ENERGY EFFICIENCY COMMUNITY WORKSHOP

Energy Efficiency, Fuel Type, and Electric Vehicle Charging Requirements for New Construction and Existing Building Remodels

TOWN OF TRUCKEE

DATE: September 15, 2022

Welcome

Jen Callaway

Town Manager

Town of Truckee

Facilitators

Melanie Jacobson

LEED AP BD&C, ICC CALGreen Inspector/Plans Examiner

Principal, ID360

Housekeeping

- There will be a Q&A discussion session after the presentation, please hold questions until then.
- Scan QR Code for access to presentation materials and supplemental resources.

AGENDA

1. Climate Ready Truckee
2. Reach Code Background
3. Introduction to Decarbonization
4. Building and EV Reach Codes
5. 2022 California Building Code Highlights
6. 2022 Statewide Reach Codes Initiative
7. Reach Code Strategy
8. Q&A Discussion

OBJECTIVE

- Provide educational background on Energy Reach Codes and EV Reach Codes.
- Review Reach Code Adoption Process.
- Respond to your questions and comments regarding the local Reach Code pathways.
- Discuss next steps.

AGENDA ITEM #1

CLIMATE READY TRUCKEE

Draft Climate Action Plan (CAP)

Committed to Sustainability

- Formalize the Town's commitment to reducing GHG emissions and mitigating the worst impacts of climate change.
- CAP Element supports goals, policies, and actions from other General Plan elements
- Rely on the innovation, compassion, diversity, and strong networks of Truckee residents.
- Build resiliency during climate change induced, extreme heat events, wildfires and other risks.
- Establish targets and goals for emissions reductions.
- Identify and implement specific measures that reduce GHG emissions to achieve the established State and Town targets.

Truckee GHG Emissions Inventory

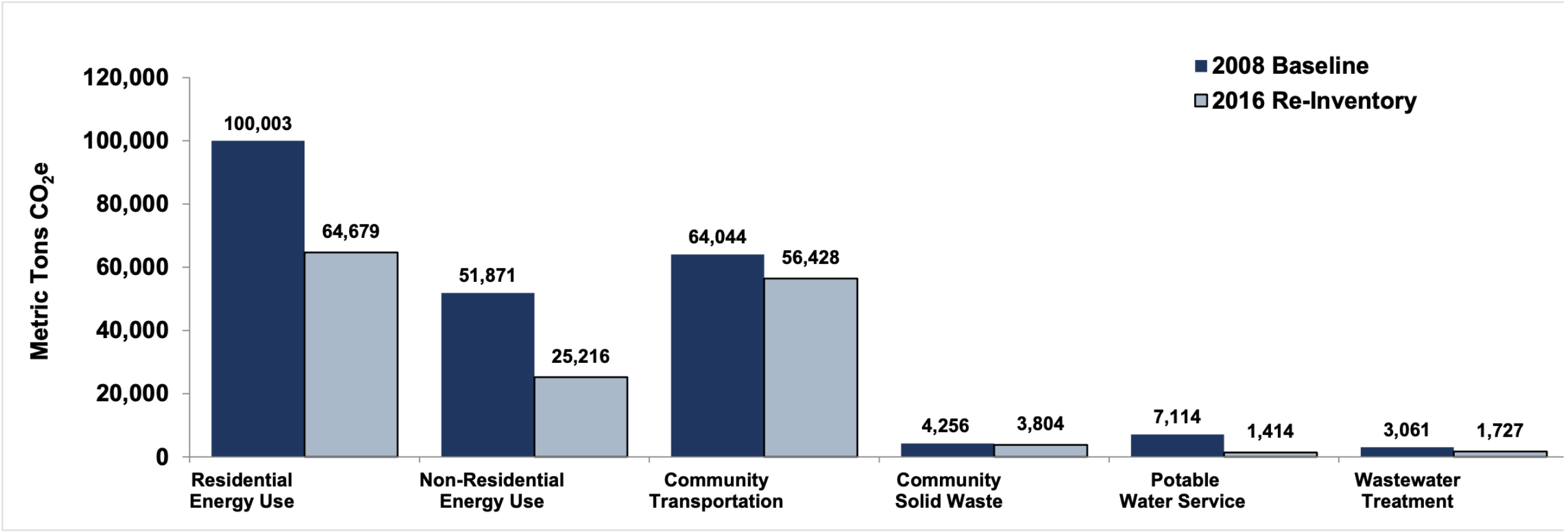


Figure 2: 2008 & 2016 Community-Wide GHG Emissions ($MTCO_2e$)

Climate Action Priorities Related to Reach Codes

- Promote and incentivize building decarbonization and energy efficiency in new development.
- Increase low and zero emissions vehicle options to work towards a carbon neutral transportation system.
- Increase energy efficiency in existing developments to reduce energy use in the built environment.
- Decrease Greenhouse Gas Emissions through increasing clean energy use.

AGENDA ITEM #2

Reach Code Background

Global & Domestic Context

- Climate Change in CA: extreme weather, wildfires, coastal erosion, and sea level rise
- Efforts related to climate action and decarbonization:
  - Paris 2015: 192 Parties agreed to limit the temperature increase and reduce GHG emissions
  - President Biden signed EO 14008: “government-wide approach to the climate change”
  - Gov. Brown issued EO B-30-15: reduce GHG emissions 40% below 1990 levels by 2030
  - Gov. Newsom issued EO N-79-20: 100% in-state sales of new passenger cars/trucks to be zero-emission by 2035
  - California is committed to becoming carbon-neutral by 2045
- CA jurisdictions are adopting local reach codes in support of climate goals

