



# Proposed Reach Codes for the 2022 Building Code Cycle

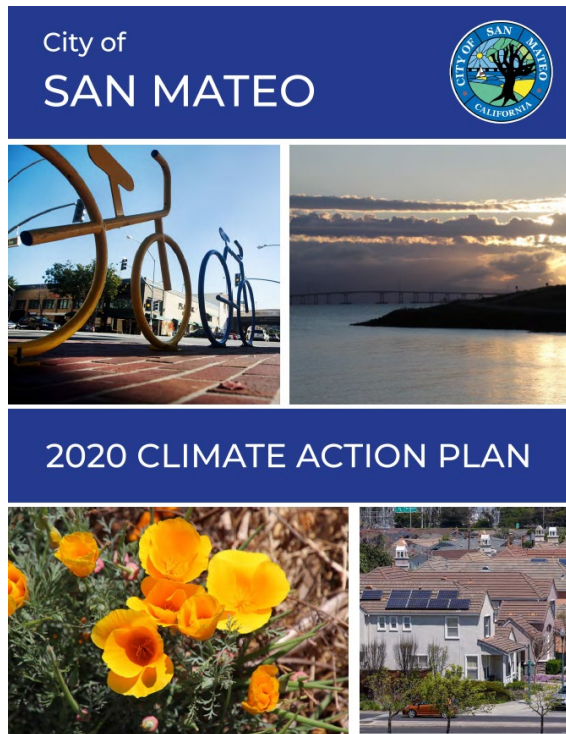
September 19, 2022

Andrea Chow, Sustainability Analyst

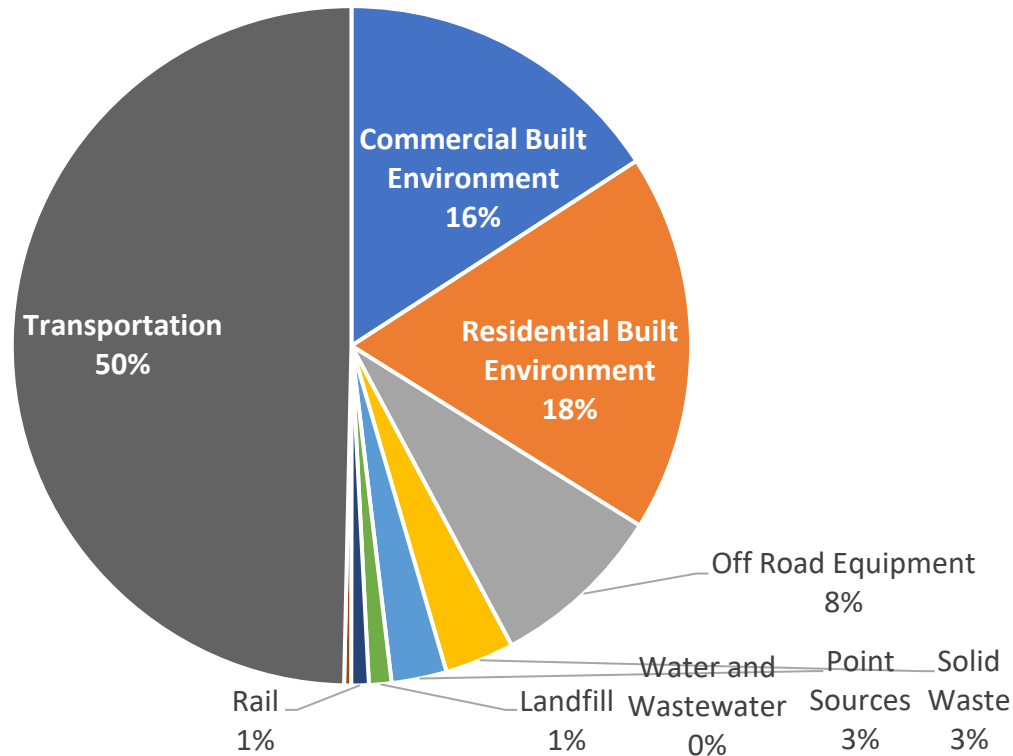
# Agenda

- 1) Background
- 2) New Construction: Proposed Reach Codes
- 3) Existing Buildings: Proposed Reach Codes

