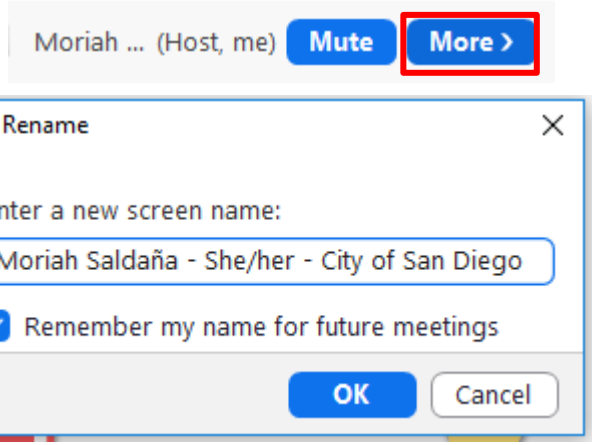
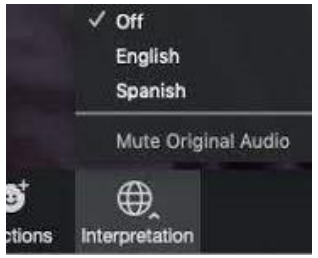
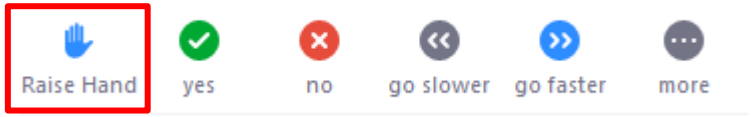
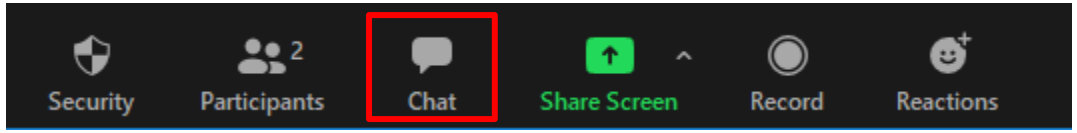
Proposed Reach Code: Building Electrification and EV Charging Infrastructure

Shelby Busó, Chief Sustainability Officer









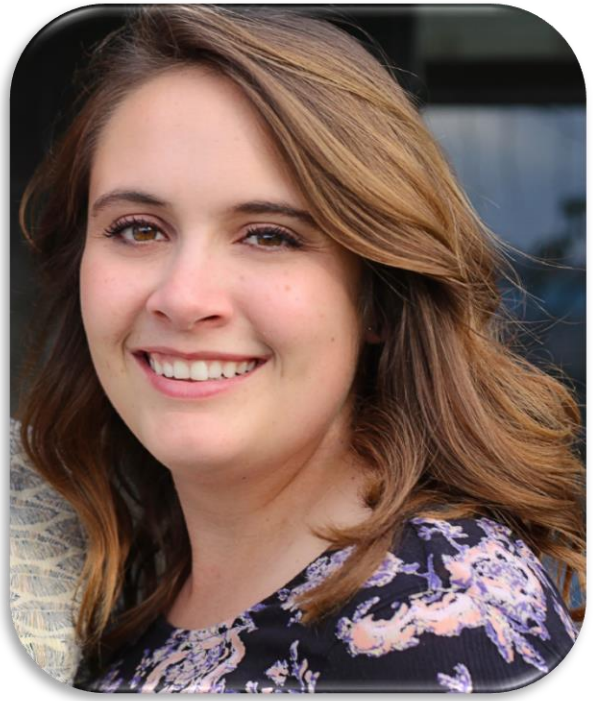
- Please change your name to the name you registered with – Preferred Pronouns - Organization if applicable
- Spanish interpretation is available
- Attendees are muted
- "Raise Hand" to participate during open discussion
- Ask questions in the Zoom chat
- Slides & Recording of meeting will be available after the forum
- Mentimeter – www.menti.com

Agenda

- Welcome/Introductions
- 2022 Climate Action Plan
- What is a Reach Code?
- What does the Reach Code mean for you?
- Feedback and Q&A
- Stay Engaged

