REACH CODE STAKEHOLDER ADVISORY COMMITTEE

MEETING #2: EXISTING BUILDINGS

TOWN OF TRUCKEE

DATE: July 25, 2022

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. Policy Questions & Discussion
3. Next Steps

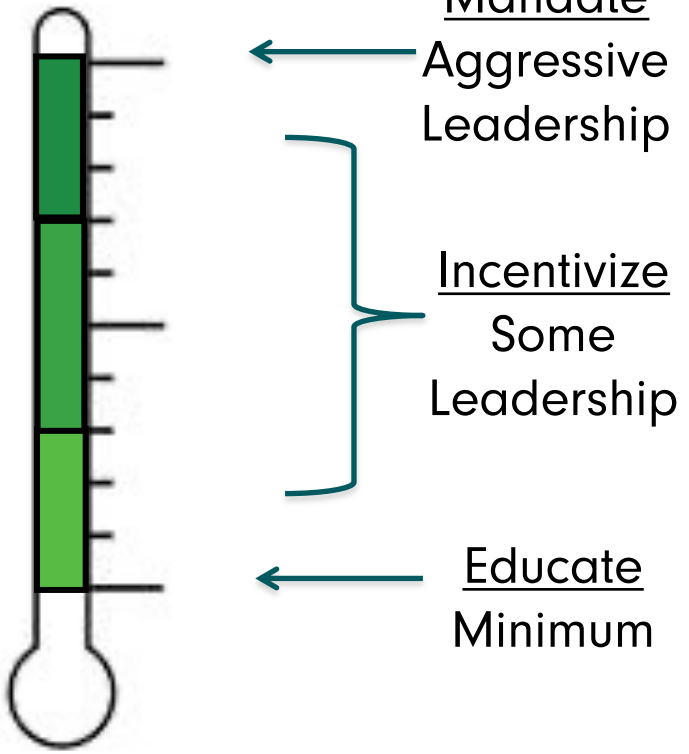
GOALS

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

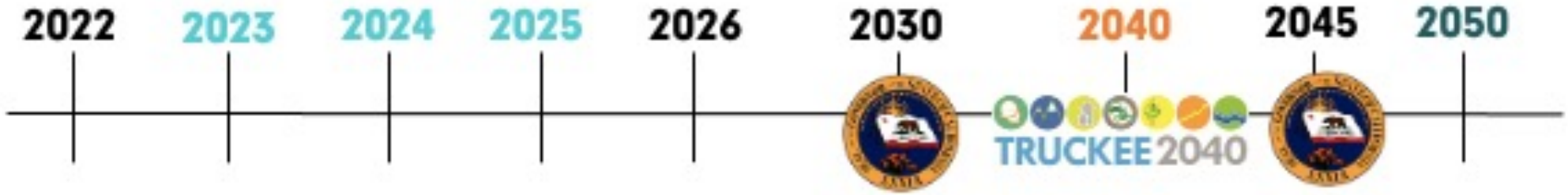
Leadership Scale

- 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



By when:



Topic #1:
Backup Power and Backup Heat

Backup Power & Backup Heat: Background

- Common Fuel Sources
  - Diesel
  - Gasoline
  - Propane
  - Natural gas
  - Batteries
  - Wood
- Backup Heat Sources
  - Woodstoves

Emergency Backup Power

Residential Options to Minimize Air Pollutant Emission Exposures

Pollutant Exposure: Zero ● Low ■ High

Maximum Likely Use	Power Range (kW)	Battery with Existing Solar	Fuel Cell	Generator - Natural Gas	Generator - Propane	Generator - Gasoline	Generator - Diesel
Emergency Communication		●			■	▲	
Partial House		●	●		■	▲	▲
Whole House	4 - 6 kW		●		■	▲	▲
	6 - 8 kW	●		■	■	▲	▲
	8 - 10 kW	●	●	■	■	▲	▲
	10 - 16 kW	●	●	■	■	▲	▲
	16 - 25 kW	●		■	■	▲	▲
	25 - 40 kW	●		■	■		▲

Source: California Air Resources Board Emergency Backup Power Options- Residential

Backup Power: Example Jurisdictions

Backup Power & Energy Reach Codes

- Emergency backup power can be allowed by exemption to the local reach code (including backup heat sources like woodstoves).
  - Per the CEC and the Statewide Reach Code Program.
- No impact on the energy or compliance results.