# Background

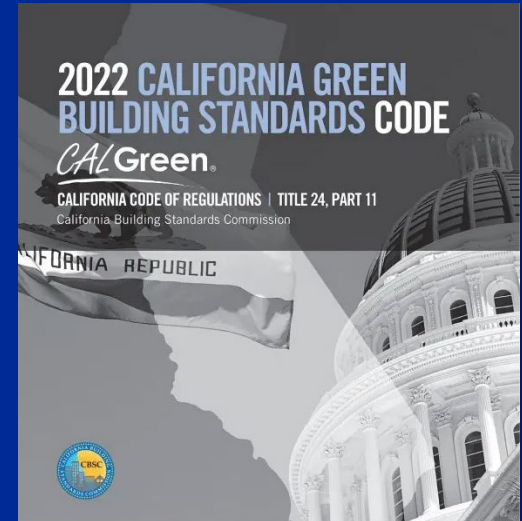


## 2017 Greenhouse Gas Emissions Inventory



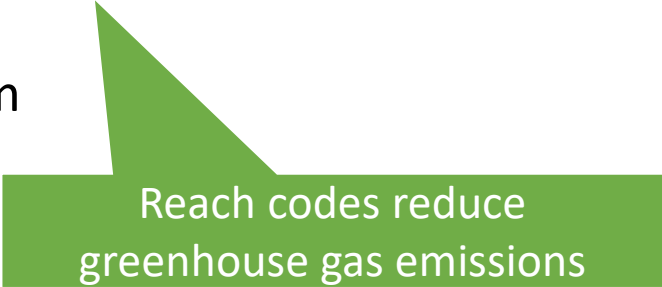
# What are Reach Codes?

- Local amendments to the Building Code that reach above the state requirements
- The building code is updated on a three-year code cycle
- Current code cycle:
  - January 1, 2020- December 31, 2022
- Upcoming code cycle:
  - January 1, 2023 – December 31, 2025



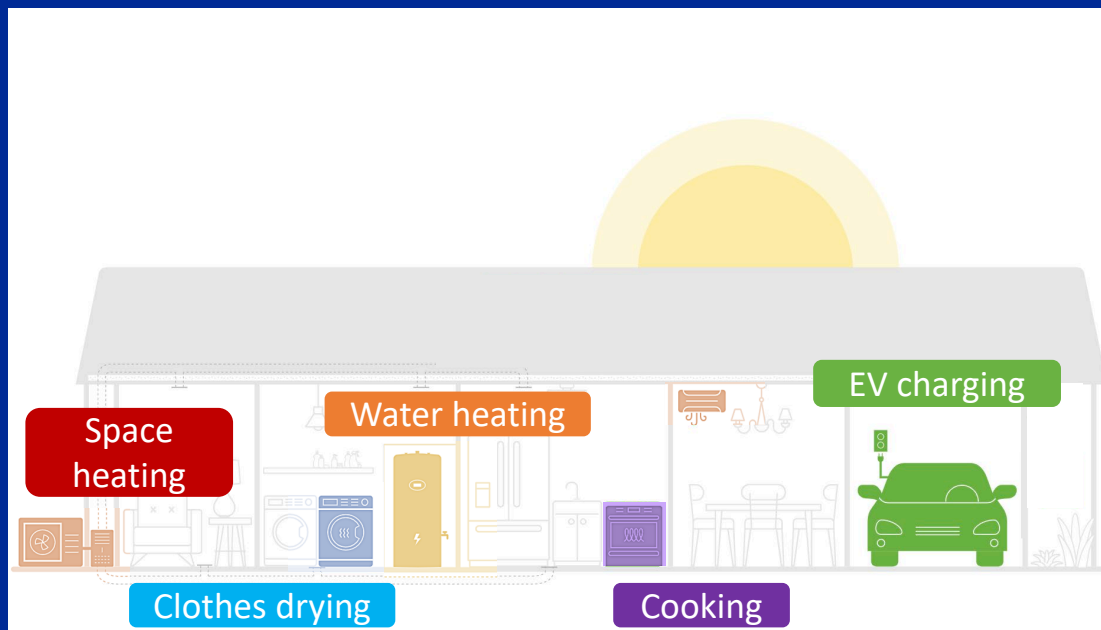


- Peninsula Clean Energy is San Mateo County's not for profit locally-led electricity provider
- **Mission:** To reduce greenhouse gas emissions by expanding access to sustainable and affordable energy solutions
- Leading the Bay Area Reach Codes team