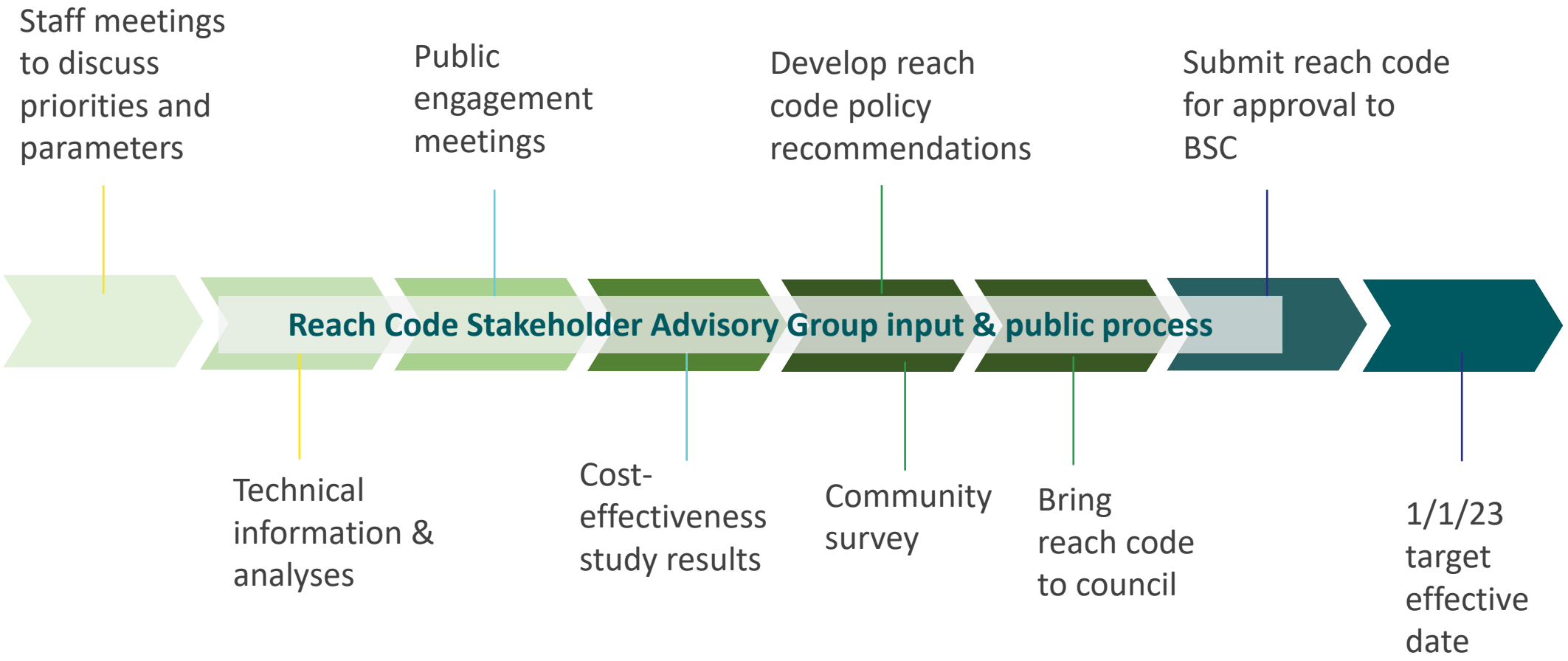
Why Reach Codes?

- Supports local governments reach various policy goals.
- Benefits:
  - Save energy
  - Reduce greenhouse gas emissions
  - Contribute to climate goals
- Furthers decarbonization efforts when clean energy is available

What is a Reach Code?

- Statewide Code updated every three years. (2022 code will take effect 1/1/23)
- Reach Code is a voluntary code that "reaches" beyond baseline requirements
- Based on local prototypes built within CEC-approved energy modeling software
- Requires cost-effectiveness studies that outline modeling assumptions
- Must not preempt federal appliance efficiency standards

Reach Code Process: Development to Implementation



AGENDA ITEM #3

Introduction to Building Decarbonization

What is Building Decarbonization?

- Energy efficiency measures that reduce energy usage (i.e. weatherization measures, insulation, LED lights).
- Uses efficient appliances and electric equipment in homes and businesses.
  - Induction cooktops
  - Heat pump water heaters
  - Heat pump heating and air ventilation (HVAC) systems

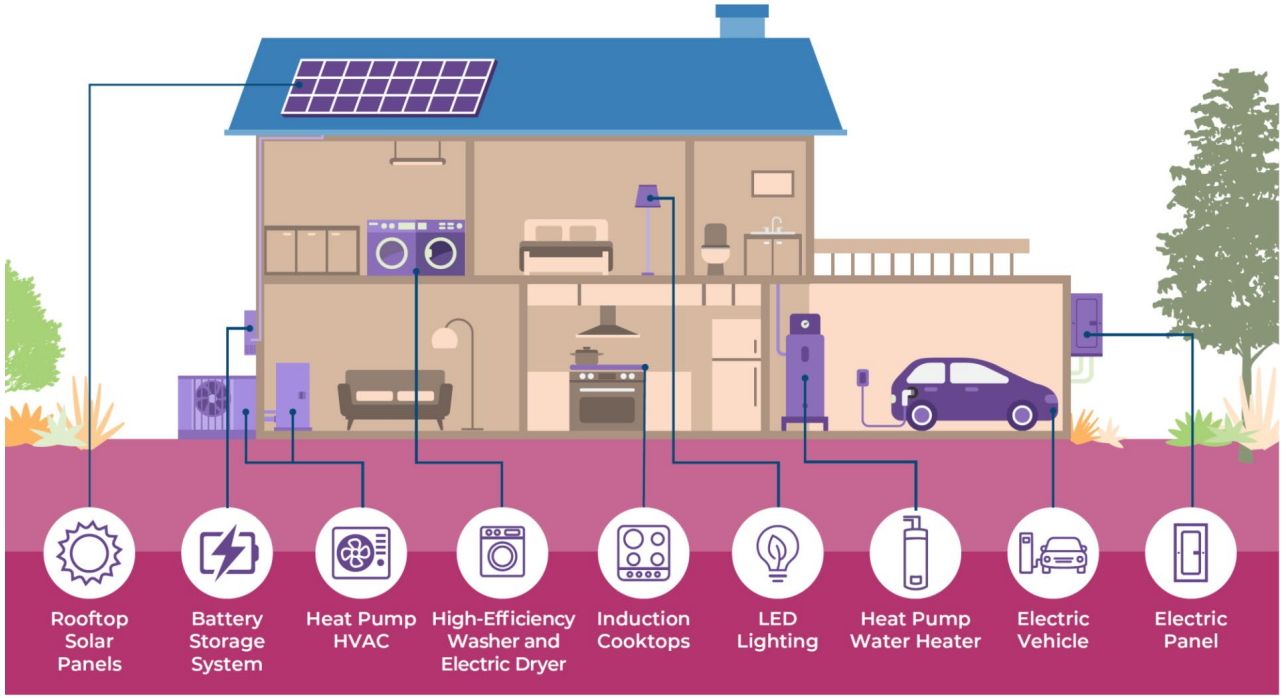
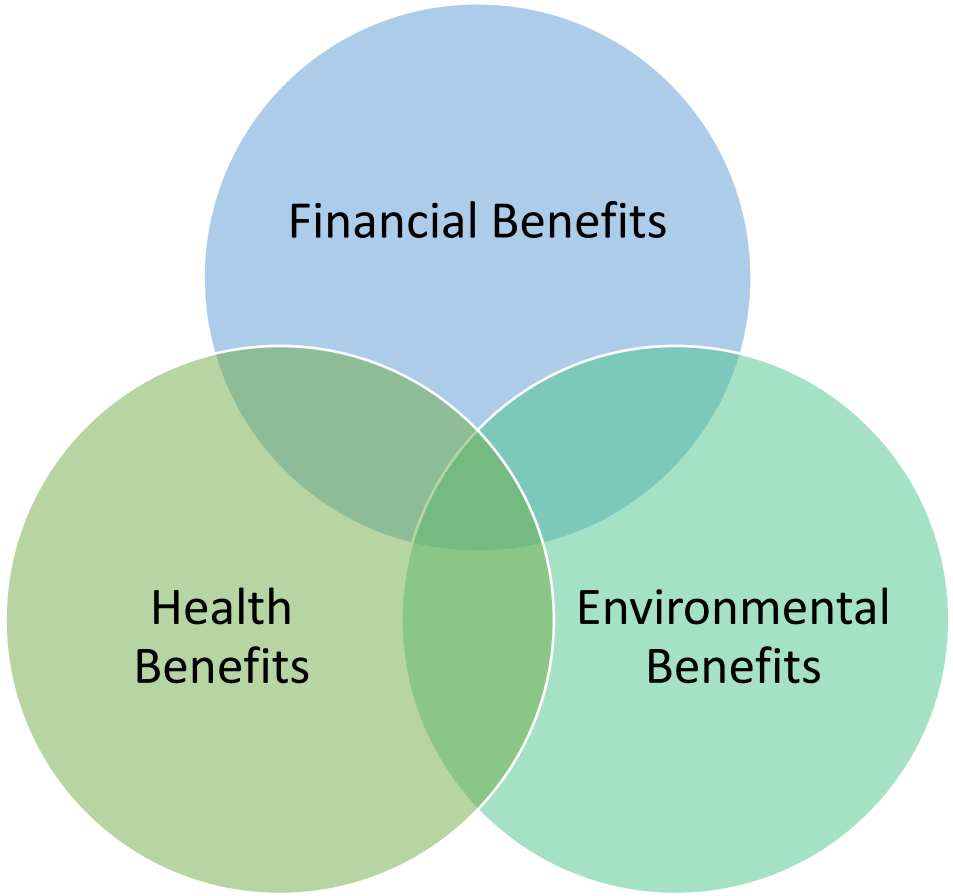


