ENERGY REACH CODE POLICY COMMUNITY MEETING

SPEAKERS: ID360

DATE: JUNE 07, 2022

CITY OF AGOURA HILLS

WELCOME

CITY OF AGOURA HILLS

Denice Thomas

Community Development Director

Planning & Community Development

CITY OF
AGOURA HILLS

WELCOME

CITY OF AGOURA HILLS

Lukas Quach

Building Official

Building & Safety

CITY OF AGOURA HILLS

Housekeeping

- There will be a Q&A Session after the presentation, please hold questions until then.
- For participants joining via Zoom, please submit questions via the chat function.
- In-house questions will be addressed first followed by questions submitted via Zoom.

CITY OF AGOURA HILLS

FACILITATOR

ID360

Melanie Jacobson

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

Principal, ID360

ID 360°

CITY OF AGOURA HILLS

AGENDA

- Climate Action and Adaptation Plan (CAAP)
- Reach Code Background
- Introduction to Electrification
- Electrification Reach Codes
- 2022 Energy Code Highlights
- 2022 Statewide Reach Codes Initiative
- Electrification Reach Code Strategy
- Q&A and Next Steps

CITY OF AGOURA HILLS

OBJECTIVE

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

CITY OF AGOURA HILLS

CLIMATE ACTION & ADAPTATION PLAN (CAAP)

CITY OF AGOURA HILLS

Climate Action Plan and Adaptation Plan (CAAP)

COMMITTED TO SUSTAINABILITY

- Develop policies and programs to reduce reliance on fossil fuels.
- Provide a cost savings to residents.
- Build resiliency during climate change induced, extreme heat events, wildfires and other risks.
- Provide a more livable, equitable, and economically vibrant community.
- Reduction of greenhouse gas (GHG) emissions.
- Enhance the community resilience.

CITY OF AGOURA HILLS

Climate Action and Adaptation Plan (CAAP)

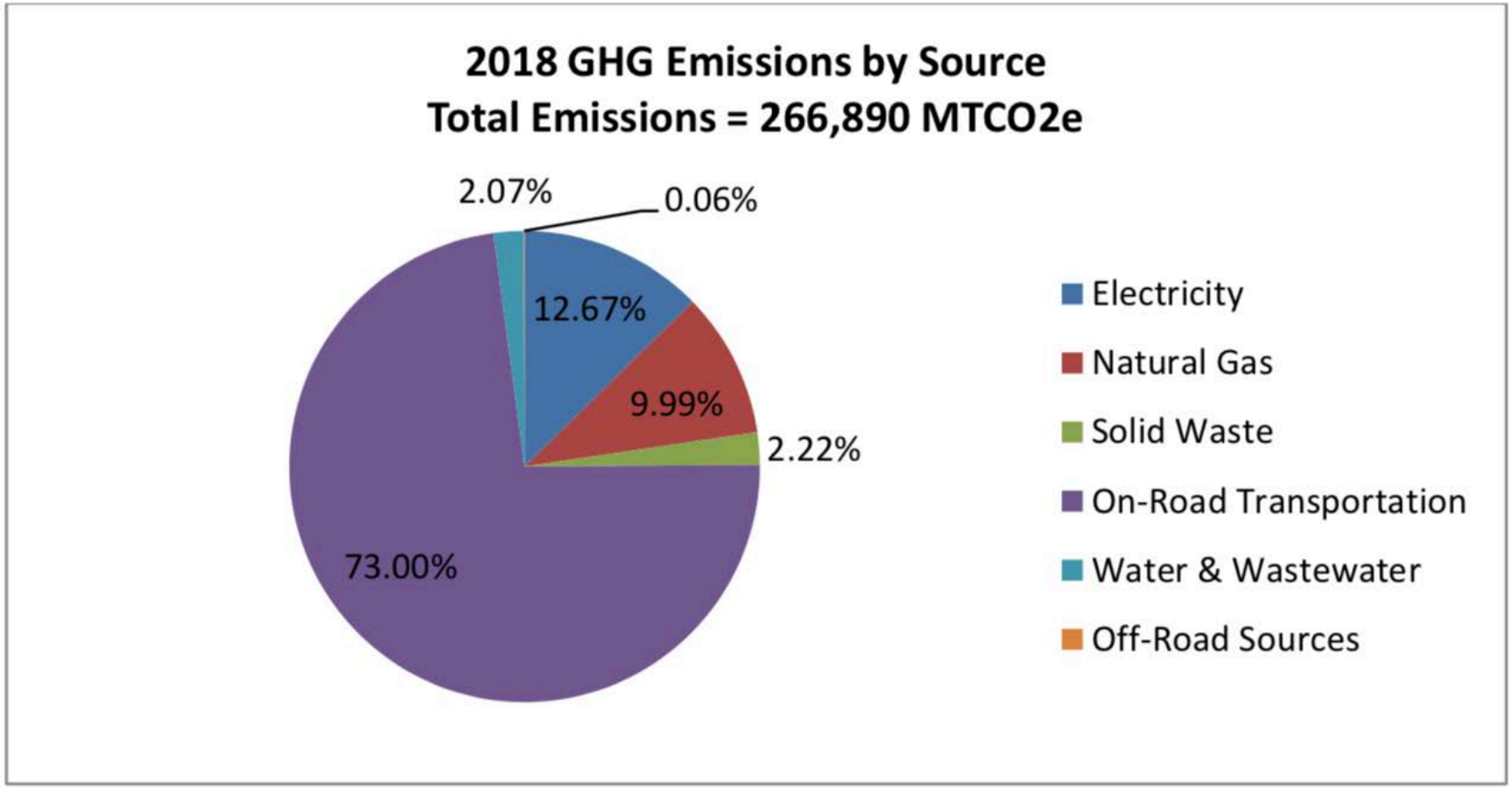
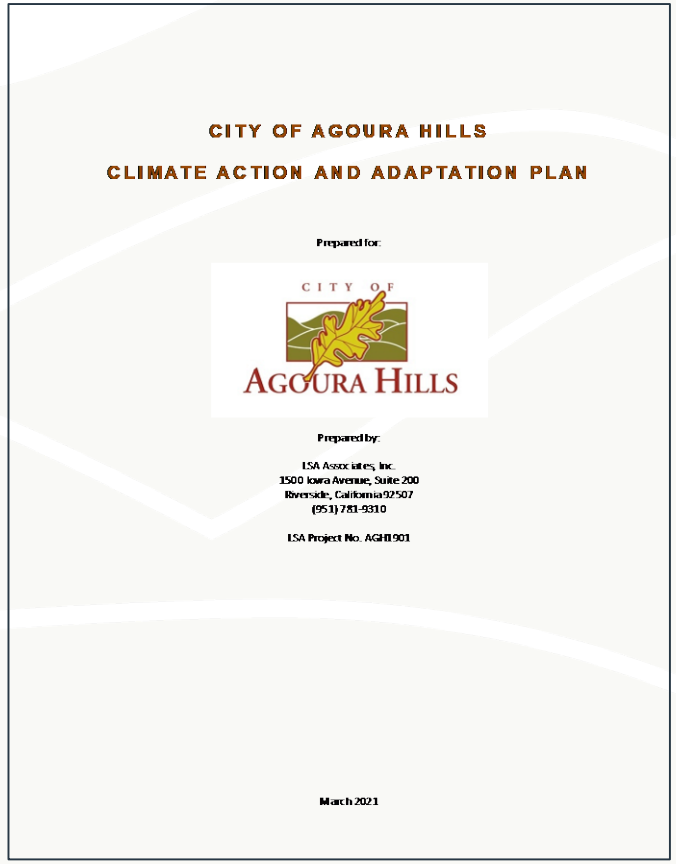