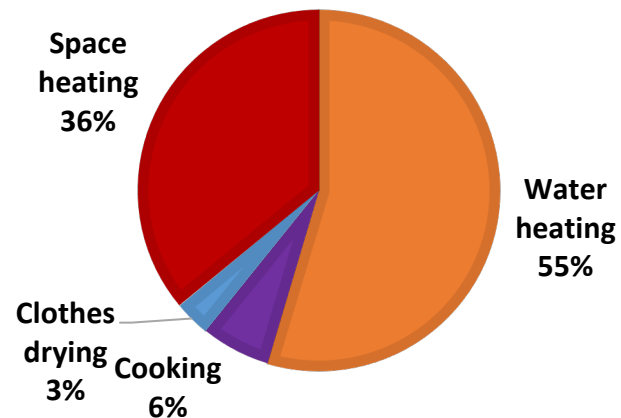
A green callout box with a triangular pointer on the left side, pointing towards the text.

Reach codes reduce  
greenhouse gas emissions

# Building Electrification



## AVERAGE FOSSIL GAS USE



# Electrification and Resilience

## Heat Pump Space Heating



Gas furnaces require electric fans, but fireplaces still work.

## Heat Pump Water Heating



Gas water heaters require electronic ignition or pumps

## Induction Cooking



Gas stoves will work without electricity, but it's unsafe

## Electric Clothes Drying



Gas dryers use electric motors to run tumbler



# EV Charging

- 50% of community emissions are related to transportation
- State will require all new passenger cars be zero-emission in 2035
- At-home charging is specifically important

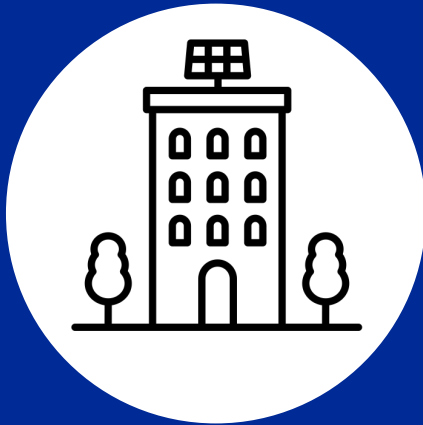


# New Construction: Proposed Reach Codes

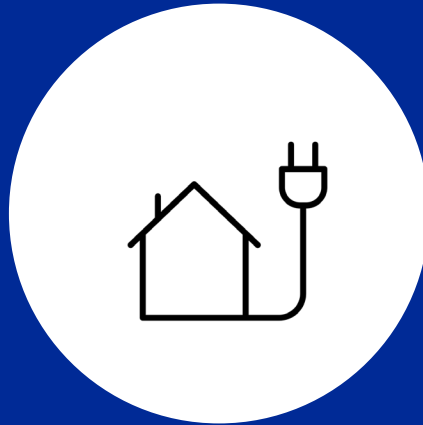
# Current Reach Codes for New Construction

## January 1, 2020 – December 31, 2022

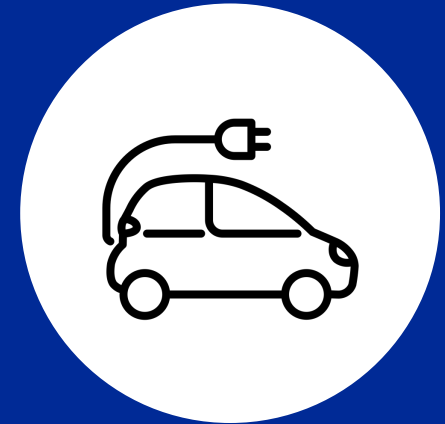
Solar



Building  
Electrification



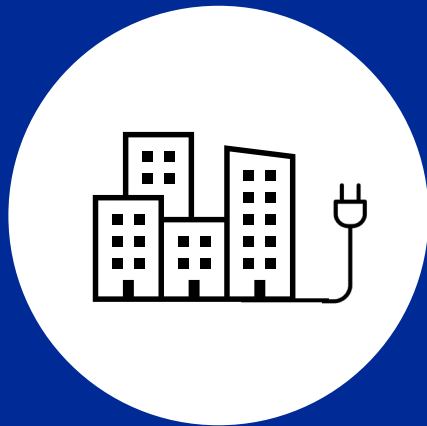
Electric Vehicle  
Readiness



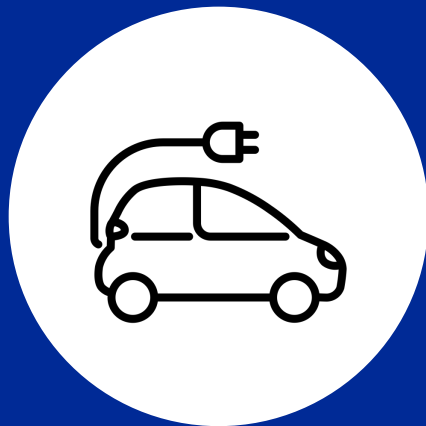
# Proposed Reach Codes for New Construction