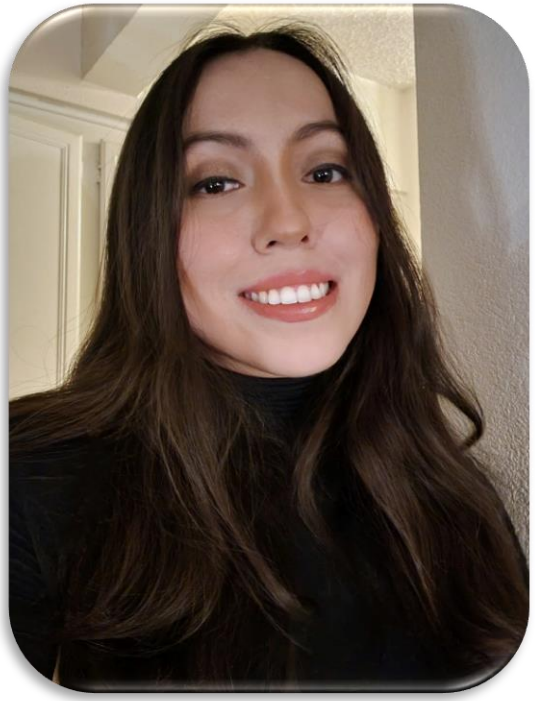
Introductions

Shelby Busó, Chief Sustainability Officer



Moriah Saldaña, Program Manager

Jon Klopp, Program Coordinator



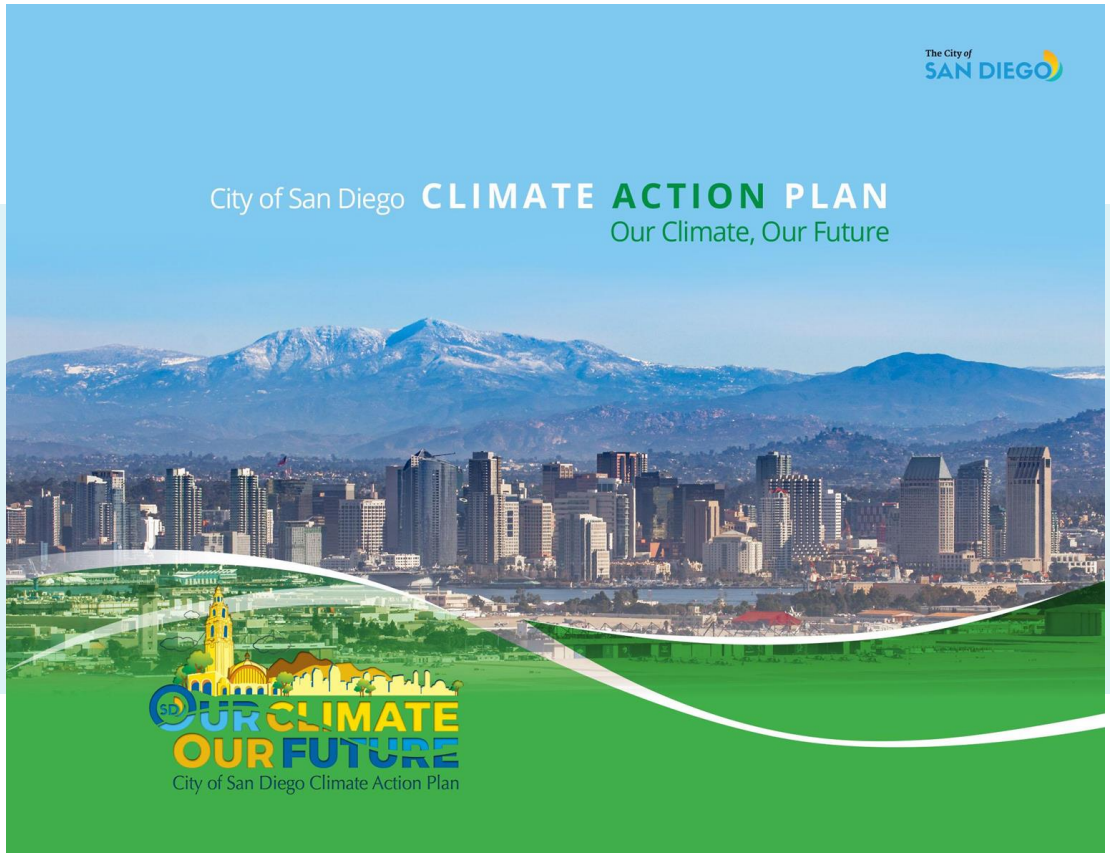
Melissa Languren, Junior Planner

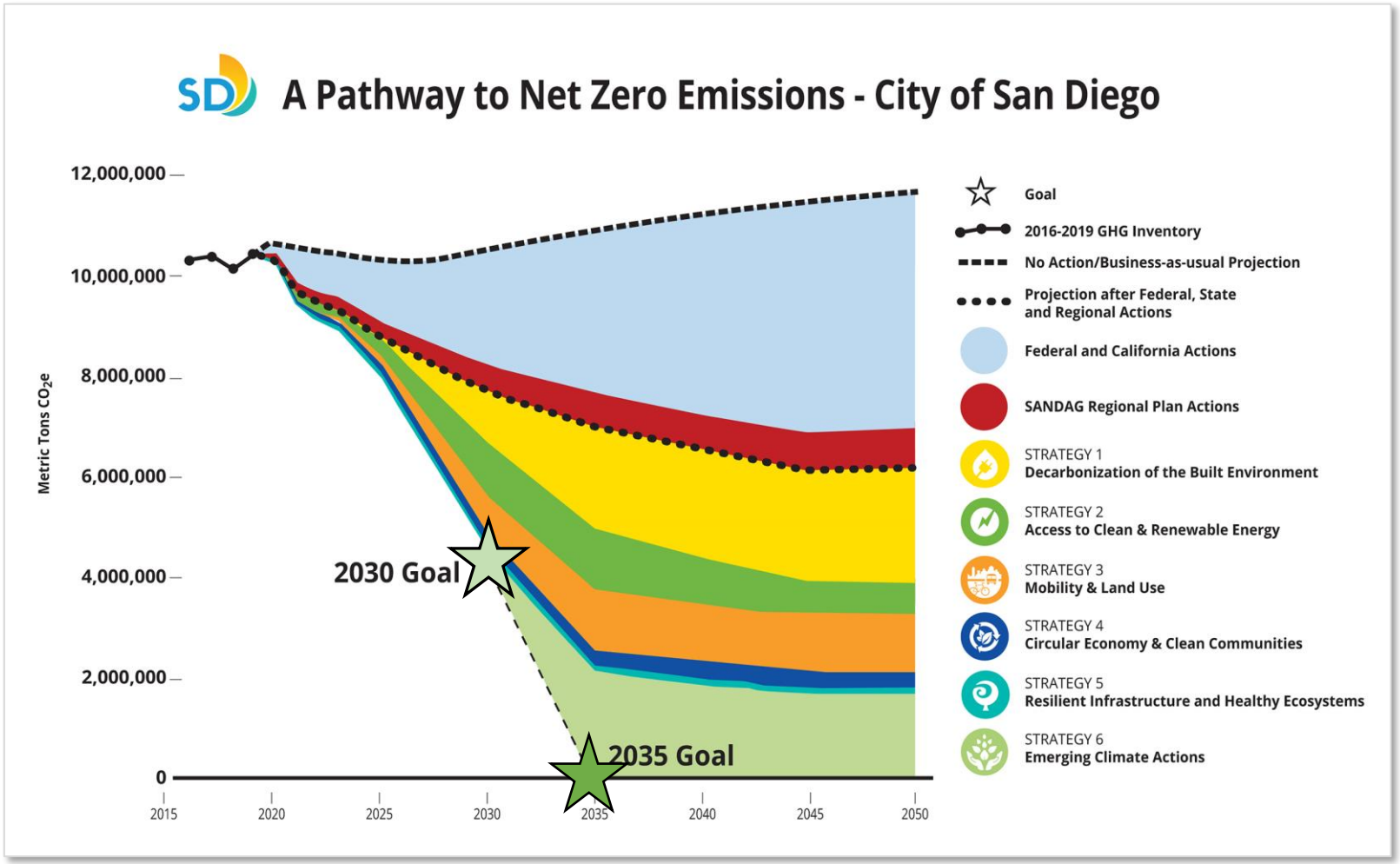
2022 Climate Action Plan

Net Zero Emissions by 2035

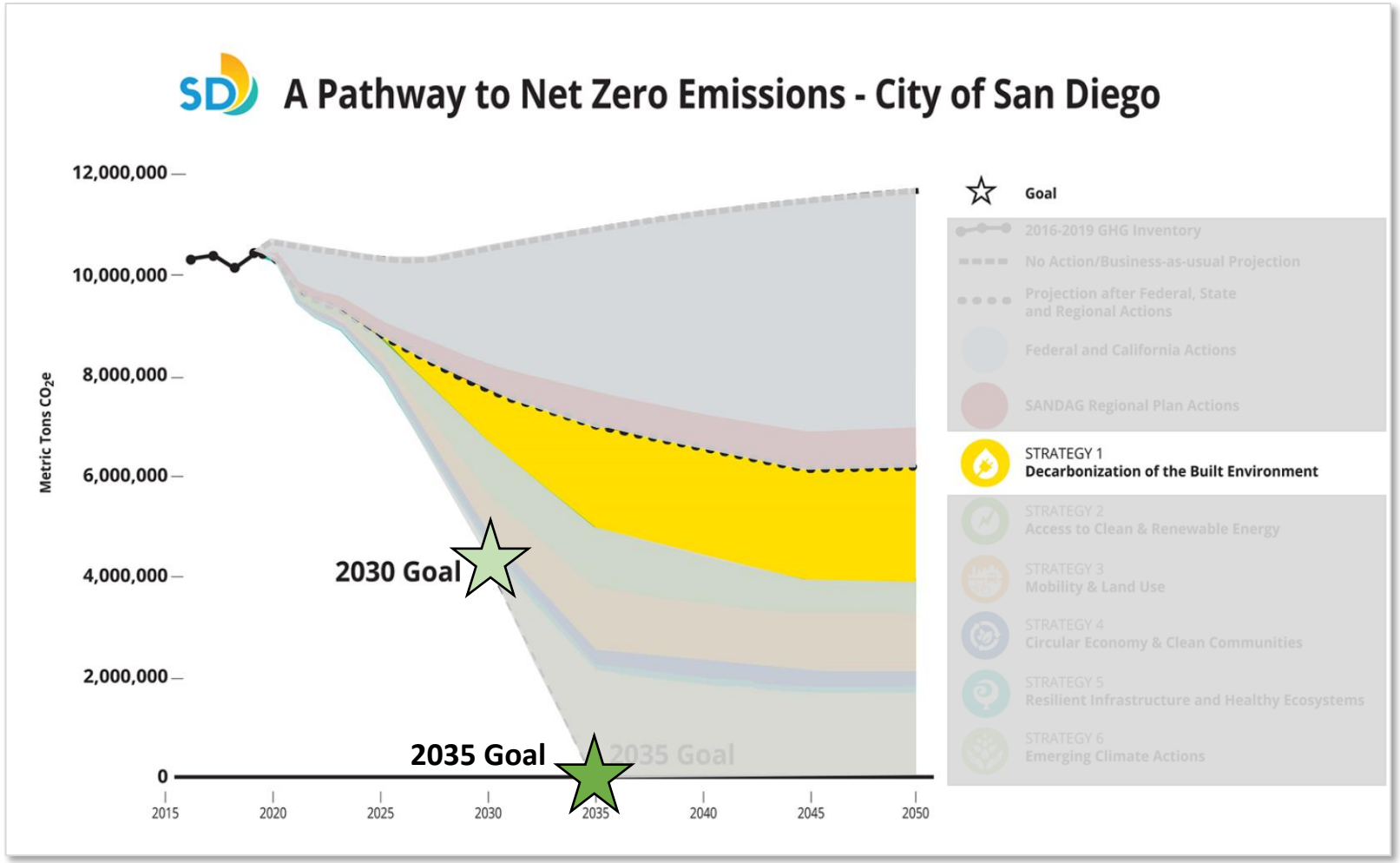
Need for "**immediate**, **rapid**, and **large-scale reductions** in greenhouse gas emissions,"

Intergovernmental Panel on Climate Change, Annual Report 6





A combination of federal, state and local actions are necessary to achieve Net Zero Emissions Goals



Area of largest local impact:

Decarbonization of the Built Environment

Strategy 1:

Decarbonization of the Built Environment

2030 Target	2035 Target
Phase out **45%** of natural gas usage from existing buildings	Phase out **90%** of natural gas usage from existing buildings
All-electric reach code starting 2023 at new residential and commercial development	
Phase out **50%** of natural gas usage in municipal facilities	Phase out **100%** natural gas usage in municipal facilities

What is a Reach Code?

Local building code that goes beyond the minimum requirements set by the state for **energy efficiency and energy performance** of buildings.

Reach codes can also indirectly **support reduction of GHG emissions** through requirements related to EV readiness.

Why adopt a Reach Code?

- Step towards meeting city's net zero goals
- Reduce GHG emissions from buildings
- Provide water and energy savings
- Improve indoor air quality

Why a San Diego “Reach Code”?