Figure ES-1: Community GHG Emissions Baseline Inventory by Sector for Year 2018

CITY OF AGOURA HILLS

Climate Action Priorities Related to Reach Codes

- Require all new residential developments achieve 100 percent electrification with exceptions.
- Consider mandates or incentives for developers that provide 100% electrification for new commercial development.
- Decrease GHG Emissions through increasing clean energy use.



CITY OF AGOURA HILLS

CLIMATE ACTION AND ADAPTATION PLAN

Prepared for:

CITY OF AGOURA HILLS

Prepared by:

LSA Associates, Inc.
1500 Iowa Avenue, Suite 200
Riverside, California 92507
(951) 781-9310

LSA Project No. AGH1901

March 2021

CITY OF AGOURA HILLS

REACH CODE BACKGROUND

CITY OF AGOURA HILLS

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
  - California is committed to becoming carbon-neutral by 2045
  - Gov. Newsom issued EO N-79-20: 100% in-state sales of new passenger cars/trucks to be zero-emission by 2035
- CA jurisdictions are adopting local reach codes in support of climate goals

CITY OF AGOURA HILLS

Why a Reach Code?

- 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

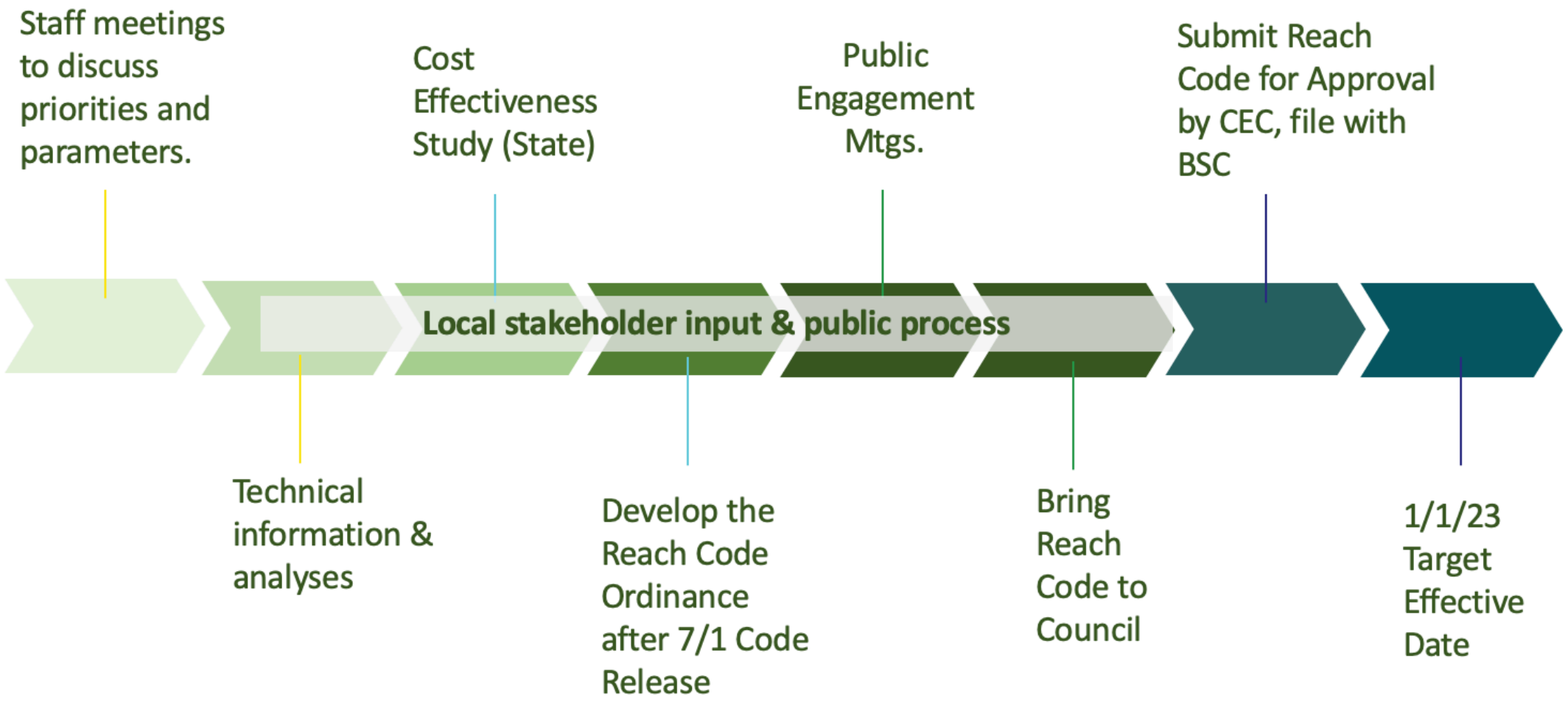
CITY OF AGOURA HILLS

What is a Reach Code?

- Statewide Code updated every three years. (2022 code will take effect 1/1/23)
- Reach Code is a 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

CITY OF AGOURA HILLS

Reach Code Process: Development to Implementation



INTRODUCTION TO BUILDING ELECTRIFICATION

CITY OF AGOURA HILLS

What is Building Electrification?