## January 1, 2023 – December 31, 2025

Building  
Electrification



Electric Vehicle  
Readiness

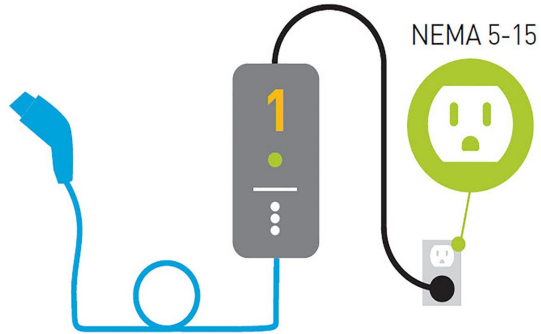


# All-Electric New Construction

<b>Current reach code (expires December 31, 2022)</b>	<b>Proposed reach code requirement (January 1, 2023 – December 31, 2025)</b>
Requires all residential buildings and buildings with office use to be all-electric	Requires all new construction to be all-electric. Commercial kitchens and hotel/motel laundry services would be exempt from this requirement. Staff recommend adding exception language for space conditioning for buildings with biotech laboratories use.

# EV Infrastructure Terminology

Level 1: 110V



Level 2: 240V

May require service upgrade

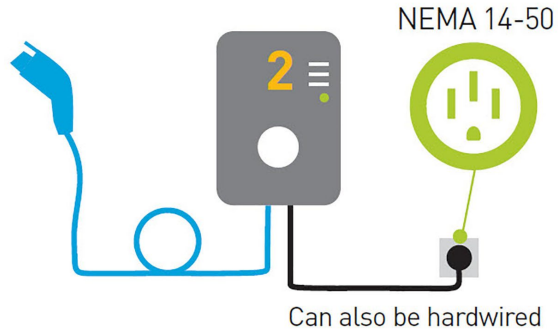


Image Credit: [https://www.pge.com/en\\_US/residential/solar-and-vehicles/options/clean-vehicles/electric/charger-options/electric-vehicles-charging-pge.page](https://www.pge.com/en_US/residential/solar-and-vehicles/options/clean-vehicles/electric/charger-options/electric-vehicles-charging-pge.page)



Main Street Garage

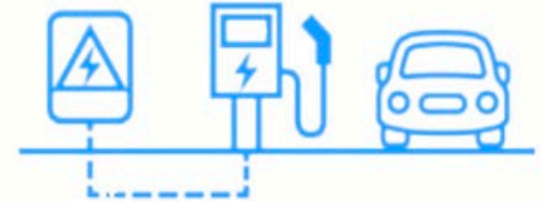
# EV Infrastructure Terminology



**EV Capable**



**EV Ready**



**EV Charging Space  
EVSE Installed**

Image credit: <https://cleanenergy.org/blog/ev-readiness-and-why-we-need-it-now/>

# Enhanced EV Requirements for New Construction

Impacted buildings	Current reach code (expires December 31, 2022)	Proposed reach code requirement (January 1, 2023 – December 31, 2025)	
Single family homes and two-family townhomes	One Level 2 EV Ready space per dwelling unit	One Level 2 EV Ready per dwelling unit; One Level 1 EV Ready space if second space provided	
Multifamily buildings	15% Level 2 EV Capable	<b>OPTION A</b> 40% Level 2 EVCS 60% Level 1 Ready Total: 100% of dwelling units with spaces  <b>OPTION B</b> 15% Level 2 EVCS 85% Level 2 Ready (low-power) Total: 100% of dwelling units with spaces	<u>Affordable Housing</u> 15% Level 2 EVCS 25% Level 2 Ready (low-power) 60% Level 1 EV Ready Total: 100% of dwelling units with spaces
Non Residential buildings	5% Level 2 EVCS 10% Level 2 EV Capable <i>Total: 15% of spaces</i>	<u>Office Use</u> 20% Level 2 EVCS 30% Level 2 EV Capable Total: 50% of spaces	<u>All Other Uses</u> 10% Level 2 EVCS 10% Level 2 EV Capable Total: 20% of spaces