Buildings contribute to climate change:

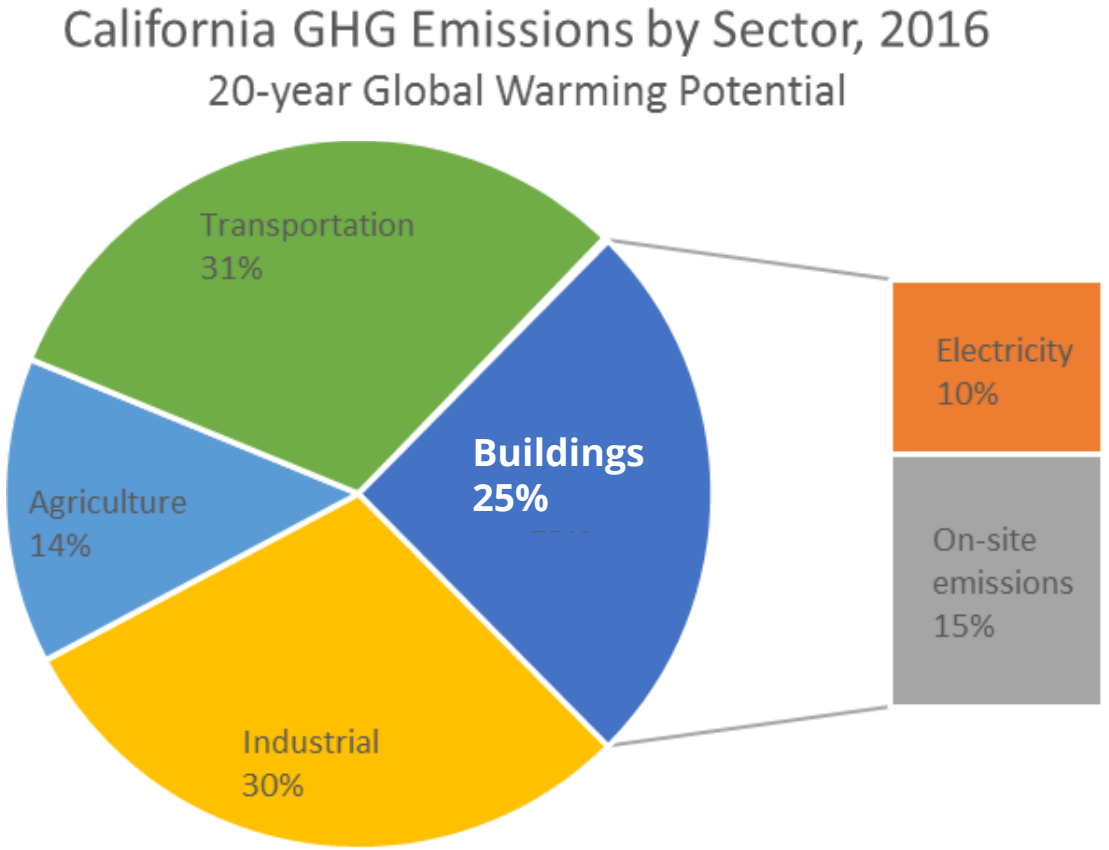


Figure 1: California GHG Emissions by Sector, 2016
From NRDC’s article “The Real Climate Impact of California’s Buildings,” https://www.nrdc.org/experts/joe-vukovich/real-climate-impact-californias-buildings

Where else have they been implemented?

70 jurisdictions in California have adopted Reach Codes in the 2022 Code Cycle.

63 of those jurisdictions adopted All Electric Reach Codes.

40 jurisdictions have adopted Electric Vehicle Supply Equipment Reach Codes for the 2022 Code Cycle .

What does the State Require?

California State Code Update: 2022 Building Energy Code and CALGreen (effective 1/1/2023)			
Building Type	**Single-Family (SF)**	**Multi-Family (MF)**	**Non-Residential**
EV Capable	X	X	X
EV Ready	X	X	X
Electric Vehicle Supply Equipment (EVSE)	X	X	X
Electric Space Heating		Standard has shifted to Heat Pump Technology	
Electric Water Heating	Baseline Case is a Heat Pump		
Cooking/Appliances	Electric Hook-ups Required		

What does San Diego's Reach Code propose?

All *newly constructed* buildings:

	Occupancy Type		
	Single Family, Duplex, ADU	**Multi-family**	**Non-Residential**
Energy Requirements	All-electric required	All-electric required	All-electric required*
EV Charging Infrastructure Requirements	➢ Single-family: no change ➢ Multi-family: no change		30% EV Capable Spaces (33% of which are EVSE installed)

*proposed deviations: industrial/academic/lab uses, commercial food preparation, essential facilities back-up generation

Which projects have to comply?

All *newly constructed* buildings

Newly constructed buildings must comply including:

- Single Family Residential and Duplexes
- High-Rise and Low-Rise Multifamily
- Nonresidential

Non-residential Deviations

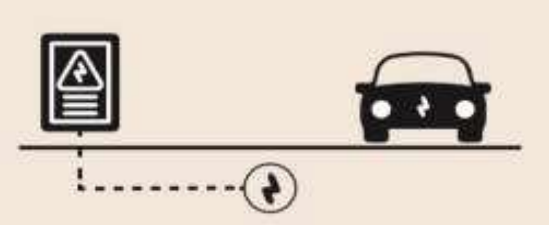
- Operations in certain Newly Constructed facilities, including buildings and facilities in the following occupancy Groups:
  - Group F, Factory Industrial
  - Group F-2, Low Hazard
  - Group F-1, Moderate Hazard
  - Group H, High-Hazard
  - Group L, Laboratories
  - Group I-2, Institutional (Hospitals)
- Back-up power for Essential Facilities, as defined in the California Building Code, Chapter 2, Section 202, Definitions
- Commercial Cooking Equipment

What does San Diego's Reach Code propose for EVSE?