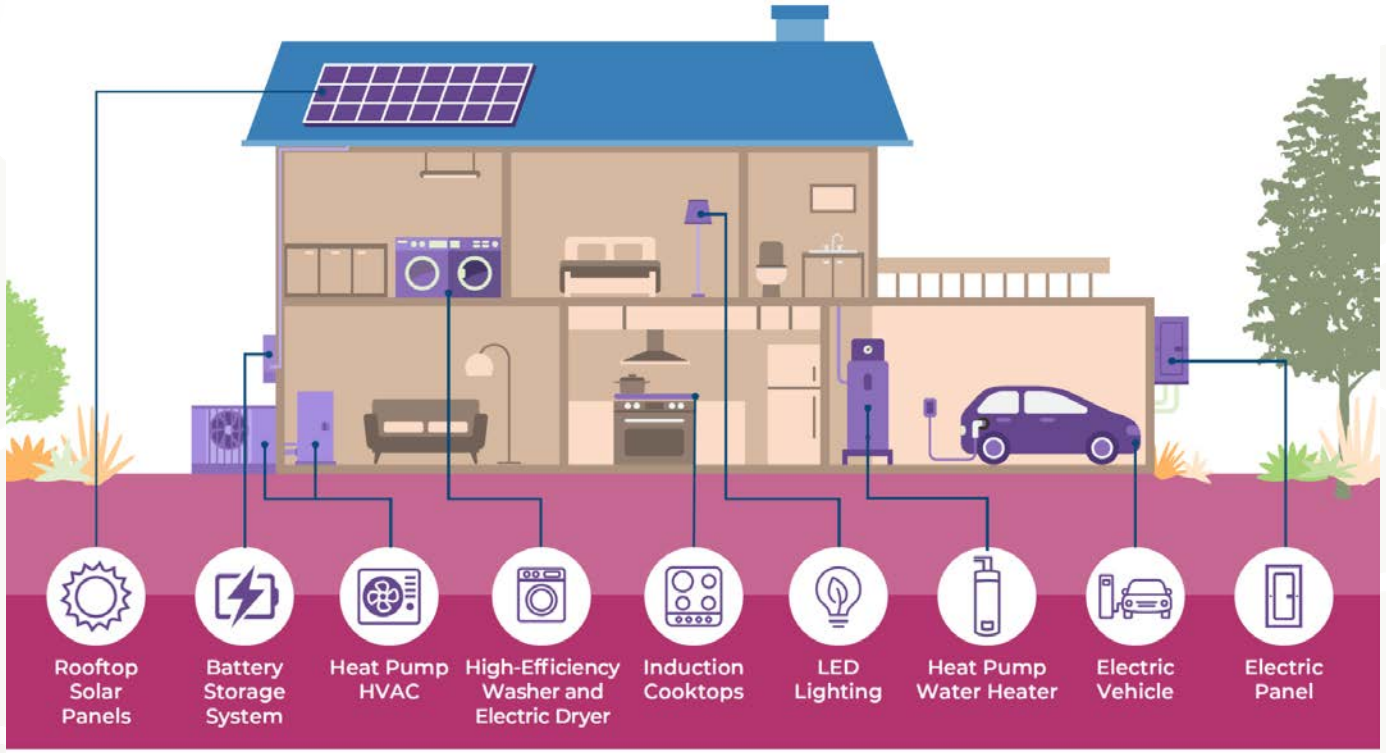


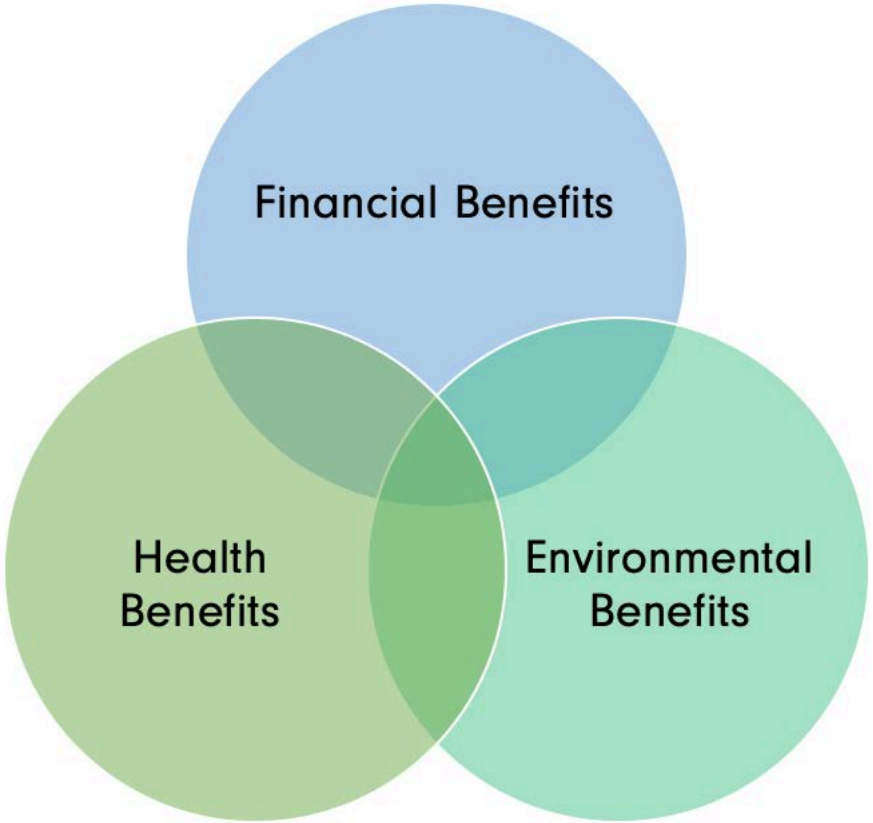
Photo Credit: City of Palo Alto Utilities

Uses electric appliances and equipment in homes and businesses.

- Induction cooktops
- Heat pump water heaters
- Heat pump heating and air ventilation (HVAC) systems

CITY OF AGOURA HILLS

Why Building Electrification?