Photo Credit: City of Palo Alto Utilities

Why Building Decarbonization?

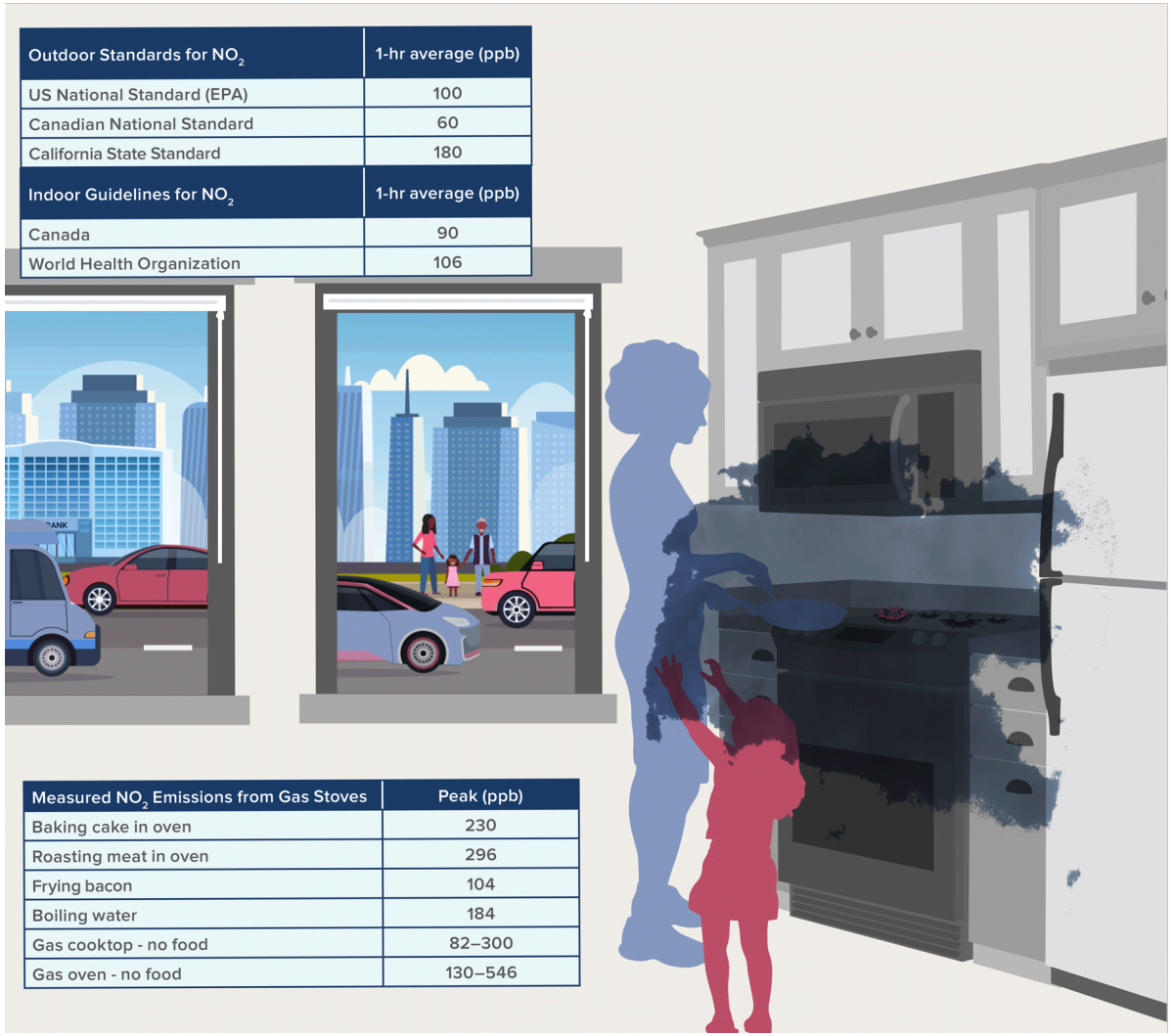
- Offers financial, health, and environmental benefits.
  - Better for indoor air quality
  - More efficient appliances save money
  - Electric appliances can be powered by clean energy (carbon-free/renewable)