Example Jurisdictions

- Contra Costa
  - Does not prohibit use of emergency backup power sources
  - Allows fossil-fuel operated generators
- San Jose
  - Allows Fuel Cell for backup power

Backup Power: State Requirements

Where required:

- Ambulatory Care Facilities (2702.2.1)
- Elevator and platform lifts (2702.2.2)
- Emergency responder radio coverage systems (2702.2.3)
- Emergency voice/alarm communication systems (2702.2.4)
- Exhaust systems (2702.2.5)
- Exit signs (2702.2.6)
- Gas detection systems (2702.2.7)
- Group 1-2 & 1-3 Occupancies (2902.2.9-9)
- Hazardous Materials (2702.2.10)
- High-Rise buildings (2702.2.11)
- Laboratory Suites (2702.2.12)
- Underground buildings (2702.2.18)
- Group L Occupancy (2702.2.19)

Source: 2019 California Building Code, Title 24, Part 2. Section 2702

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Policy Question Set #1: Backup Power

Topic #2: Energy Upgrades for Existing Residential Buildings

Existing Building Reach Codes: Background

Benefits

- Health Benefits
  - Improve indoor air quality + outdoor pollution
  - Positively impacts comfort
- Safety & Resilience
  - Aging infrastructure
  - Fires & explosions, earthquakes
  - Backup power & affordability
  - Job growth
- Environmental/GHG reduction

Considerations

- Upfront costs
- Electrical capacity concerns (i.e., panel capacity and upgrades)
- Equity
- Competing needs
- Labor
- Timing (i.e., phased approach)
- Permit avoidance
- Regional inconsistency

Existing Building Reach Codes: Pathways and Triggers

- Approach
  - Reach Codes*
  - Emission Limit on Appliances
  - Require Appliance Replacement
  - Community Scale Phase Out
  - Building Emission Standards
- Trigger Point
  - Upon Replacement
  - During Retrofits
  - At Time of Sale
  - Date Certain

Reach Codes: Existing Residential

☑ Flexible Path Model

- Establishes a target score
- Menu of individual measures w/ points weighted by site energy savings
- Based on building vintage
- Applicants select a set of measures that meet or exceed the target.

C/E Savings: 26, 301 MTCO2e

☑ Decarbonization Ordinance

- Any new appliances installed shall be powered by electricity only
- Does not amend the Energy Code (Title 24, Part 6)
- Can cover specific appliance upgrades
- Can include electrical capacity or transformer upgrade requirements when alteration or addition requires increase of capacity

Savings: 157, 133 MTCO2e
C/E Savings: 0 MTCO2e

☑ Building Performance Ordinance

- Assumes energy and water benchmarking ordinance is in place.
- Standards based on Performance Metrics by certain date
- If building misses interim or final performance standard, owner pays alternative compliance payment.

Existing Building Reach Codes: Exemptions

- Emergency backup power
- Subsidized Housing
- Houseboats
- Economic hardship exemptions
- In-lieu fees
- Mobile homes, Manufactured Housing or Factory-built Housing
- HOA conflicts

- When scope consists of specific scenarios
  - Medically necessary improvements
  - Seismic safety improvements
- Other exemptions:
  - By building occupancy
  - By appliance type
  - By % of remodel
- Waivers
  - For cost burden
  - For technical infeasibility

Flexible Model: Sample Residential Measures

Climate Zone 16
Measures
High-Efficiency Heat Pump HVAC
Heat Pump HVAC
New Ducts + Duct Sealing
High Efficiency Heat Pump Water Heater (HPWH)
Heat Pump Water Heater (HPWH)
Duct Sealing
Windows
R-13 Wall Insulation
R-49 Attic Insulation
PV
PV + Electric Ready Pre-Wire
PV + Battery
Air Sealing
Water Heating Package
LED lamps and Exterior Photosensor

Residential Existing Building Reach Codes:
Example Jurisdictions

Denver, CO

Policy Pathway/ Trigger	Requirements
Building Performance Standards, Date Certain	MF: > 25,000 ft^2: 30%+ EUI reduction by 2030
During Retrofit – Electric Required, Require Appliance Replacement	SF, MF: Space heater and water heater Phases across 2023, 2025, 2027
At Time of Sale	MF: BPS Compliance Status

- *Denver provides incentives of [$3M/year for 2022-2024]*
- *Building stock: Metropolitan*

Vancouver, Canada

Policy Pathway/ Trigger	Requirements
During Retrofit – Electric Required, Require Appliance Replacement	Single family alterations must install all-electric water heater and space heaters Includes Renewable gas option

- *Building stock: Metropolitan*

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Policy Question Set #2: Energy Upgrades for Existing Residential

Topic #3:
Energy Upgrades for Existing Commercial

Reach Codes: Existing Commercial

☑ Existing Buildings Decarbonization Model Ordinance

- Trigger can include building permits, sale of property, appliance upgrades
- Any new appliance installed shall be powered by electricity only
- Can include electrical capacity or transformer upgrade requirements when alteration or addition requires increase of capacity
- Can include electric-ready requirements in appliance upgrades