# Multifamily EV Reach Code Options

## **OPTION A**

40% Level 2 EVCS

60% Level 1 Ready

Total: 100% of dwelling units  
with spaces

## **OPTION B**

15% Level 2 EVCS

85% Level 2 Ready (low-  
power)

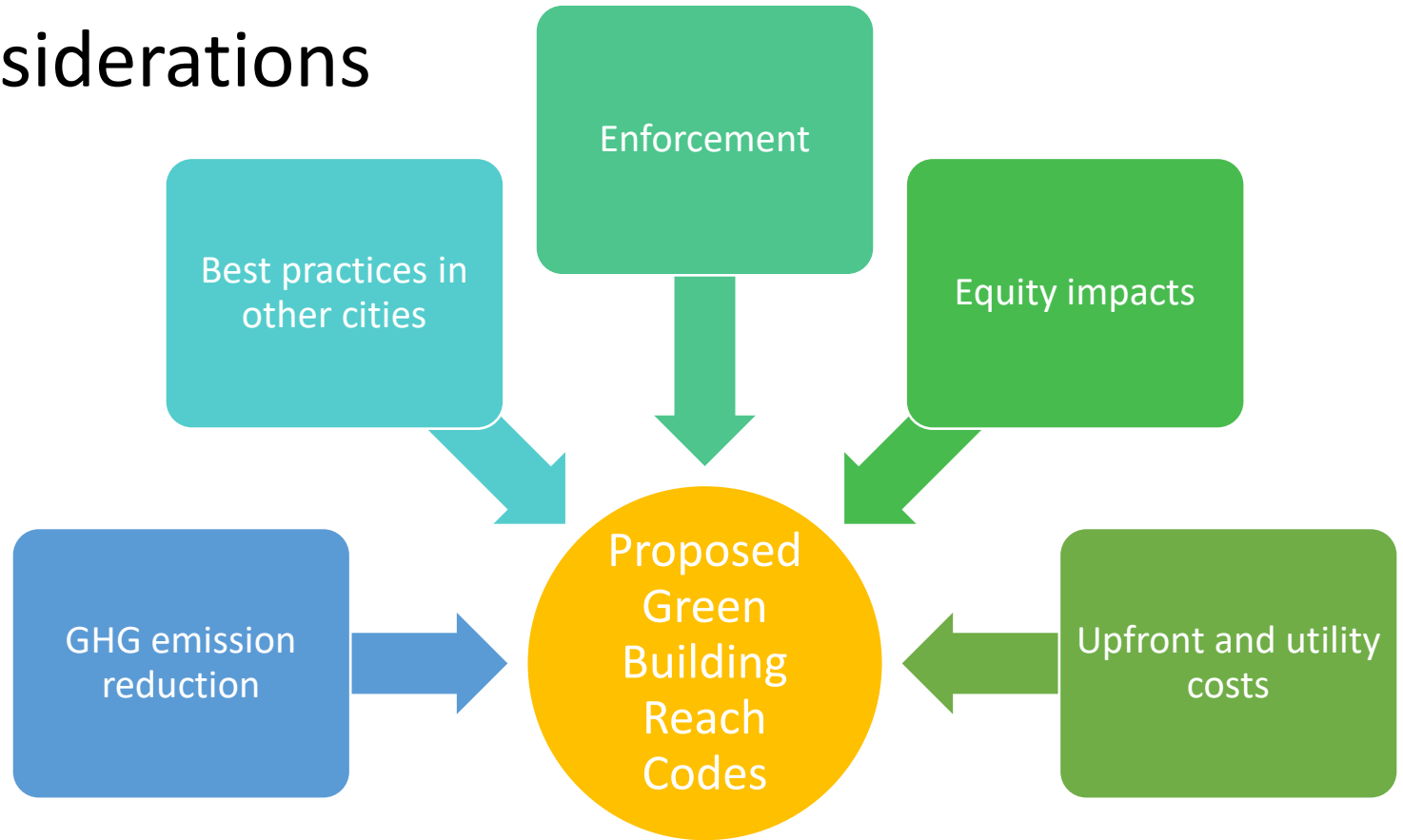
Total: 100% of dwelling units  
with spaces

# Existing Buildings: Proposed Reach Codes

# Reach Codes for Existing Buildings

- Developed in collaboration with PCE
- Would be effective January 1, 2023 – December 31, 2025
- Enforced at time of permit
- Focus on building electrification