Electrification

- Carbon-free
- Lowest-cost, lowest-risk pathway
- Healthier indoor air
- Job creation

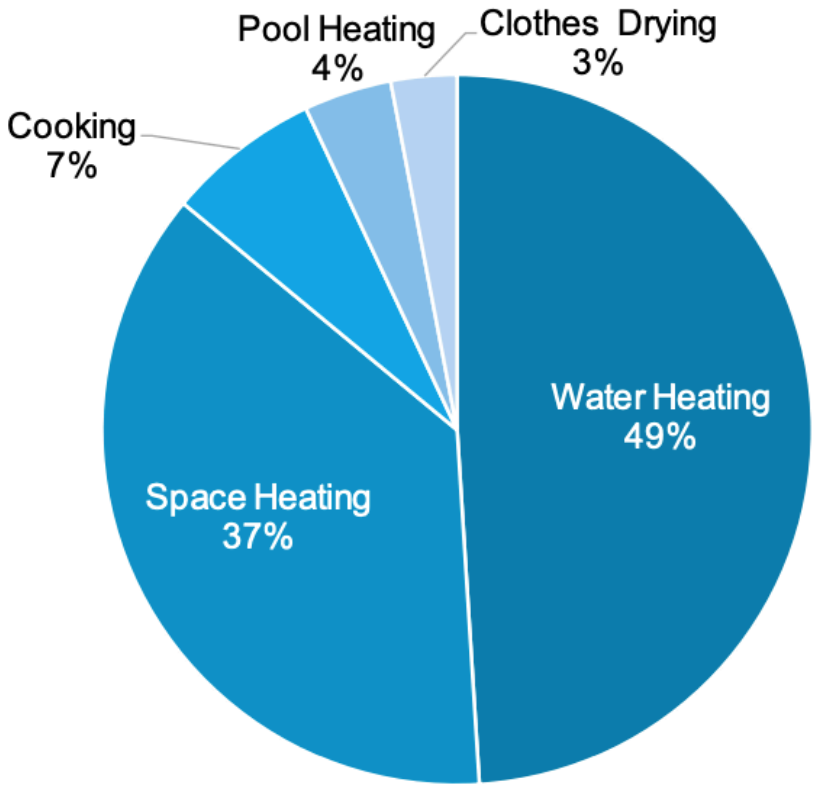
Outdoor Standards for NO_2	1-hr average (ppb)
US National Standard (EPA)	100
Canadian National Standard	60
California State Standard	180
Indoor Guidelines for NO_2	**1-hr average (ppb)**
Canada	90
World Health Organization	106



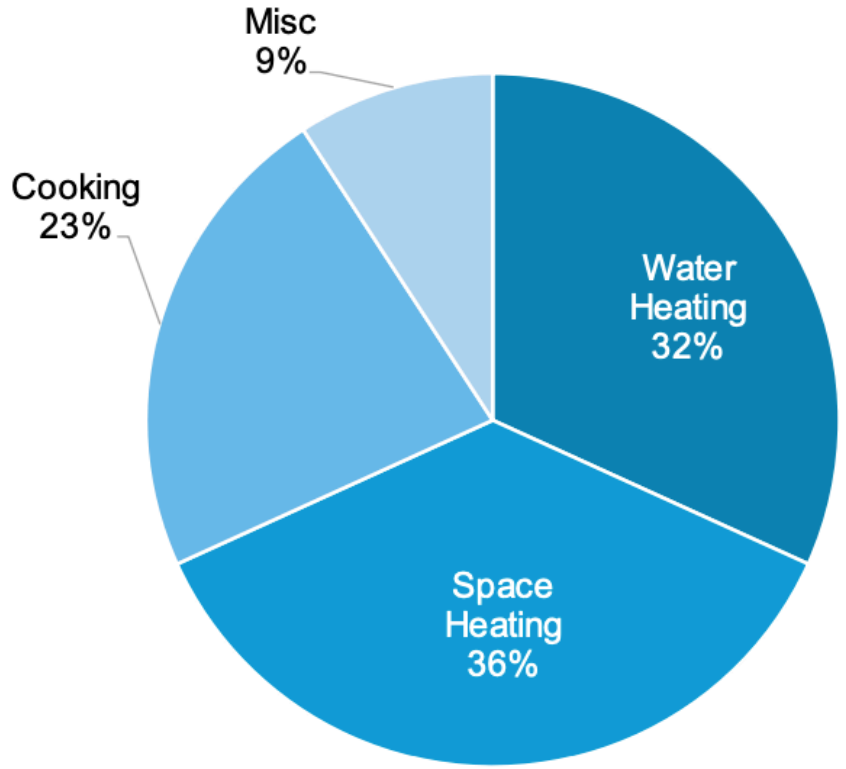
Measured NO_2 Emissions from Gas Stoves	Peak (ppb)
Baking cake in oven	230
Roasting meat in oven	296
Frying bacon	104
Boiling water	184
Gas cooktop - no food	82–300
Gas oven - no food	130–546