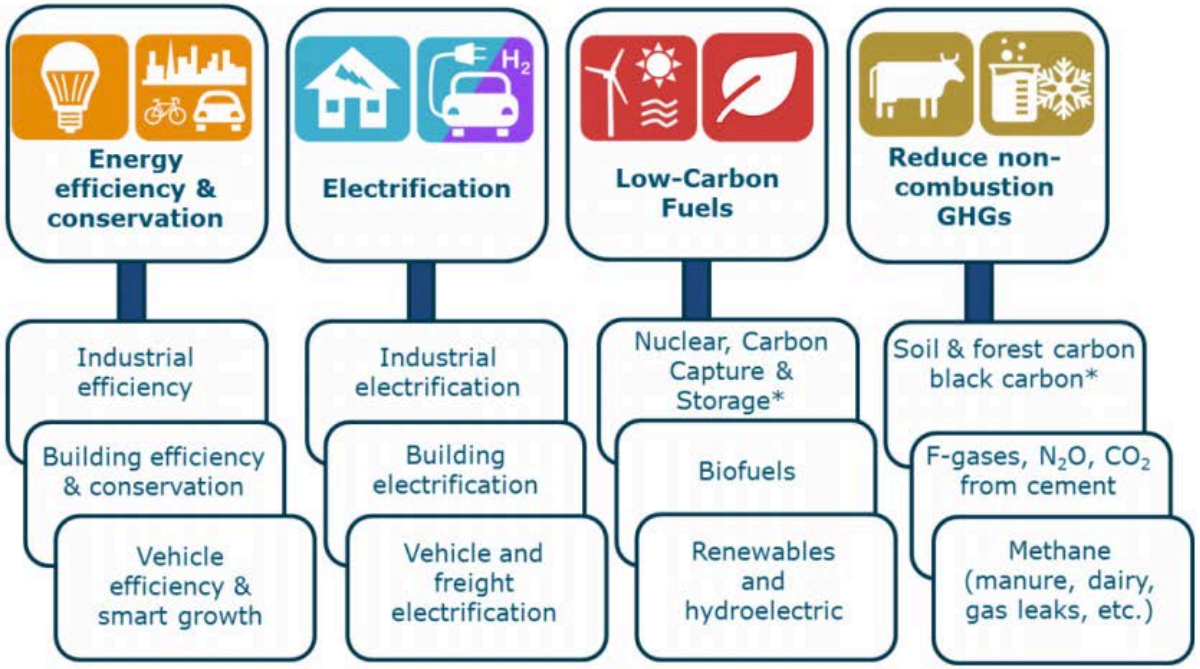


Offers financial, health, and environmental benefits.

- Better for indoor air quality
- Electric appliances are more efficient than gas counterparts (saves money)
- Electric appliances can be powered by clean energy (carbon-free/renewable)

CITY OF AGOURA HILLS

What is Building Electrification?