# Policy Considerations



# Reach Code Option 1

## Panel capacity for future electrification

<b>Impacted buildings</b>	Residential buildings
<b>Trigger</b>	Electric panel replacement or upgrade
<b>Reach code requirement</b>	Panel capacity and reservation of breaker space for future electrification
<b>GHG impact</b>	Electric-readiness
<b>Upfront Cost</b>	Add \$0

# Reach Code Option 2

## Outlets installed during kitchen or laundry room renovations

Impacted buildings	Single family homes and duplexes
Trigger	Kitchen or laundry room renovations
Reach code requirement	Installation of outlet for the use of future electric appliances
GHG impact	Electric-readiness
Upfront Cost	Add \$500-\$2,000

# Reach Code Option 3

## Heat pump air conditioning

<b>Impacted buildings</b>	Single family homes and duplexes
<b>Trigger</b>	New installation or replacement of existing air conditioner and gas furnace
<b>Reach code requirement</b>	Installation of a heat pump space conditioning
<b>% of household fossil gas use</b>	Space heating = 36%
<b>Upfront cost</b>	Add \$1,500
<b>Monthly utility bill impact</b>	Save \$10 – add \$11

# Reach Code Options 4A

## Electric/solar water heating for pools

<b>Impacted buildings</b>	Residential buildings
<b>Trigger</b>	Installation of new pools
<b>Reach code requirement</b>	Installation of electric or solar pool heating
<b>% of household fossil gas use</b>	Pool water heating = 4%
<b>Upfront cost</b>	Add \$800-\$1,300
<b>Monthly utility bill impact</b>	Save \$8.75



# Reach Code Options 4B

## Pool and outdoor equipment

<b>Impacted buildings</b>	Residential buildings
<b>Trigger</b>	New pools and/or new fuel gas infrastructure for outdoor fire pits/ kitchens
<b>Reach code requirement</b>	Prohibition of fuel gas infrastructure into the backyard for uses such as fire pits, grills and pools
<b>% of household fossil gas use</b>	Pool water heating = 4%
<b>Upfront cost</b>	Add \$800-\$1,300
<b>Monthly utility bill impact</b>	Save \$8.75

# Reach Code Option 5

## Heat pump water heater

Impacted buildings	Single family homes and duplexes
Trigger	Addition or alteration project that includes water heater replacement
Reach code requirement	Installation of a heat pump water heater
% of household fossil gas use	Water heating = 55%
Upfront cost	Add \$1,500 - \$4,500
Monthly utility bill impact	Savings or no impact

# Existing Buildings: Reach Code Options

- 1) Electric-readiness: panel capacity
- 2) Electric-readiness: outlets installed
- 3) Heat pump air conditioning
- 4) Pools and outdoor equipment
  - A. Requires electric or solar heated pools
  - B. Prohibit extension of gas infrastructure for pools, fire pits, grills, etc.
- 5) Heat pump water heaters

# Existing Building Decarbonization Ordinance

Four main elements:

- 1) Establishes a date to require electric appliances upon appliance replacement,
- 2) Requires electric-readiness during appliance replacements,
- 3) Requires fossil fuel disclosure during sale of property, and
- 4) Establishes a date for termination of fuel gas infrastructure.