Sources: 1) https://rmi.org/insight/gas-stoves-pollution-health

California Buildings Gas Usage



Residential



Non- Residential

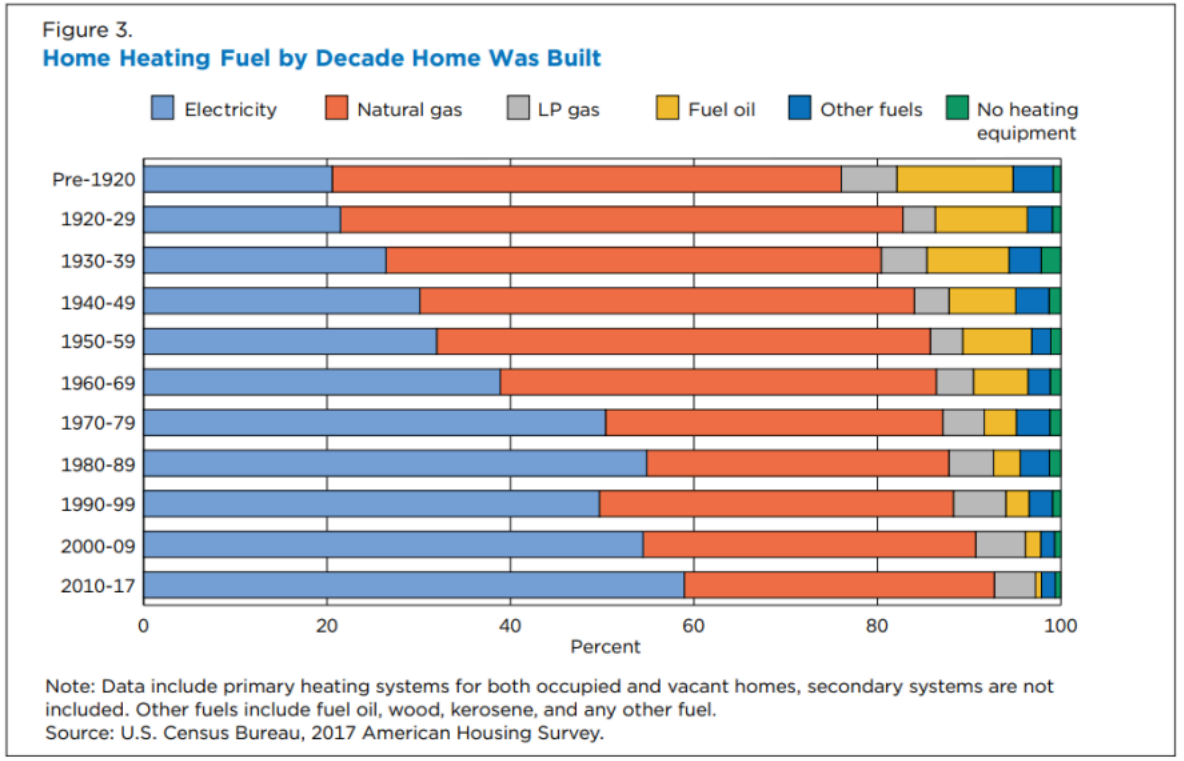
2009 Residential Appliance Saturation Survey

2006 California Commercial End Use Survey

Electric is already the majority

Of national new construction homes:

- 60% use electric space heating
  - 40% of which are heat pumps
- 55% use electric water heating
- 62% use electric cooking
- 75% use electric clothes drying



Sources: 1) 2017 American Community Survey 2) 2017 IEA Heat Pump Conference Proceedings