	Occupancy Type		
	Single Family	**Multi-family**	**Non-Residential**
EV Charging Infrastructure Requirements	➢ Single-family: 1 EV ready (if space is required by Code); ➢ Multi-family: 60% Upgradeable Level 1 EV Ready or better		➢ Additional EV Ready Spaces dependent on amount of parking. Due to several changes proposed in the interim cycle update at the State, the City code will adopt the Tier 1 state requirements for non-residential EV charging as mandatory: 30% of all spaces EV capable, of which 33% have EVSE installed.

Codes generally define three types of electric vehicle spaces

EV Capable

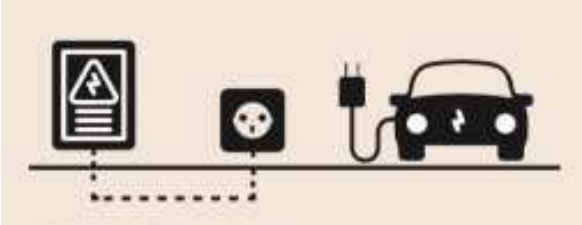


Electrical Panel Capacity

Raceway

A parking space with electrical infrastructure, such as raceways, electrical capacity, and panel space for the future installation of an EVSE.

EV Ready

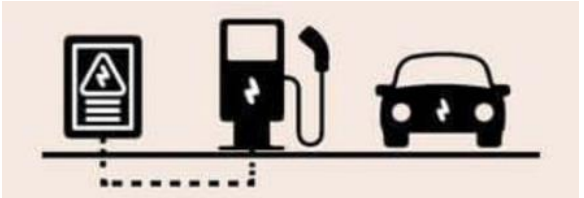


Electrical Panel Capacity

Raceway + Wiring + Outlet

A parking space that is provided with a branch circuit terminating with a receptacle.

Electric Vehicle Supply Equipment (EVSE)



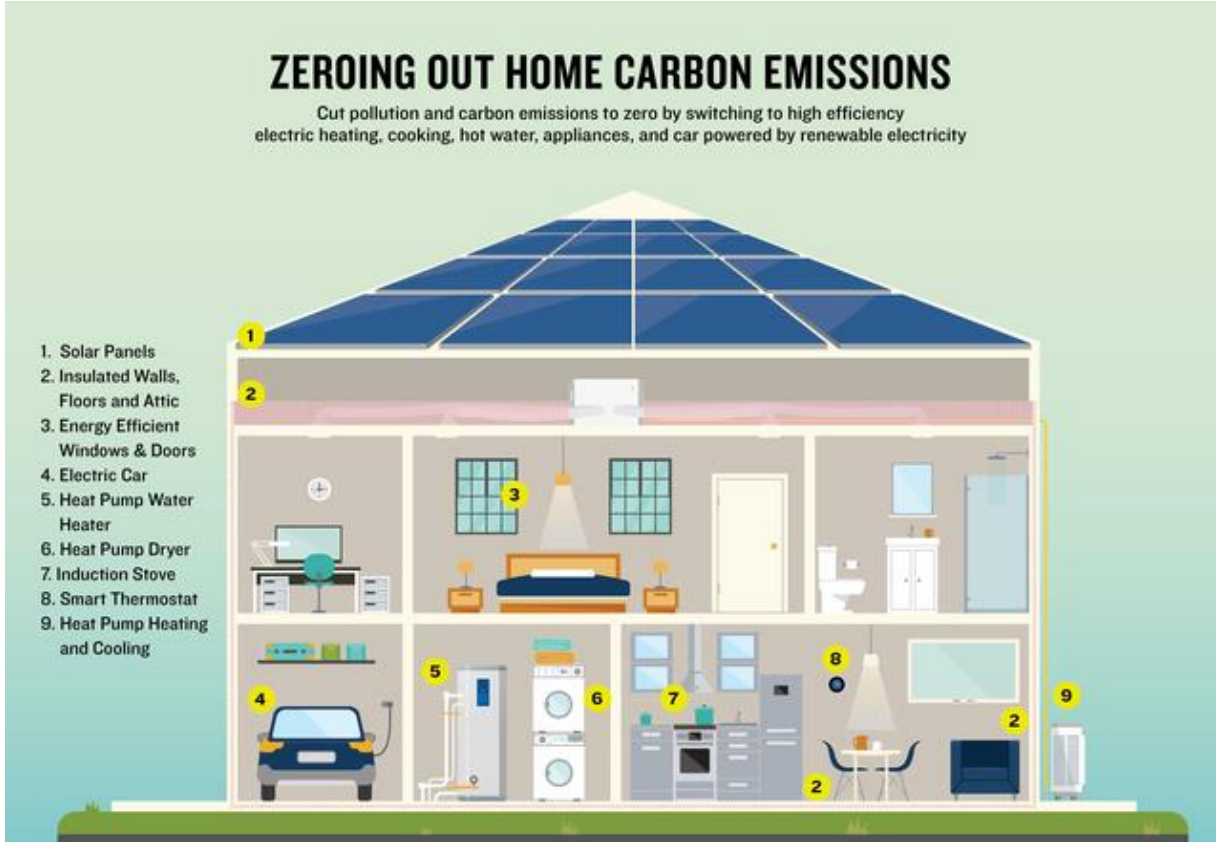
Raceway + Wiring + Charging Station Installed

A parking space with an EVSE installed (EV Charger).