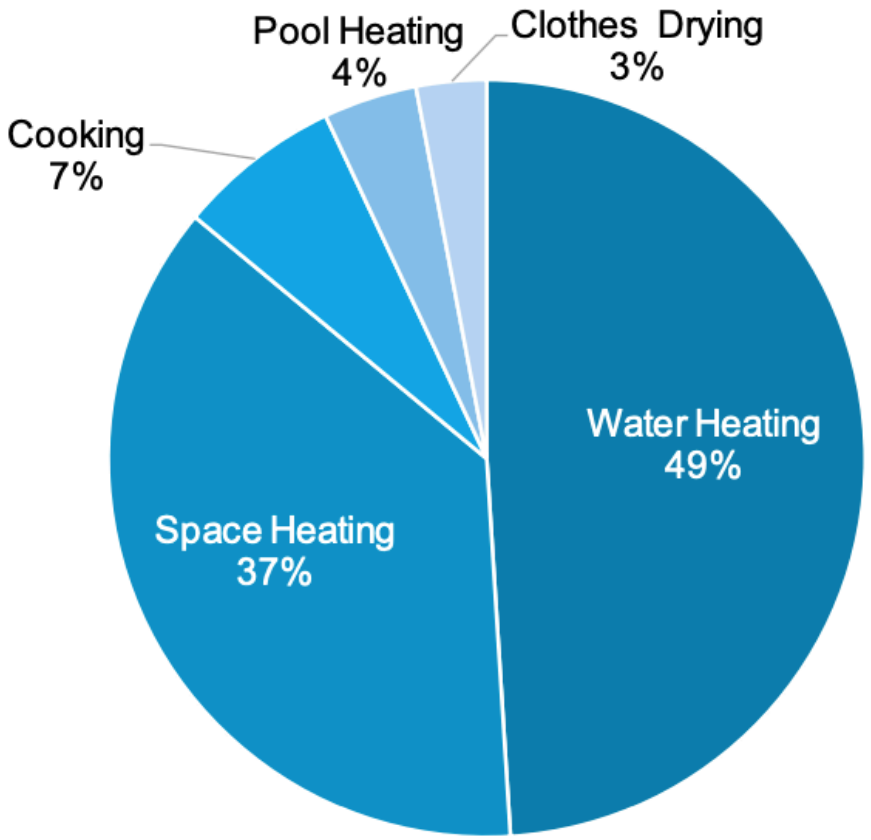


Sources: 1) AB3232 Decarbonization Assessment 2021 2) CA Energy Commission 2018 3) CPUC 2021

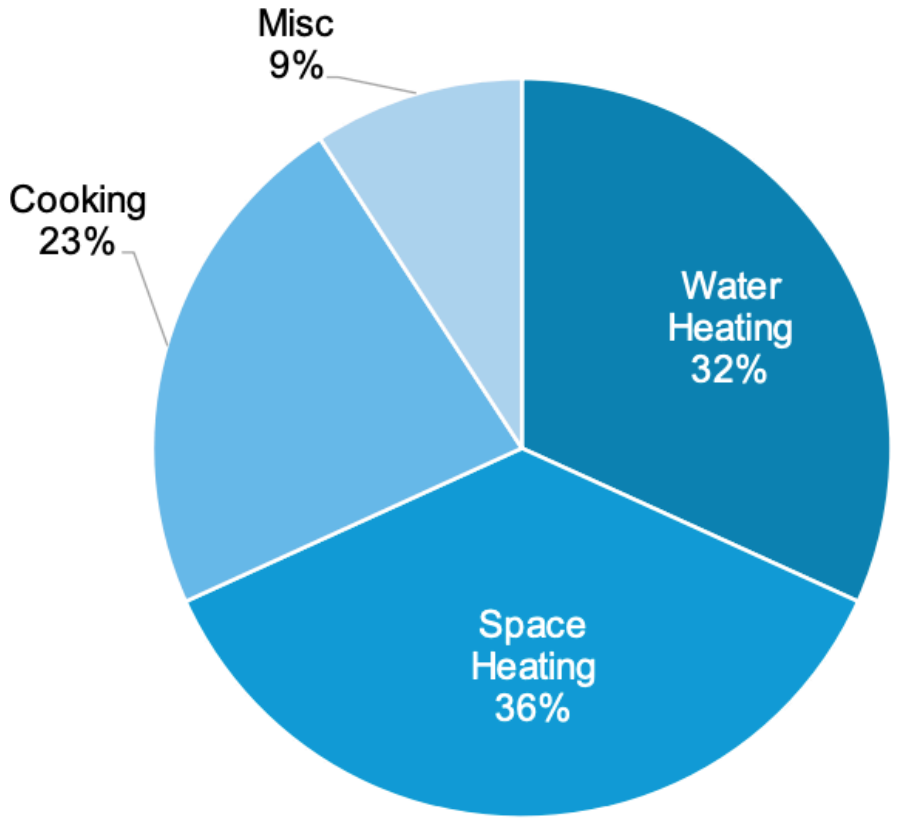
- Carbon-free
- Lowest-cost, lowest-risk pathway
- Healthier indoor air
- Job creation