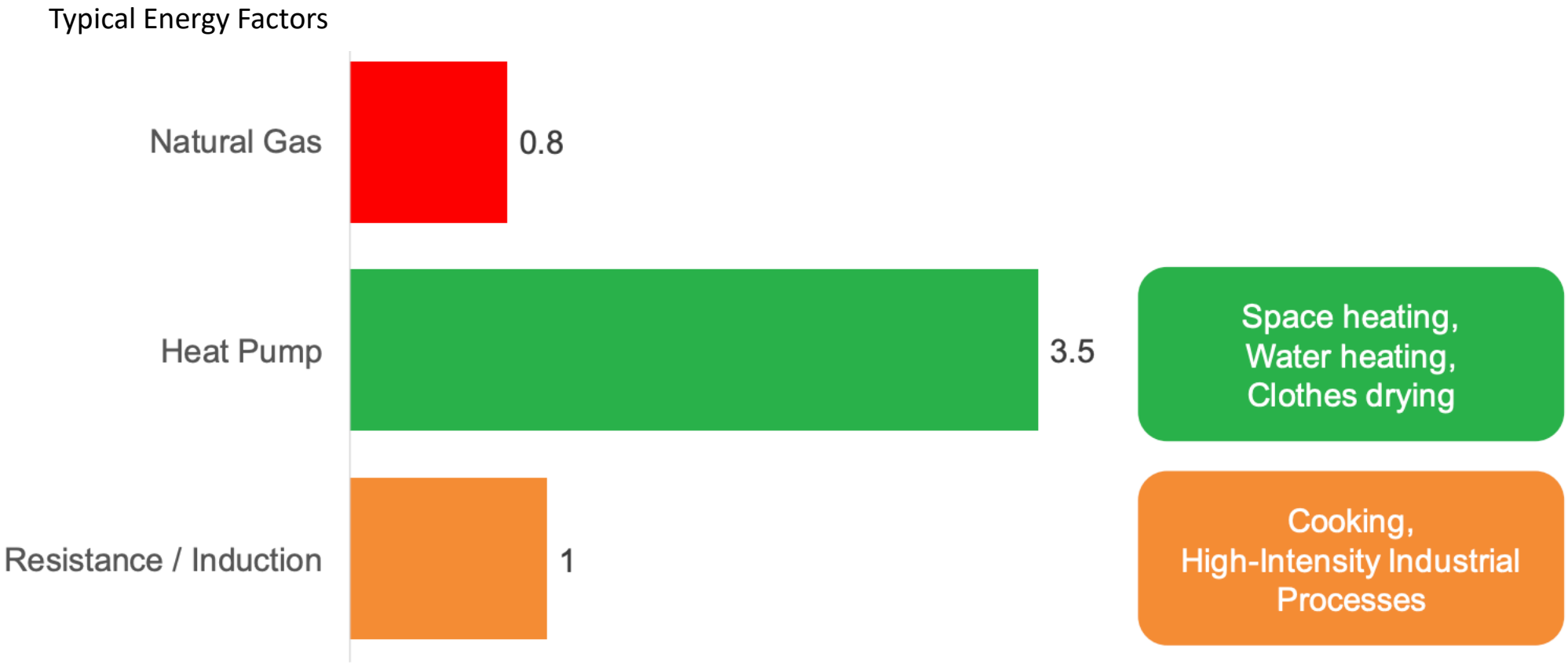
Equipment

	Space Heating	Water Heating	Cooking	Clothes Drying
Residential				
Commercial				

Source: BayAreaReachCodes.Org

Equipment Efficiency

Energy Efficiency Comparison of Technology



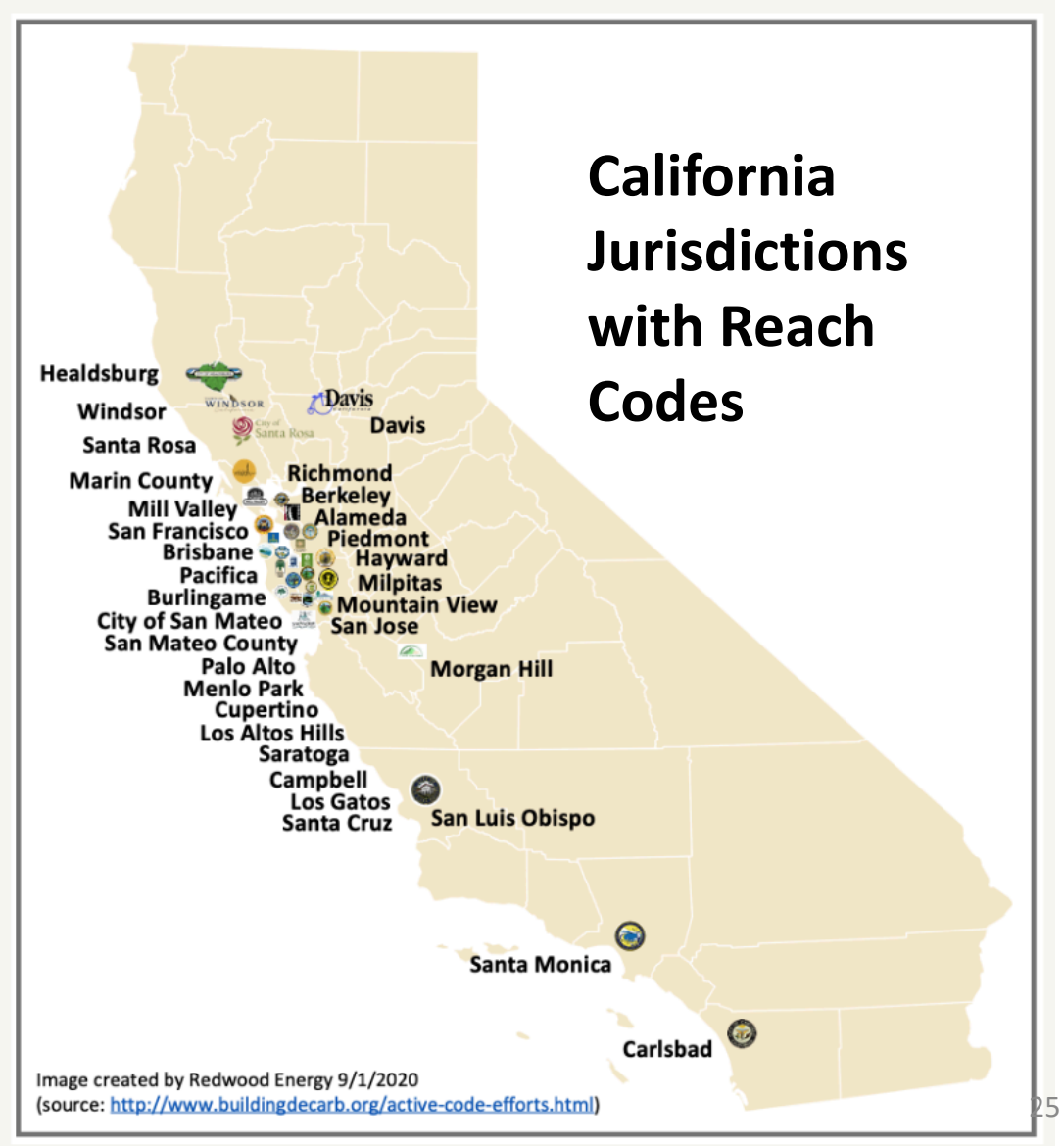
Source: BayAreaReachCodes.Org

AGENDA ITEM #4

Building and EV Reach Codes

Adoption of Decarbonization Reach Codes

- 54 California Jurisdictions (as of 12/10/21)
- Variety of policy approaches to reach codes:
  - All-Electric Only Whole Building
  - All-Electric Only Specific Systems
  - Electric-Preferred
  - Efficiency
  - Electric Vehicle Charging Infrastructure



Other Jurisdictions with Reach Codes

Crested Butte, Colorado

- All-electric requirements for new residential and commercial buildings
- EV charging requirements for new residential/commercial buildings and alteration projects
- Home Energy Assessment for existing residential buildings

Denver, Colorado

- Building Performance Standards for commercial and multifamily buildings.
- Electric space heating and water heating required during residential retrofits
- EV charging requirements for existing multi-family and commercial buildings
- Energy benchmarking for existing commercial and industrial buildings

Seattle, Washington

- Prohibits fossil fuel combustion or electric resistance appliances for purposes of space heating or domestic water heating for new commercial and multifamily buildings

AGENDA ITEM #5

2022 California Building Code Highlights

2022 California Energy Code: Highlights

New Construction

- **Heat pumps = prescriptive baseline**
  - Performance credit for all-electric design
- **Residential**
  - Pre-wiring for gas appliances
  - Higher ventilation rate for gas stoves
  - Energy storage readiness
- **Nonresidential**
  - Solar PV and Battery Storage prescriptive

Existing Buildings

- Restricts new electric resistance heating
- Simplified language for heat pump retrofits

EV Infrastructure: Terminology

Speed

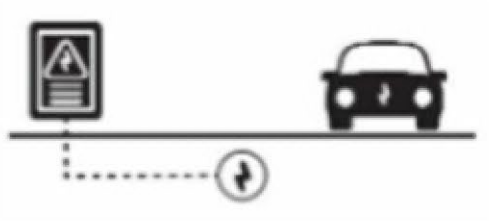
Level 1
3-4 miles per charging hour

Level 2
10-20 miles per charging hour

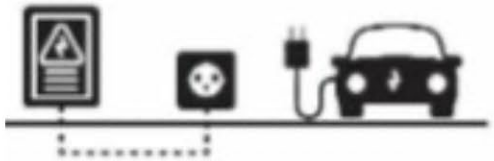
Level 3
150+ miles per charging hour

Readiness

EV **Capable**

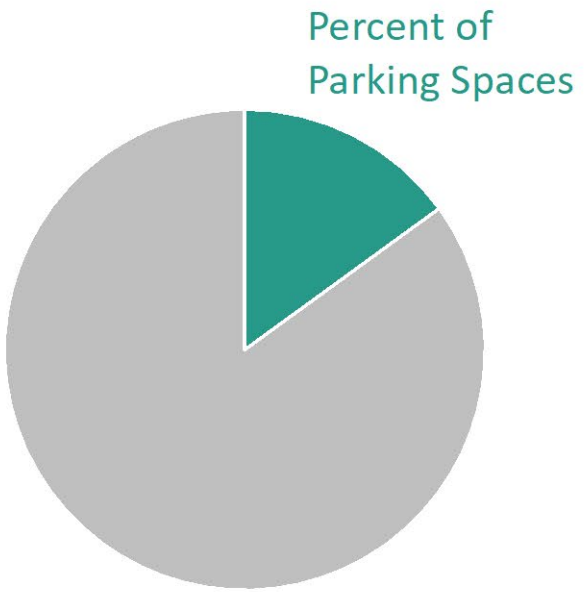


EV **Ready**



EV **Charging Station**

Number



Source: Bay Area Reach Codes Initiative

2022 CALGreen Code: Residential EV Highlights

New Residential Buildings

- **One-and Two-Family Homes, Town-homes with Private Garages**
  - All EV Capable, Raceway
  - Service Panel and/or Subpanel Capacity and Space(s)