☑ Building Performance Standard Model Ordinance

- Standards based on performance metrics
- Prioritizes equity (i.e., tenant protection, affordable housing)
- For each metric, buildings must meet a long-term (15-30+ years in the future), final performance standard by a prescribed date.
- Interim performance standards for each building

Commercial Existing Building Reach Codes:
Example Jurisdictions

Boulder, CO

Policy Pathway/ Trigger	Requirements
Date Certain	Commercial, Industrial: Rating and Reporting whole-building energy use via Energy STAR Portfolio Manager
Date Certain, Energy Assessment	Commercial, Industrial: Every 10 yrs perform energy assessments Buildings < 50,000 sf: ASHRAE Level I assessment Buildings ≥ 50,000 sf: ASHRAE Level II assessment
Date Certain, Require Appliance Replacement	Commercial, Industrial: Complete One-Time Lighting Upgrades (meet 2017 COBECC)
Date Certain, Retrocommissioning	Commercial, Industrial: Buildings < 50,000 sf: RCx via third-party (Xcel) assessments program or meet RCx scope. Buildings ≥ 50,000 sf: RCx via Qualified Vendor and meet RCx scope

- *Single-family detached homes*
- *Rebates for residents and businesses.*
- *Based on 2018 International Energy Conservation Code.*

Commercial Existing Building Reach Codes: Example Jurisdictions

Denver, CO

Policy Pathway/ Trigger	Requirements
Building Performance Standards	Commercial: > 25,000 ft2: 30%+ reduction by 2030
During Retrofit – Electric Required, Require Appliance Replacement	Commercial: Space heater and water heater (when near cost-parity with like-for-like gas system). Phases across 2023, 2025, 2027
Time of Property Transfer/ At Time of Sale	Commercial: BPS Compliance Status

- *Denver provides incentives of $3M/year for 2022-2024*
- *Building stock: Metropolitan*

Seattle, WA

Policy Pathway/ Trigger	Requirements
During Retrofit– Electric Required, Require Appliance Replacement	Commercial alterations must install heat pumps, with some exemptions for electric resistance

- *Building stock: Metropolitan*

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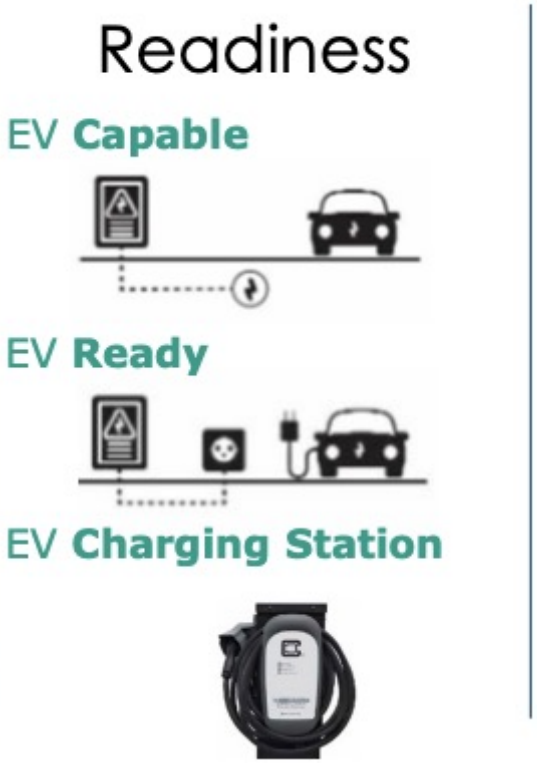
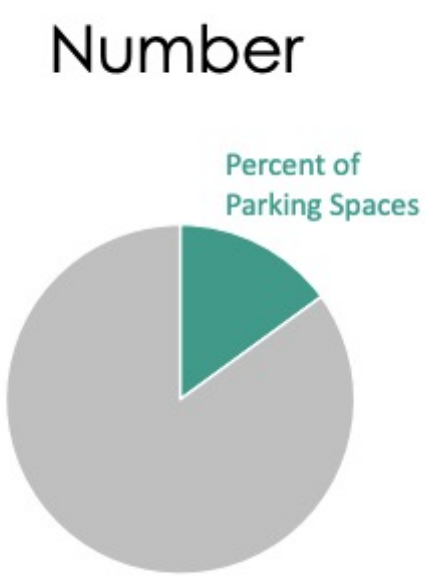
Policy Question Set #3:
Energy Upgrades Existing Commercial

Electric Vehicle Infrastructure Reach Codes for Existing Buildings

EV Infrastructure: Terminology

- Automatic Load Management System (ALMS)
- EV Capable Space
- EV Ready Space
- Level 2 EV Supply Equipment (EVSE)
- Electric Vehicle Charging Station (EVCS)
- Low Power Level 2 EV Charging Receptacle





Source: Bay Area Reach Codes Initiative

EV Infrastructure: Model Code Pathways and Triggers

- Alterations or additions (i.e., parking additions, electrical panel upgrade, lighting systems)
  - Single Family
  - Multifamily
  - Nonresidential

- Time Certain Policy
  - By January 1st, 2025, multifamily and nonresidential properties shall upgrade existing EV Capable spaces required by the locally adopted codes at the time the building was permitted to a minimum of Level 1 EV Ready.