CITY OF AGOURA HILLS

California Buildings Gas Usage



RESIDENTIAL



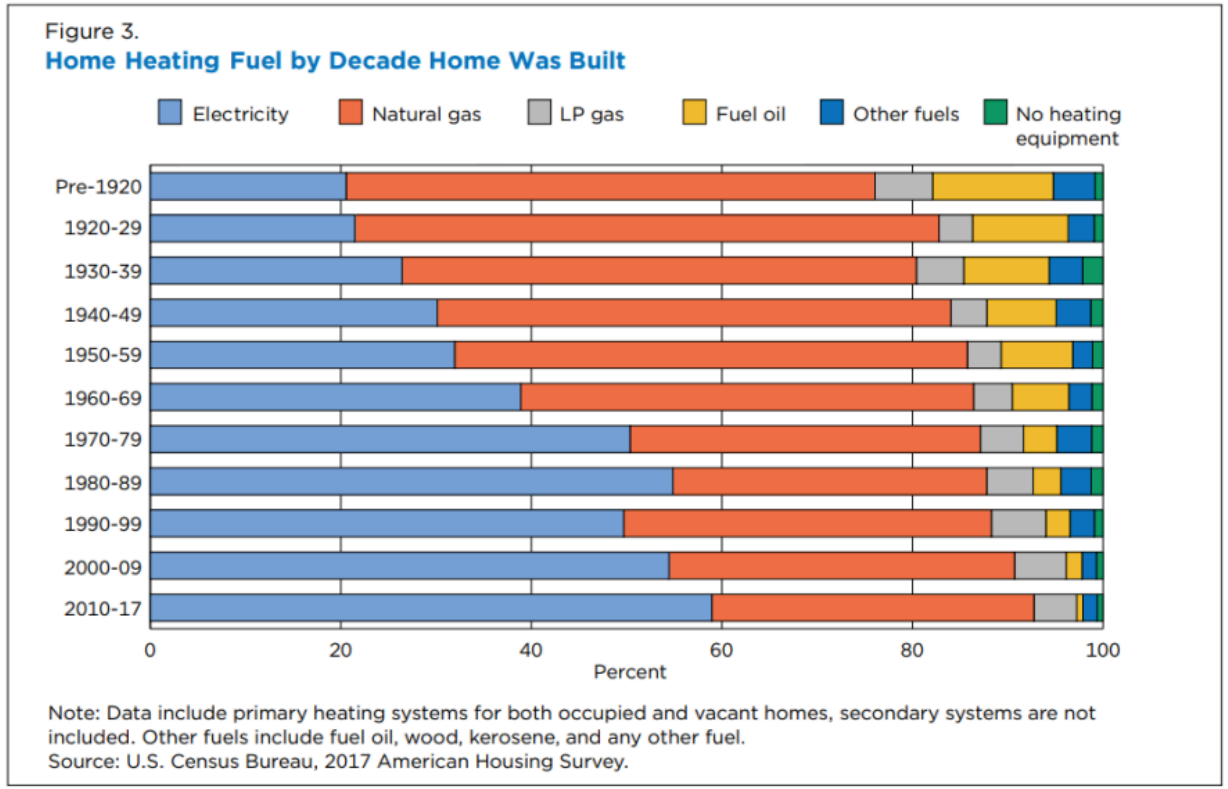
NON-RESIDENTIAL

2009 Residential Appliance Saturation Survey

2006 California Commercial End Use Survey

CITY OF AGOURA HILLS

Electricity is already the majority



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

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

CITY OF AGOURA HILLS

Equipment

Residential

Commercial

SPACE HEATING *WATER HEATING* *COOKING* *CLOTHES DRYING*

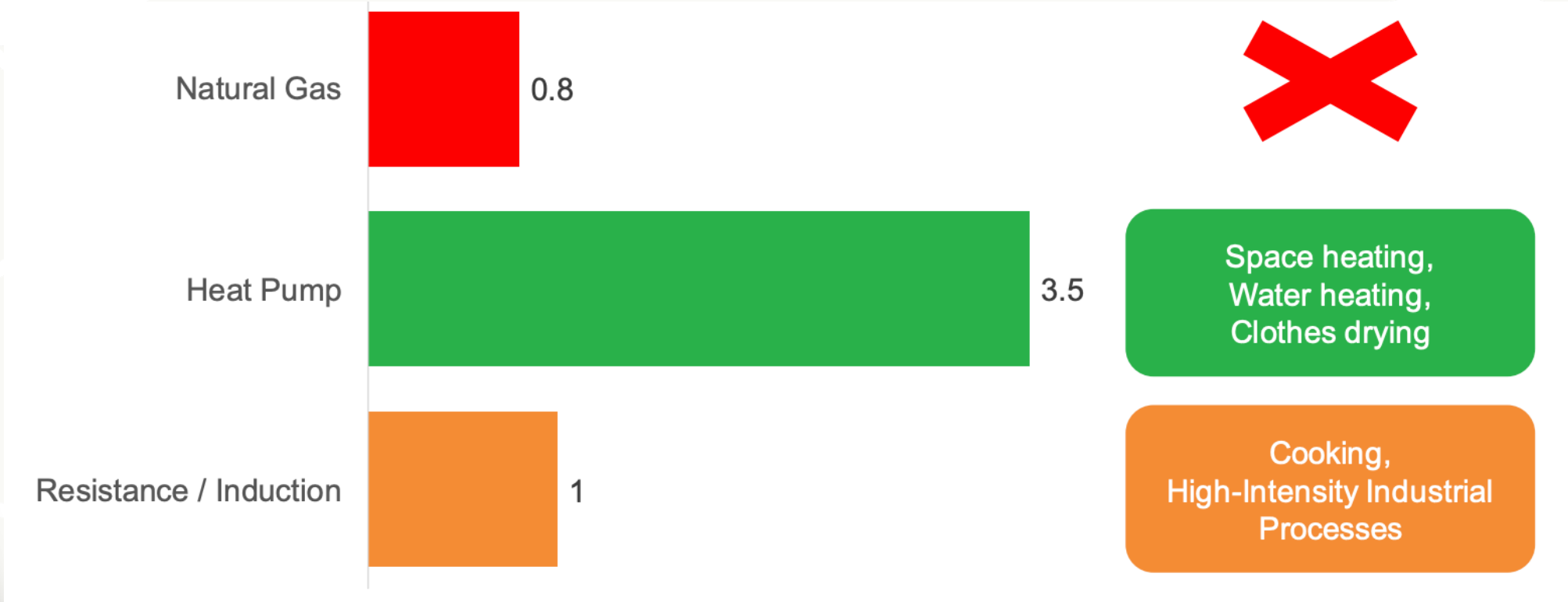
Source: BayAreaReachCodes.Org

CITY OF AGOURA HILLS

Equipment

ENERGY EFFICIENCY COMPARISON OF TECHNOLOGY

TYPICAL ENERGY FACTORS



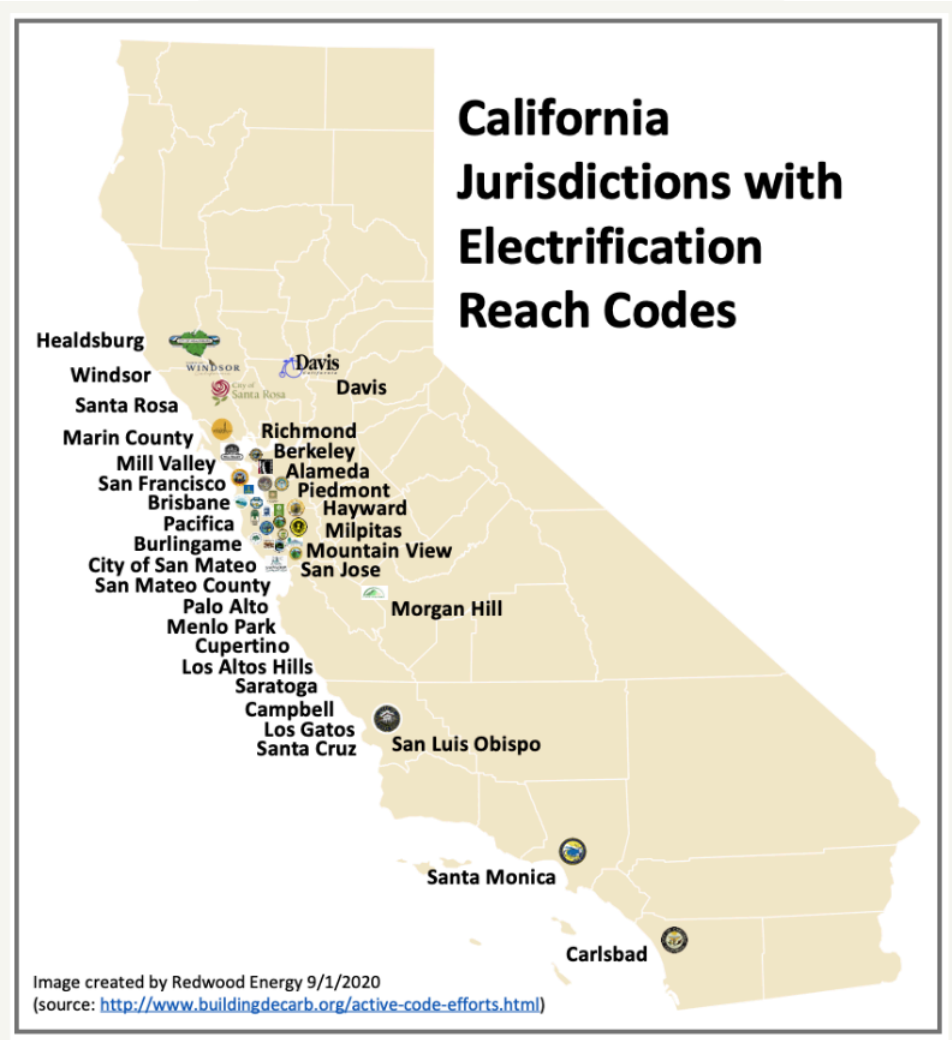
Source: BayAreaReachCodes.Org

CITY OF AGOURA HILLS

ELECTRIFICATION REACH CODES

CITY OF AGOURA HILLS

Adoption of Electrification 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
- Electric Vehicle Charging Infrastructure

CITY OF AGOURA HILLS

Adoption of Electrification Reach Codes

Source: Statewide Energy Code Program

Highlighted local cities:

- Santa Monica (electric Preferred, PV, EV)
- West Hollywood (PV, Cool Roofs)
- Ojai (All Electric)
- Los Angeles County (Cool Roofs)
- City of Los Angeles (All Electric)