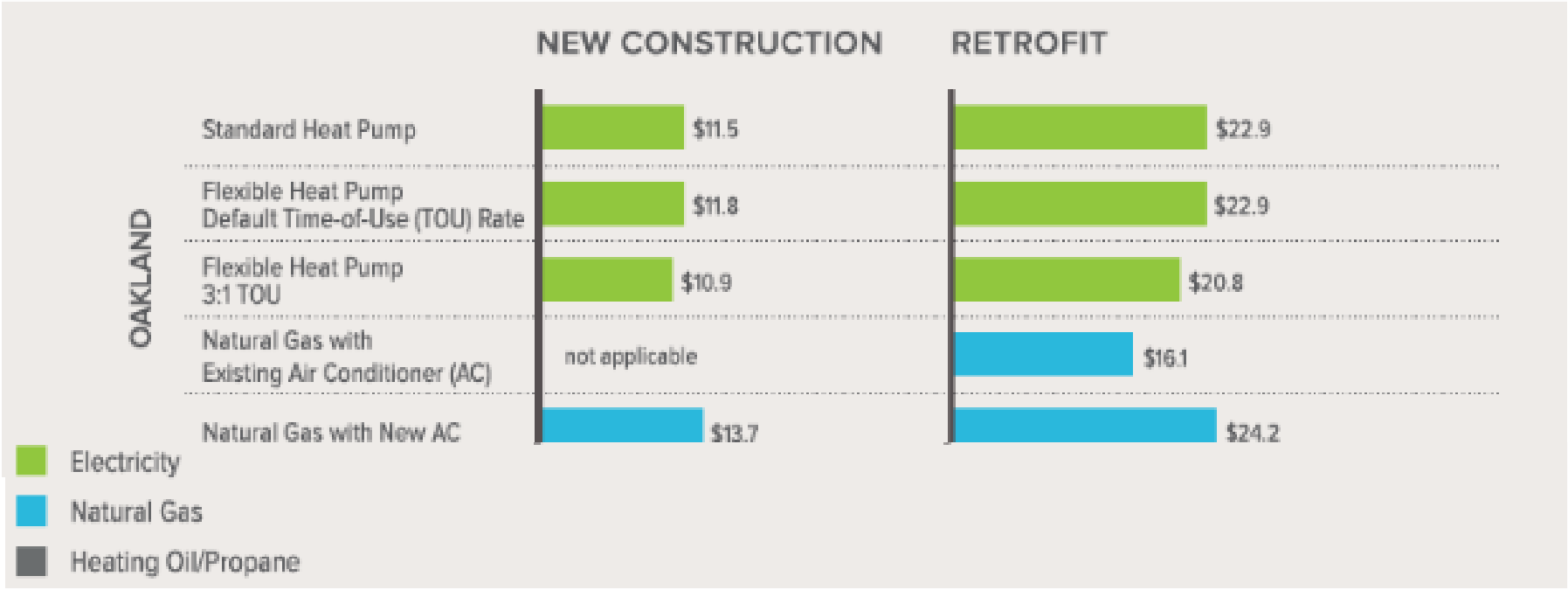
What does the Reach Code mean for you?

Safer, more sustainable, more affordable homes

- Cleaner air
- Improved public health
- Less climate pollution
- Lower utility bills
- More affordable housing

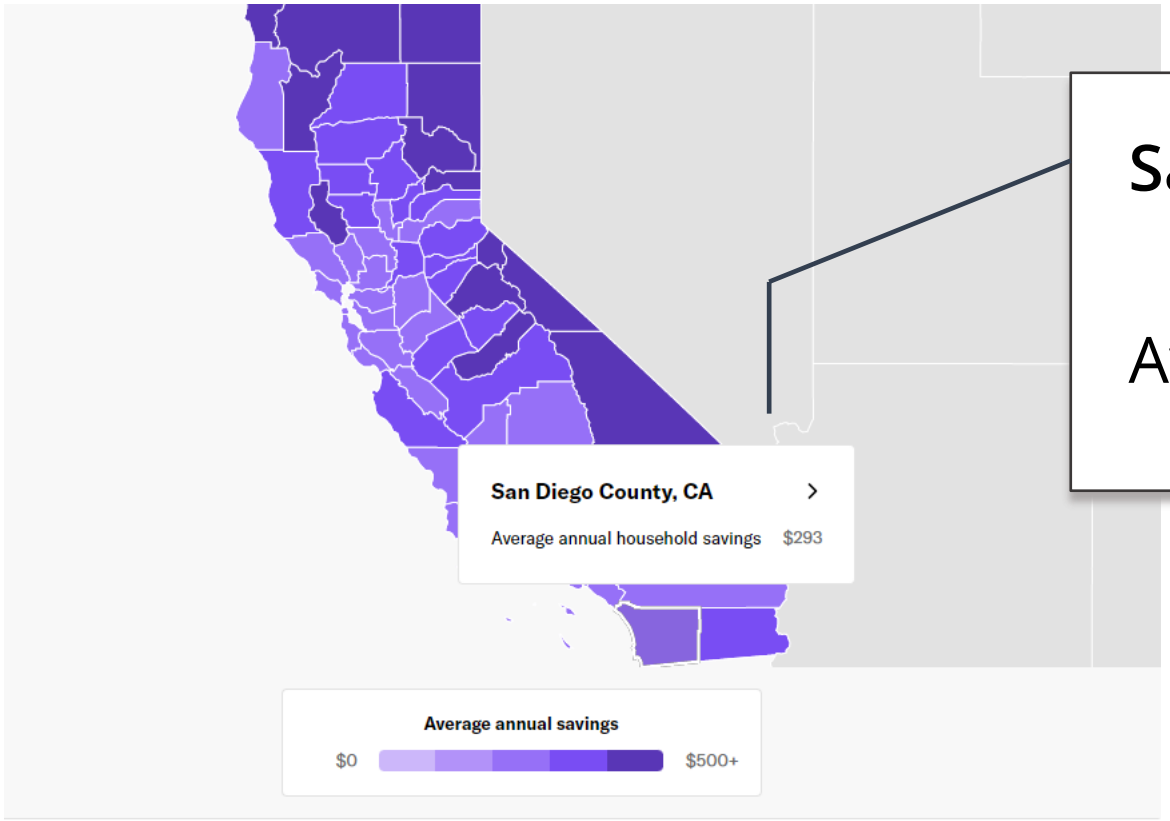


Electric Ready Cost Savings: Customer



COMPARISONS OF 15-YEAR NET PRESENT COSTS OF WATER HEATING AND SPACE CONDITIONING (THOUSAND

Electrification – Economic Impact



San Diego, CA

Average annual savings of $293

All Electric Construction: Cost Savings

- All-electric homes are less expensive to build
- Save $7,500–$8,200 on construction costs
- All-electric medium office buildings in the study area were only slightly more expensive
- Avoided cost of not installing fossil-fuel infrastructure
- More cost effective to electrify upfront

