parking Spaces

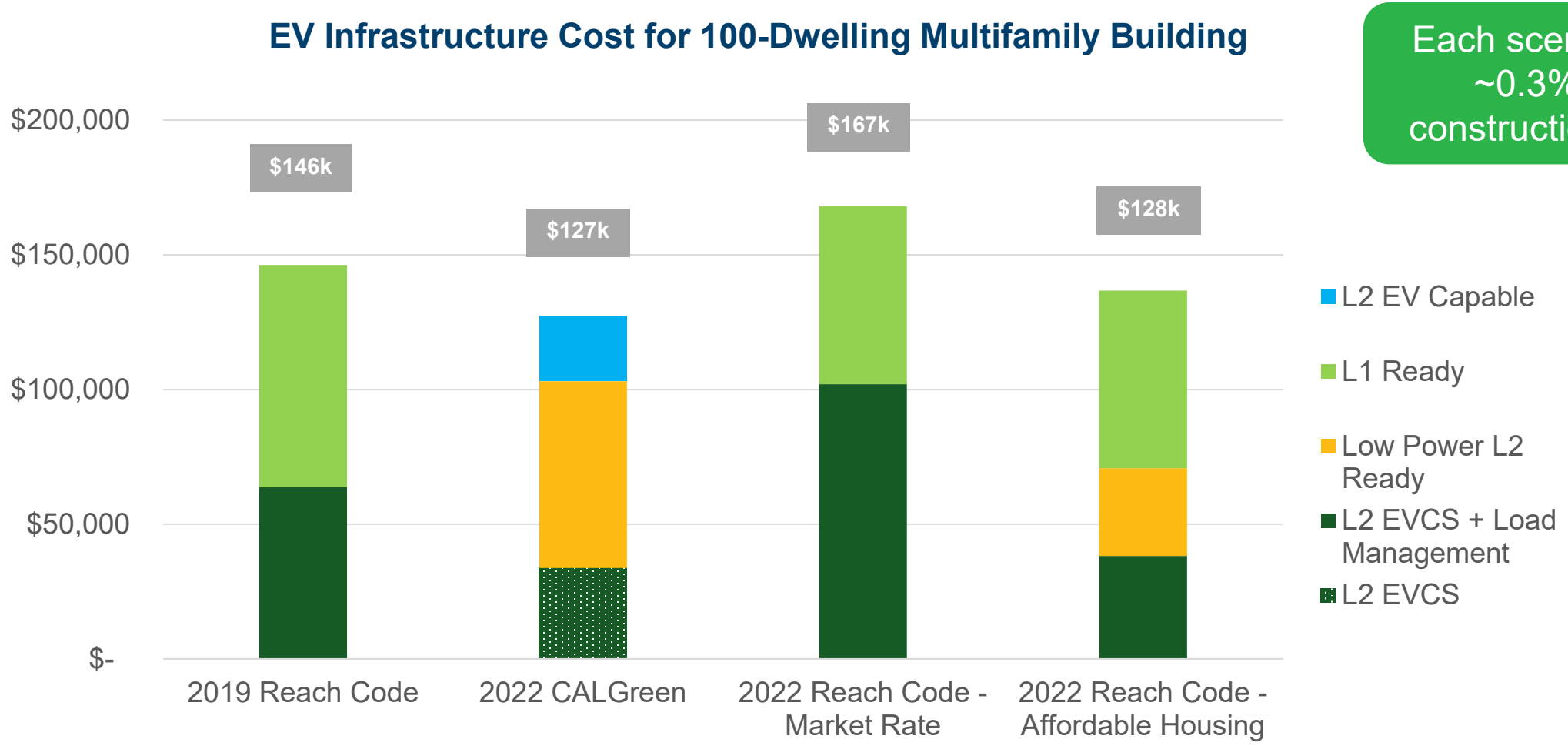
% of Dwelling Units w/ Parking Spaces

EV Reach Code: Residential New Construction

- *When low power Level 2 EV charging receptacles or Level 2 EVSE are installed beyond the minimum required, an **automatic load management system** (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS.

- **When EV chargers (Level 2 EVSE) are installed in a number less than the required number of EV capable spaces, the number of EV capable spaces required may be reduced by a number equal to the number of EV chargers installed.