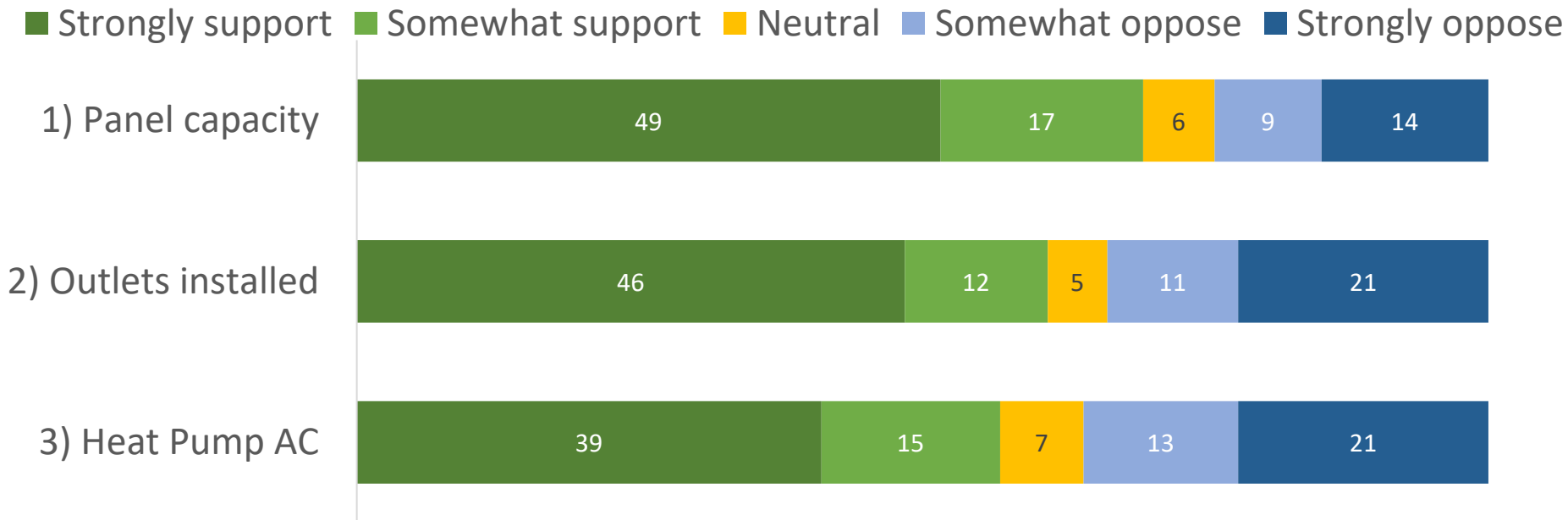
# Decarbonization Strategy

- City intends to develop a strategic roadmap to decarbonize our community and evaluate/establish an “End of Flow” target date
- Possible approaches for implementation:
  - Existing Building Decarbonization Ordinance
  - Partnerships focused on electrification in low-income households
  - Financing and rebates for electrification
  - Home energy assessments
  - Commercial building performance standards
  - Carbon neutrality policy

# August 30, 2022 Virtual Community Meeting

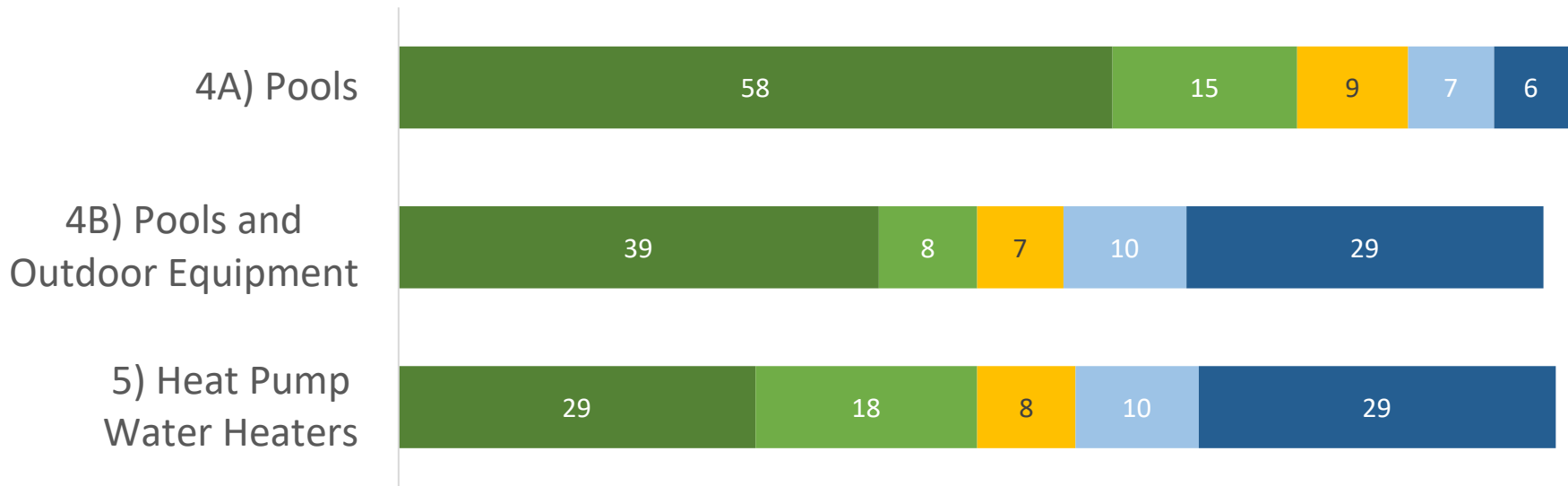
- 35 people attended
- Overall, most poll respondents expressed strong support for adoption of all of the reach code options for existing buildings
- Most attendees thought reach code options for existing buildings do not go far enough
- Most comments expressed support for the San Mateo Climate Action Team advocacy group's approach