Natural Gas in Buildings

VOC = Volatile Organic Compounds
$PM_{2.5}$ = Particulate Matter
CO = Carbon Monoxide
CO_2 = Carbon Dioxide
NO_2 = Nitrogen Dioxide
PAH = Polycyclic Aromatic Hydrocarbon
SO_2 = Sulfur Dioxide

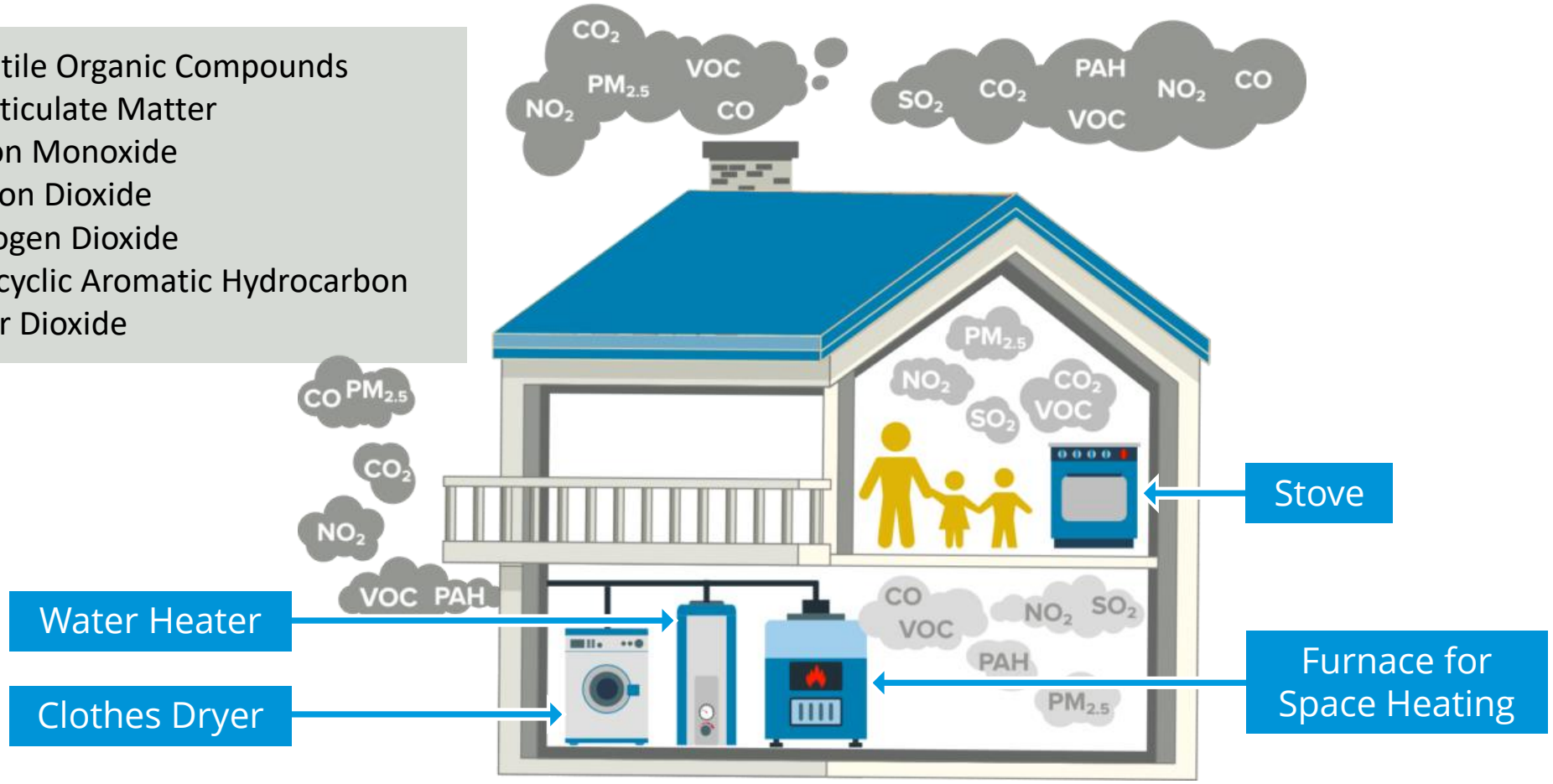
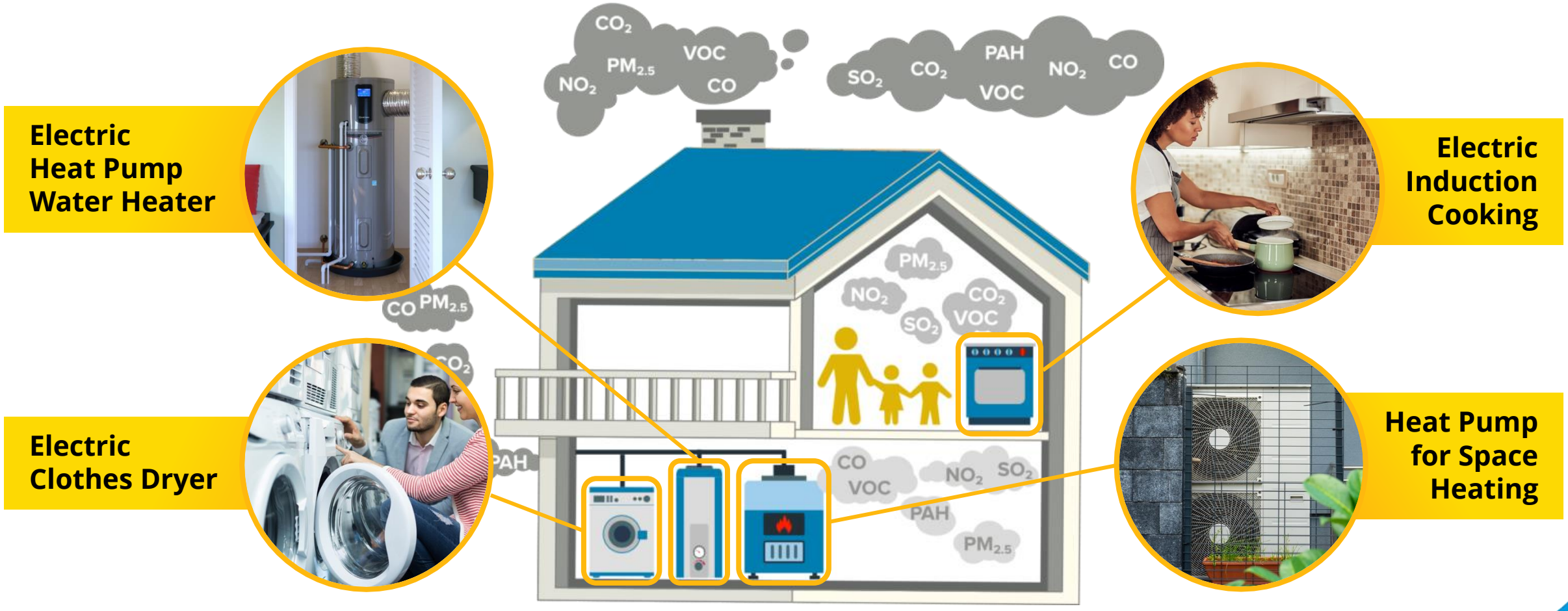