EV Infrastructure Cost Example



Each scenario is ~0.3% of construction cost

% of dwellings with access	100%	40-60%	100%	100%

Source: Turner and Townsend, 2021

Res EV Reach Codes: Example Jurisdictions

Half Moon Bay, CA

Trigger	Requirements
Single Family, Duplexes, and Townhouses	Level 2 EV-Ready space per unit + Level 1 EV-Ready circuit (Level 2 if only 1 space exists)
Multifamily	• < 20 units: Level 2 EV-Ready space per unit • > 20 units: 25% of spaces Level 2 EV-Ready + remaining spaces Level 1 EV-Ready • Affordable MF: 10% spaces Level 2

Denver, CO

Trigger	Requirements
Multi-family dwellings (3+ dwellings) with 10+ spaces	• 5% of parking spaces to be EV Installed • 15% EV-Ready Parking Spaces • 75% EV-Capable Parking Spaces For MUD and Commercial buildings, allow developers to substitute up to five Level-2 charging spaces with one DC fast-charging space (minimum 20kW).

POLL

Policy Question Set #10: Electric Vehicle Charging Station (EVCS) for New Residential

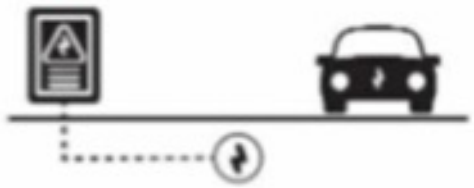
Topic #11:
Electric Vehicle Charging Station (EVCS) for New Commercial

2022 CALGreen NonRes EV Charging Requirements

Total # Parking Spaces	Number of Required EV Capable Spaces	Number of EVCS[1]
0–9	0	0
10–25	4	0
26–50	8	2
51–75	13	3
76–100	17	4
101–150	25	6
151–200	35	9
201 & more	20% of total	25% of EV Capable Spaces

[1]The number of required EVCS (EV capable spaces provided with EVSE) in column 3 count toward the total number of required EV capable spaces shown in column 2.

EV **Capable**



EV **Charging Station**

2022 CALGreen NonRes EV Charging Requirements

Requirements for Grocery Stores, Retail, and Warehouses for Medium- and Heavy-Duty EVs

Building Type	Building Size (ft^2)	# of Off-Street Loading Spaces	Additional capacity for raceway, busway, transformer & panel
Grocery	10,000 - 90,000	1 or 2 3 or greater	200 400
	> 90,000	1 or greater	400
Retail	10,000 – 35,000	1 or 2 3 or greater	200 400
	>135,000	1 or greater	400
Warehouse	20,000 – 256,000	1 or 2 3 or greater	200 400
	>256,000	1 or greater	400

EV Reach Code: Commercial New Construction

CALGreen Tier 1

TOTAL NUMBER OF ACTUAL PARKING SPACES	TIER 1 NUMBER OF REQUIRED EV CAPABLE SPACES	TIER 1 NUMBER OF EVCS (EV CAPABLE SPACES PROVIDED WITH EVSE)[2]
0–9	2	0
10–25	5	2
26–50	11	4
51–75	19	5
76–100	26	9
101–150	38	13
151–200	53	18
201 and over	30 percent of total parking spaces[1]	33 percent of EV capable spaces[1]

CALGreen Tier 2

TOTAL NUMBER OF ACTUAL PARKING SPACES	TIER 2 NUMBER OF REQUIRED EV CAPABLE SPACES	TIER 2 NUMBER OF EVCS (EV CAPABLE SPACES PROVIDED WITH EVSE)[2]
0–9	3	0
10–25	8	3
26–50	17	6
51–75	28	9
76–100	40	13
101–150	57	19
151–200	79	26
201 and over	45 percent of total parking spaces[1]	33 percent of EV capable spaces[1]

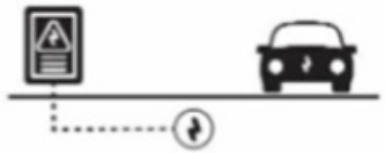
EV Reach Code: Commercial New Construction

EV Model Code

- Offices
  - 20% Level 2 EVCS
  - 30% Level 2 EV Capable
- Hotel/motel – shared parking facilities
  - 5% Level 2 EVCS
  - 25% Low Power Level 2 EV Ready
  - 10% Level 2 EV Capable
- All other – shared parking facilities
  - 10% Level 2 EVCS
  - 10% Level 2 EV Capable