# Online Survey Results



# Online Survey Results (continued)

■ Strongly support ■ Somewhat support ■ Neutral ■ Somewhat oppose ■ Strongly oppose





# Online Survey Results (continued)

- Most respondents are somewhat concerned or very concerned about climate change (83%)
- Most respondents live in San Mateo (69%) or live and work in San Mateo (21%)
- Most own their own home (91%)
- Do you think these green building reach code options...
  - Do not go far enough (24%)
  - Help reduce GHGs (32%)
  - Go too far (35%)
  - Not sure (8%)

# Regional, State and Federal Decarbonization Efforts

## Gas appliance restrictions - BAAQMD

- Res gas water heaters after January 1, 2027
- Res/commercial gas furnaces after January 1, 2029
- Commercial gas water heaters/boilers after January 1, 2031

## Gas appliance restrictions - CARB

- 100% of appliance sales be electric by 2035

## Rebates/incentives - IRA

- Tax credits: up to \$2000 for heat pumps
- \$4.5B for up to \$14,000 in rebates for electric appliances

## Rebates/incentives – PCE/BayREN

- Heat pump space heaters \$3,500
- Heat pump water heaters \$3,000
- Electric dryer \$300
- Induction cooktop \$750

# Process and Next Steps



# Feedback and direction

## NEW CONSTRUCTION

- All-electric buildings
- EV charging infrastructure
  - Multifamily Option A vs. Option B

<u>OPTION A</u>	<u>OPTION B</u>
40% Level 2 EVCS 60% Level 1 Ready	15% Level 2 EVCS 85% Level 2 Ready (low-power)

## EXISTING BUILDINGS

- Reach Code Options
  - 1) Electric-readiness: panel capacity
  - 2) Electric-readiness: outlets installed
  - 3) Heat pump air conditioning
  - 4) Pools and outdoor equipment
    - A. Requires electric or solar heated pools
    - B. Prohibit extension of gas infrastructure for pools, fire pits, grills, etc.
  - 5) Heat pump water heaters
- Decarbonization Strategy

# Thank You

Andrea Chow

Sustainability Analyst, City Manager's Office

[achow@cityofsanmateo.org](mailto:achow@cityofsanmateo.org)

# Proposed Reach Code All-electric New Construction

## Proposed reach code requirement (January 1, 2023 – December 31, 2025)

Requires all new construction to be all-electric. Commercial kitchens and hotel/motel laundry services would be exempt from this requirement. Staff recommend adding exception language for space conditioning for buildings with biotech laboratories use.

# Proposed Reach Code: EV Charging New Construction

Impacted buildings	Proposed reach code requirement (January 1, 2023 – December 31, 2025)	
Single Family and Two-Family Townhomes	One Level 2 EV Ready per dwelling unit; One Level 1 EV Ready space if second space provided	
Multifamily	<p><b>OPTION A</b></p> <p>40% Level 2 EVCS 60% Level 1 Ready Total: 100% of dwelling units with spaces</p> <p><b>OPTION B</b></p> <p>15% Level 2 EVCS 85% Level 2 Ready (low-power) Total: 100% of dwelling units with spaces</p>	<p><u>Affordable Housing</u></p> <p>15% Level 2 EVCS 25% Level 2 Ready (low-power) 60% Level 1 EV Ready Total: 100% of dwelling units with spaces</p>
Non Residential	<p><u>Office Use</u></p> <p>20% Level 2 EVCS 30% Level 2 EV Capable Total: 50% of spaces</p>	<p><u>All Other Uses</u></p> <p>10% Level 2 EVCS 10% Level 2 EV Capable Total: 20% of spaces</p>

# Multifamily EV Reach Code Options

## **OPTION A**

40% Level 2 EVCS

60% Level 1 Ready

Total: 100% of dwelling units  
with spaces

## **OPTION B**

15% Level 2 EVCS

85% Level 2 Ready (low-  
power)

Total: 100% of dwelling units  
with spaces



# Existing Buildings: Reach Code Options

- 1) Electric-readiness: panel capacity
- 2) Electric-readiness: outlets installed
- 3) Heat pump air conditioning
- 4) Pools and outdoor equipment
  - A. Requires electric or solar heated pools
  - B. Prohibit extension of gas infrastructure for pools, fire pits, grills, etc.
- 5) Heat pump water heaters