CITY OF AGOURA HILLS

2022 CALIFORNIA ENERGY CODE HIGHLIGHTS

CITY OF AGOURA HILLS

2022 California Energy Code: Highlights

NEW CONSTRUCTION

- Heat pumps = prescriptive baseline
  - Residential: space heating
  - Residential: water heating
  - Nonresidential: water and/or space heating for most building types
  - Performance credit for all-electric design
- Residential
  - Pre-wiring required for gas appliances
  - Higher ventilation rate for gas stoves
  - Energy storage readiness
- Nonresidential
  - Solar PV and Battery Storage prescriptive

EXISTING BUILDING

- Restricts newly installed electric resistance heating
- Simplified language for heat pump retrofits

CITY OF AGOURA HILLS

2022 STATEWIDE REACH CODES INITIATIVE

CITY OF AGOURA HILLS

2022 Statewide Reach Codes: Updates

- Draft results for Single-Family and Nonresidential Cost-Effectiveness Studies released
- Final results anticipated to be available during Q3 2022
- Multifamily New Construction Cost-Effectiveness Study – results webinar 7/7/22
- Accessory Dwelling Unit (ADU) and Electric Pool Heating analyses underway
- Simulations will be updated as necessary based on the new software versions
- Statewide Reach Codes Webinar Series:
- Reach code implementation – webinar on 9/27