Figure 2: Indoor and outdoor pollution from building appliances. From *What's up with natural gas in my home?* by Fresh Energy: fresh-energy.org/whats-up-with-natural-gas-in-my-home

Better: Replace Gas with Electricity



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How Could the Reach Code Impact You?

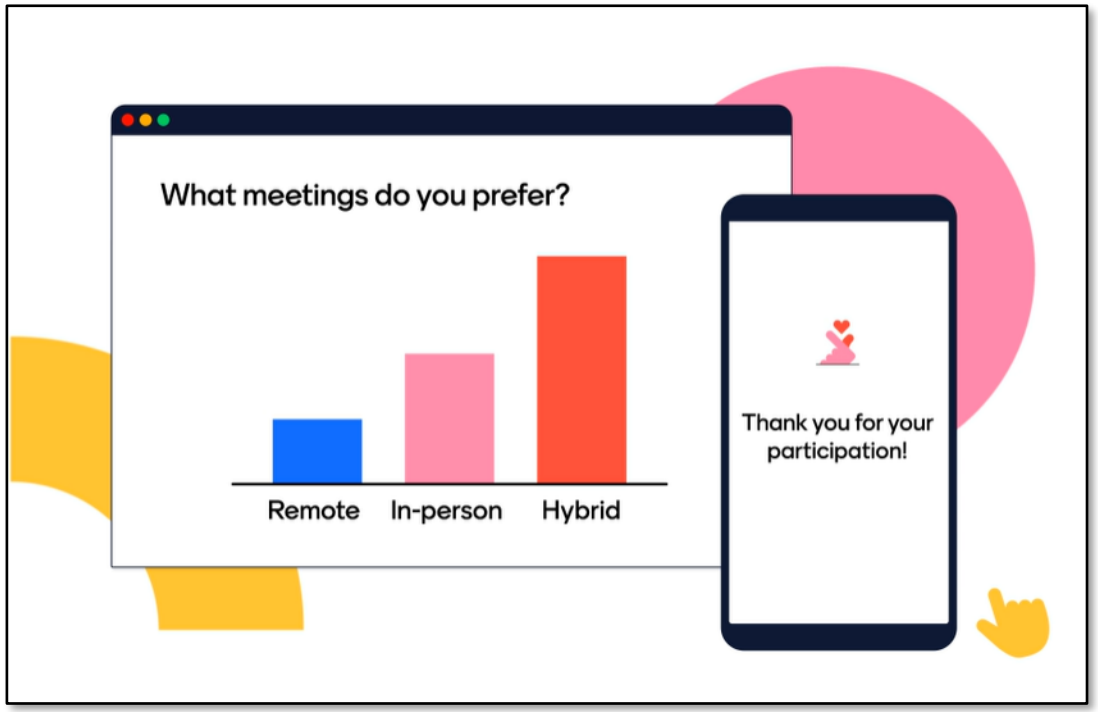
Category	Potential Impacts
Health	Studies suggest improved indoor air quality, reduced outdoor pollution, and decreased risk of childhood respiratory illnesses (i.e. asthma)
Cost	Models suggest reduced construction costs for building all-electric homes; gas prices likely to increase
Safety	Less risk of injury due to open flame or gas leak from electric and induction stoves; heat pumps maintain safe temperature
Comfort	Heat pumps improve consistency of air and water temperature
Resilience to Extreme Weather	Increased resilience with solar PV and “islanding”; increased risk for loss of power during power shut-offs (due to wildfire prevention efforts)

Feedback and Q&A

Gathering Feedback

Mentimeter is a tool for real time audience participation.

You can participate on your web browser or cell phone.



Mentimeter - Interactive Presentations

How Can I Engage?

- Attend public stakeholder meetings
- Climate Action Plan Website: Sign up for newsletter
- Building Decarbonization and Zero Emissions Buildings: Sign up for Stakeholder Interest Form

Questions?

- Email sustainability@sandiego.gov

OUR CLIMATE OUR FUTURE

City of San Diego Climate Action Plan

Questions?

sustainability@sandiego.gov

Stay engaged at:

sandiego.gov/sustainability

SD sustainability