Pathway: Zoning Code or CALGreen Amendment
Trigger Point: Alterations or Additions, Date Certain

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

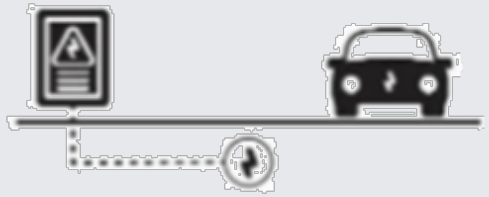
Policy Question Set #4: Electric Vehicle Charging Station (EVCS) for Existing Single-Family

EVCS Existing Single Family: Pathways and Triggers

- *No 2022 CALGreen Voluntary Tiers (Tier 1 or Tier 2) for Existing Single-Family*

- EV Model Code
  - Trigger: Parking additions or electrical panel upgrades must meet residential single-family new construction requirements.

EVCS Existing Single Family Reach Code:
Model Reach Code

	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     

EVCS Existing Single Family Reach Codes: Example Jurisdictions

Mill Valley, CA

Trigger	Requirements
Addition/Alteration w/ Panel upgrade	Panel upgrade must include Level 2-Ready circuit

Marin County, CA

Trigger	Requirements
Addition/Alteration w/ Panel upgrade	Panel upgrade must include Level 2-Ready circuit

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Policy Question Set #4: Electric Vehicle Charging Station (EVCS) for Existing Single-Family

Topic #5:
Electric Vehicle Charging Station (EVCS) for Existing Multifamily

EVCS Existing Multifamily: Pathways and Triggers

- 2022 CALGreen*
  - Trigger: addition or alteration increases the building's conditioned area, volume, or size
  - Requires:
    - 10% of new added parking spaces to be EV capable spaces
    - 10% of altered spaces to be EV capable

- EV Model Code
  - Trigger: When new parking facilities are added, or electrical systems or lighting of existing parking facilities are added or altered and the work requires a building permit
  - Requires:
    - 10% of the total number of parking spaces added or altered shall be EVCS

*For Multifamily Dwellings, Hotels and Motels

EVCS Multifamily Reach Codes: Example Jurisdictions

City & County of San Francisco

Trigger	Requirements
Major multifamily alterations	Major multifamily alterations: 100% of the total number of parking spaces on a building site be EV charging spaces (EV spaces) capable When existing electrical service will not be upgraded, requirement applies to max. extent that doesn't require an upgrade

Carlsbad, CA

Trigger	Requirements
Major multifamily alterations	Major multifamily alterations; repave, replace, or add 2,500 sq ft or more of vehicle parking and drive area: 5% EV Capable, 5% EVCS

San Anselmo, CA/ Marin County

Trigger	Requirements
Addition/Alteration w/ Panel upgrade	Panel upgrade must include capacity for 20% Level 2 EV-Capable spaces

- *Sources: TRC*

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Policy Question Set #5: Electric Vehicle Charging Station (EVCS) for Existing Multifamily

Topic #6:
Electric Vehicle Charging Station (EVCS) for Existing Commercial

EVCS Existing Commercial: Pathways and Triggers

- EV Model Code
  - Trigger: When new parking facilities are added, or electrical systems or lighting of existing parking facilities are added or altered and the work requires a building permit
  - Requires:
    - 10% of the total number of parking spaces added or altered shall be EVCS

EVCS Existing Commercial Reach Codes: Example Jurisdictions

Menlo Park, CA

Trigger	Requirements
Nonresidential additions or alterations > 10,000 ft^2	Provide a Level 2 raceway for 5 to 10 percent of the associated total parking Provide EVSE for one plus 1% of total required parking spaces.

Marin County, CA

Trigger	Requirements
Nonresidential alterations w/ panel upgrade	Panel upgrade must include capacity for 20% Level 2 EV Capable

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Policy Question Set #6: Electric Vehicle Charging Station (EVCS) for Existing 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. (July 2022)
- Bring reach code to Town Council (October 2022).
- Undergo state approvals and begin local enforcement.