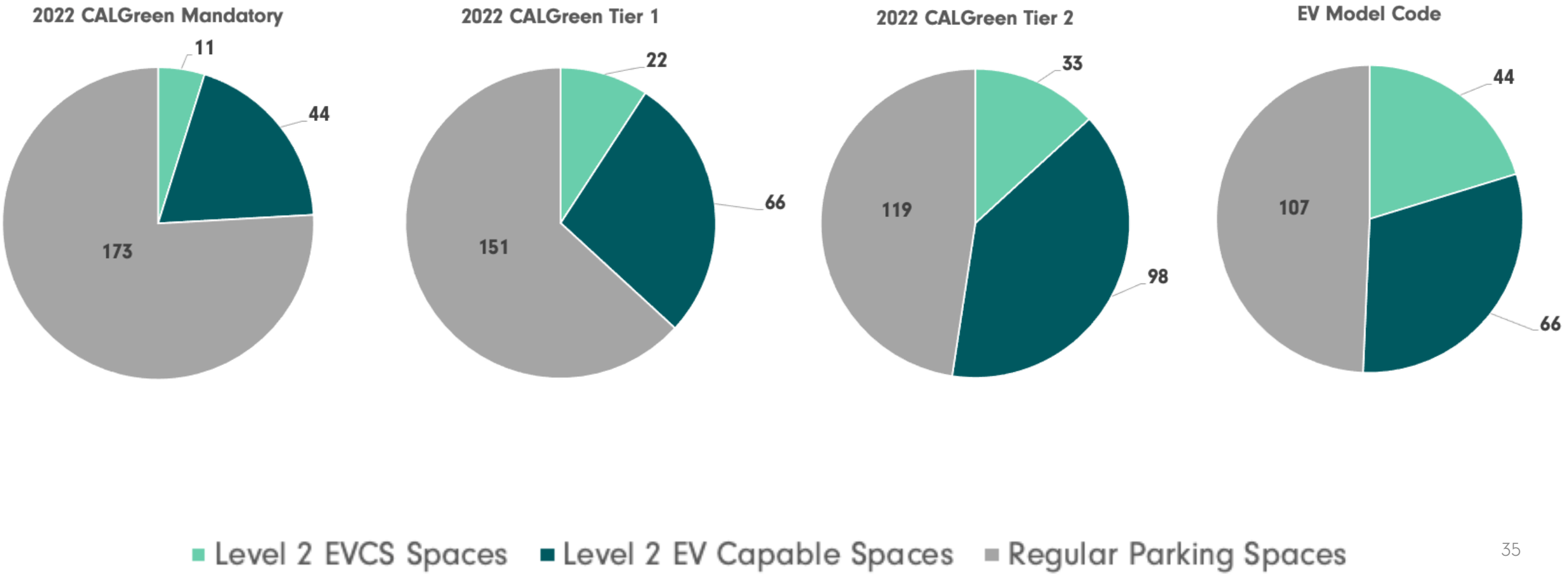
EV **Charging Station**

EV **Capable**



Example Nonresidential Construction Project

Scope of work: New 65,000 sq ft Office Building w/ 217 parking spaces



NonRes EV Reach Codes: Example Jurisdictions

Denver, CO

Trigger	Requirements
New Commercial buildings w/ +10 spaces	• 5% of parking spaces to be EV-Installed • 10% EV-Ready Parking Spaces • 10% EV-Capable Parking Spaces Allows developers to substitute up to five Level-2 charging spaces with one DC fast-charging space (min. 20kW).

Carlsbad, CA

Trigger	Requirements
New Nonresidential – office, other	• 10% of units with Level 2 EV-Capable space AND • 50% of those spaces installed with EVSE

POLL

Policy Question Set #11: Electric Vehicle Charging Station (EVCS) for New Commercial

Committee Meetings Schedule

Meeting Number	Topic	Date/Time
1	Reach Code Intro/Educational Background	June 20th 2:30pm-4:30pm
2	Existing Buildings (Backup Heat, Energy Efficiency Reach Code, EV Reach Code)	July 25th 2:30pm-4:30pm
3	New Construction (Backup Heat, Energy Efficiency Reach Code, EV Reach Code)	August 8th 2:30pm-4:30pm
★ 4	Workforce Strategy, Incentives, Cost Analysis	August 22nd 2:30pm-4:30pm

Next Steps

- Develop local code based on statewide model code language and community and industry feedback. (ongoing)
- State finalizes the cost-effectiveness studies. (August 2022)
- Bring reach code to Town Council (October 2022).
- Undergo state approvals and begin local enforcement.