- **Multi-Family, Hotels/Motels**
  - 10% EV Capable
  - 25% EV Ready
  - 5% buildings w/ 20+ units Level 2 EV Supply Equipment (EVSE)

Existing Residential Buildings

- **Multi-Family, Hotel/Motel Buildings**
  - 10% of new parking spaces EV Capable
  - 10% of altered spaces EV Capable

2022 CALGreen Code: Nonresidential EV Highlights

Total # Parking Spaces	Number of Required EV Capable Spaces	Number of Electric Vehicle Charging Stations (EVCS)
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

AGENDA ITEM #6

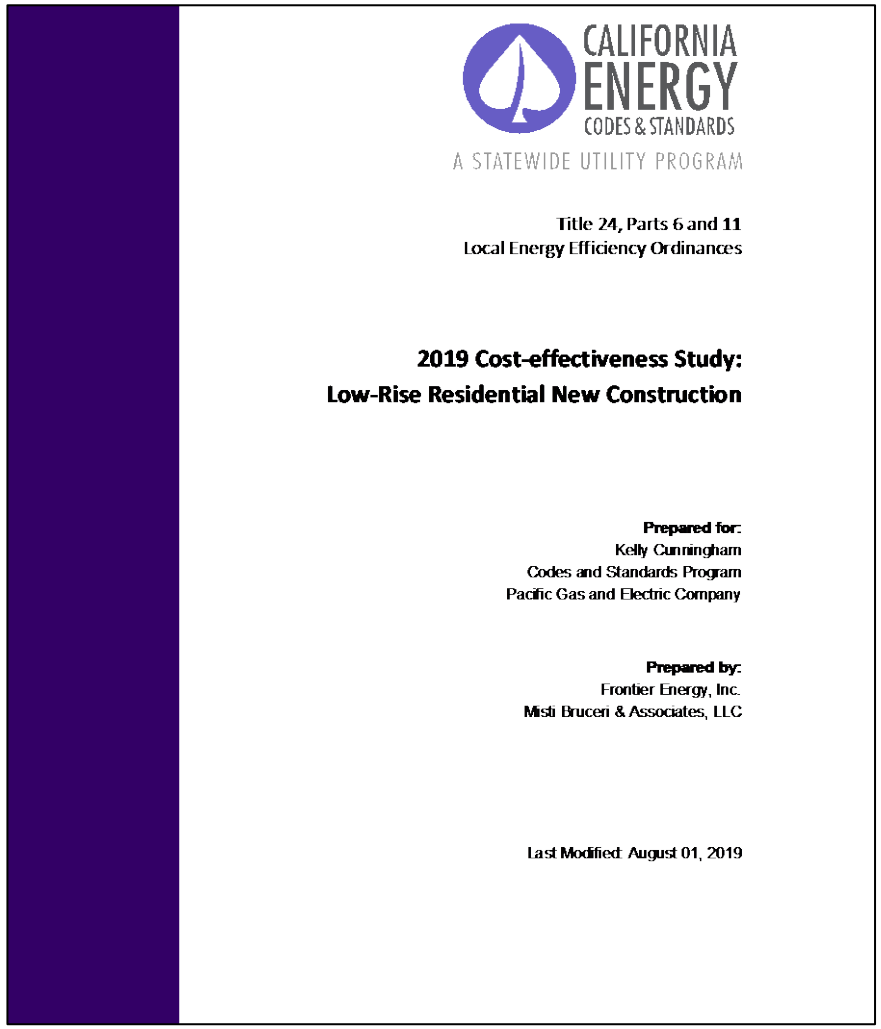
2022 Statewide Reach Codes Initiative

2022 Statewide Reach Codes Initiative

- Provides cost-effectiveness studies to support efficiency/electrification reach codes for new and existing buildings.
- Provides model codes to support jurisdictions in development of reach codes.
- CALGreen provides reach code language for green building provisions in voluntary appendices (Tier 1 and Tier 2).

Cost-Effectiveness Study Overview

- C/E Study required for local amendments to California Energy Code
- Two methodologies
  - “On-bill” (individual consumer, utility rates)
  - ”Time Dependent Valuation” (code, societal)
- Jurisdiction determines if reach code is C/E
- May not preempt Federal appliance standards


CALIFORNIA ENERGY CODES & STANDARDS

A STATEWIDE UTILITY PROGRAM

Title 24, Parts 6 and 11
Local Energy Efficiency Ordinances

2019 Cost-effectiveness Study:
Low-Rise Residential New Construction

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

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

Last Modified: August 01, 2019

Triggers & Buildings Impacted by Reach Codes

Triggers

- New Construction
- Existing Buildings
  - Upon appliance replacement
  - During retrofits
  - At Time of Sale
  - Date Certain

Building Types Impacted

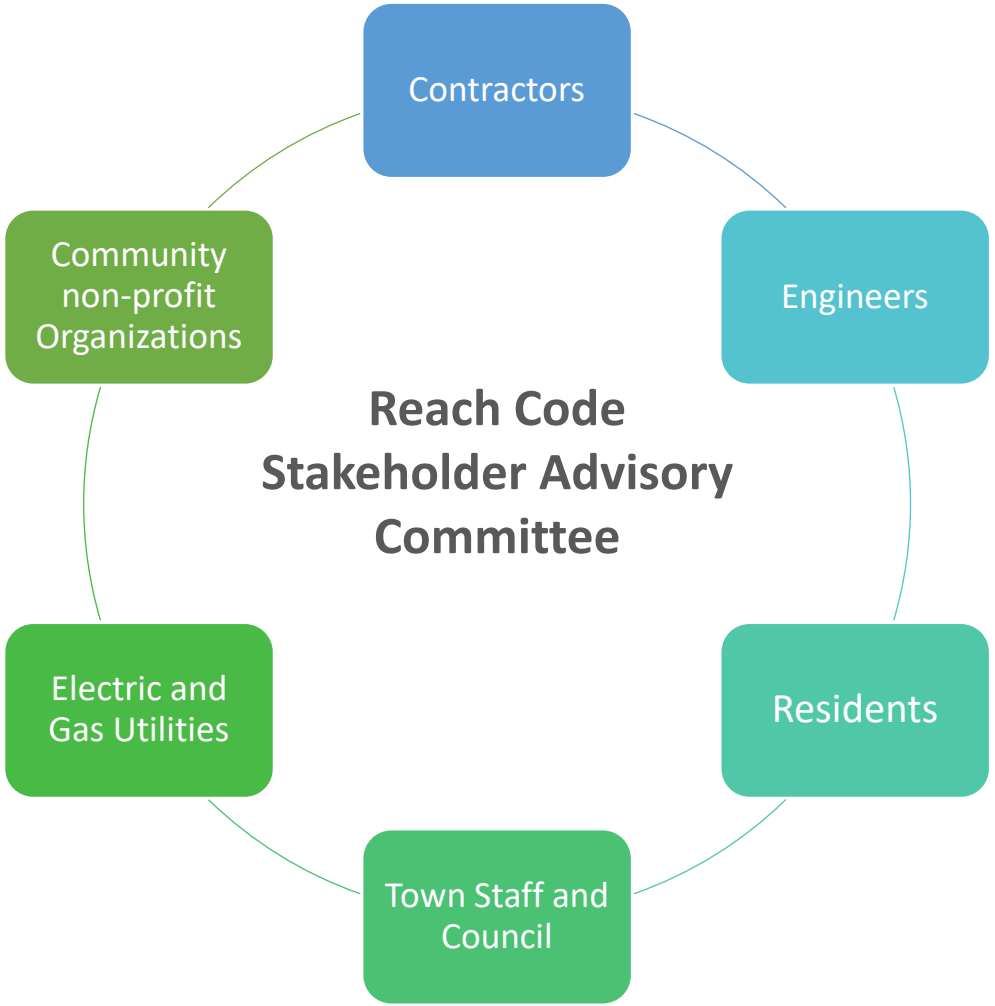
- Residential Single-family and ADUs
- Multi-family
- Non-residential
  - Hotel
  - Office
  - Retail
  - Restaurant

Exemptions Allowed

AGENDA ITEM #7

Reach Code Strategy

Stakeholder Engagement



- Regular meetings to identify direction of ordinance criteria.
- Reviewed potential model codes for building and EV reach codes.
- Discussed potential exemptions.
- Provided feedback on approaches.

Reach Code Stakeholder Advisory Committee

Committee Member	Affiliation
Jan Zabriskie	TOT Councilmember
Anna Klovstad	TOT Councilmember
Steven Keates	Truckee Donner Public Utility District
Breanna Kelley	Liberty Utilities
Matt Helmers	Southwest Gas
Patrick Flora	Contractors Association of Truckee Tahoe
Kristi Thompson	MWA Inc, Architecture-Engineering
Mark Schlosser	Sugarpine Engineering
Ken Bousquet	Sugarpine Engineering
Alondra Delgadillo	Sierra Community House
Blake Herrschaft	Peninsula Clean Energy
Mark Zimring	Community at Large
Jen Carlile	Community at Large
Denyelle Nishimori	TOT Staff
Hilary Hobbs	TOT Staff
Mike Ross	TOT Staff
Sara Sherburne	TOT Staff

Climate Zone 16 Characteristics

- Covers large area of California
- Climate mostly cold, summer temperatures can be mild
- Temp varies tremendously with slope orientation/elevation
- Cool temps/snow cover predominate over half of the year
- Most extreme range of temperatures

Truckee Climate Characteristics

- Average annual snowfall around 201”
- Average January low of 14 degrees
- Steady warming trend for the region
- Solar PV High Snow Load and Shading Exceptions

Truckee Building Permit Data

Building Permit Applications Last Two Years (2020-2021)

- New Residential Construction Permits = 116
- Existing Residential Permits = 251
- New Commercial Construction Permits = 7
- Existing Commercial Permits = 38
- Photovoltaic (PV) Permits = 43

Total Projects in Planning Entitlement

- 70 projects in entitlement.

Reach Code Policy Considerations

The Town is considering the following energy efficiency or fuel requirement reach codes:

- Energy efficiency upgrades for existing residential and commercial buildings
- Whole-building energy reach code for new residential and commercial buildings
- EV charging requirements for existing residential and commercial buildings
- EV charging requirements for new residential and commercial buildings
- Energy benchmarking requirements for existing commercial buildings

Reach Code Policy Considerations

- **Reach Code Approach for New Buildings**
  - All-Electric
  - Electric Preferred
  - Electric Only Plus Efficiency
  - Efficiency
  - EV Charging

- **Reach Code Approach for Existing Buildings**
  - Efficiency
  - EV Charging

- **Applicable Systems and Appliances**
  - Whole Building
  - Specific Appliances
    - Heat Pump Water Heater
    - Cooking Appliance
    - Electric Dryer
    - Heat Pump Space Heating and Cooling

Reach Code Policy Considerations

- **Building Types Impacted**
  - Residential
    - Single-family, ADUs
    - Multi-family
  - Non-residential
    - Hotel
    - Office
    - Retail
    - Restaurant
- **Potential Exemptions**
  - By building occupancy
  - By appliance type
  - By % of remodel
  - For backup power and backup heat sources

Potential New Building Reach Code Exceptions

- Emergency backup power and backup heat sources
- New swimming pools and spas
- Water heating or space heating in ADUs
- Outdoor BBQs
- Commercial kitchens
- Hotels/motels w/ 80+ guestrooms may use gas for commercial clothes drying
- Multi-family projects w/ entitlement may use gas water heating

When combustion equipment is allowed, require electric ready.

Potential Existing Building Reach Code Exceptions

- Backup power/backup heat sources
- Subsidized Housing
- In-lieu fees
- HOA conflicts
- Mobile homes, Manufactured Housing or Factory-built Housing
- When scope consists of specific scenarios

Potential Electric Vehicle Reach Code Exceptions

- Areas served by parking lifts
- Local utility power supply infeasibility
- Increases to construction cost
- 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
- Multifamily w/ approved entitlements

AGENDA ITEM #8

Q&A Discussion

Next Steps

- Town to host community meeting #2 virtually. (September 28, 2022)
- Develop code recommendation based on statewide model code language and community and industry feedback. (ongoing)
- State finalizes the cost-effectiveness studies. (September 2022)
- Town Council to provide direction on policy recommendations. (October 2022)
- Consider draft reach code ordinance (November 2022)
- Undergo state approvals and begin local enforcement.

THANK YOU.

Questions or comments?

Please send to Sara Sherburne, Sustainability Program Analyst

ssherburne@townoftruckee.com / 530-582-5329