CITY OF AGOURA HILLS

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

2022 SINGLE FAMILY NEW CONSTRUCTION PRELIMINARY RESULTS

CITY OF AGOURA HILLS

Residential Building Prototypes

- **Single Family (SF)**: Blended 2,400 ft²
  - 50% 1-story / 2100 ft²
  - 50% 2-story / 2700 ft²

Source: California Energy Codes & Standards, Draft Residential Cost-Effectiveness Results

CITY OF AGOURA HILLS

Single Family Analysis: Baseline

2022 Prescriptive requirements used as starting point

- Slab on grade
- Vented attic
- Heat pump baseline
- Minimum efficiency equipment
- PV prescriptive standard

No change from 2019 (sized to offset electric loads in mixed-fuel home)

CITY OF AGOURA HILLS

Single Family Analysis: Packages

- All Electric
  - Prescriptive
  - Efficiency
  - Efficiency & NEEA HPWH
  - Efficiency & PV
  - Efficiency, PV, & Battery
- Mixed Fuel (2022 Baseline)
  - Efficiency
  - Efficiency & PV
  - Efficiency, PV, & Battery

Source: California Energy Codes & Standards, Draft Residential Cost-Effectiveness Results

CITY OF AGOURA HILLS

2022 NONRESIDENTIAL NEW CONSTRUCTION PRELIMINARY RESULTS

CITY OF AGOURA HILLS

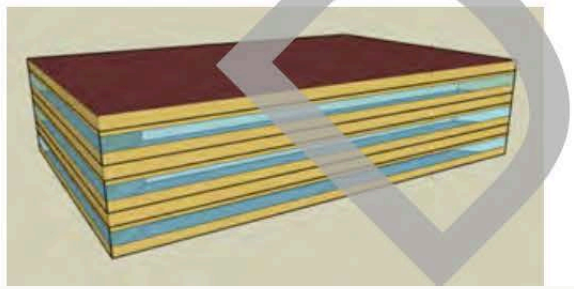
Nonresidential Preliminary Results: Overview

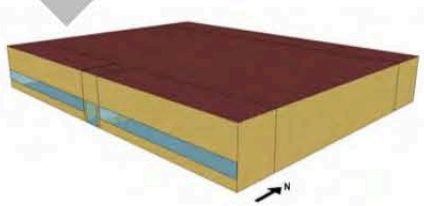
- Challenging for electrification alone to be cost-effective
- Load Flexibility improves cost-effectiveness considerably for Medium Office
- TDV metric generally found to be cost-effective more often
- Many building types and climate zones can cost-effectively construct all-electric
- Restaurant all-electric cooking not yet cost-effective

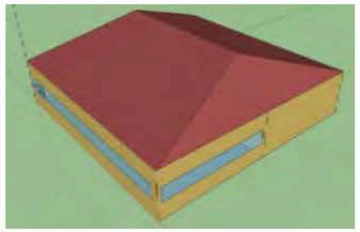
CITY OF AGOURA HILLS

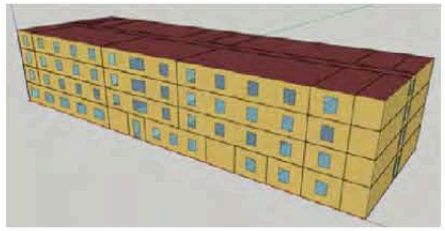
Nonresidential Prototypes

	Medium Office (MO)	Medium Retail (RE)	Quick Service Restaurant (QSR)	Small Hotel (SH)
CFA	53,628 ft^2	24,692 ft^2	2,501 ft^2	42,552 ft^2
Stories	3	1	1	4
WWR	33%	7.1%	14%	11%
Thermal zoning	Large core, 4 perimeter zones	Large core, 4 very small zones	Dining, Kitchen	77 Guest rooms, laundry, NR areas









Source: California Energy Codes & Standards, Draft Residential Cost-Effectiveness Results

CITY OF AGOURA HILLS

Nonresidential Analysis: Packages

	Mixed Fuel		All-Electric		
	Code Minimum Efficiency (Baseline)	Energy Efficiency	Code Minimum Efficiency	Energy Efficiency	Energy Efficiency + Load Flexibility
MO	Y	Y	Y	Y	Y
RE	Y	Y	Y	Y	N
QSR	Y	Y	Y*	Y*	Y
SH	Y	Y	Y**	Y**	N

** Two scenarios: HVAC and water heating electrification only, with and without cooking electrification*
*** Includes electrification of laundry water heating and dryer*

Load Flexibility

- *Medium Office (MO): Smart Thermostat + Demand Response Lighting*
- *Quick Service Restaurant (QSR): Heat Pump Water Heater (HPWH) Load Shift*

CITY OF AGOURA HILLS

Table Summary – Climate Zone 9 Residential

Packages Cost-effective for Climate Zone 9
All-Electric Prescriptive
All-Electric Efficiency & PV
All-Electric Efficiency, PV, & Battery
Mixed-Fuel Efficiency & PV
Mixed-Fuel Efficiency, PV, & Battery

Packages NOT Cost-effective for Climate Zone 9
All-Electric Prescriptive
All-Electric Efficiency
All-Electric Efficiency & NEEA HPWH
Mixed- Fuel Efficiency
Mixed-Fuel Efficiency, PV, & Battery

CITY OF AGOURA HILLS

Table Summary – Climate Zone 9 Non-Residential

Packages Cost-effective for Climate Zone 9	
Prototype	**Packages**
Medium Office	All-Electric + Efficiency
Medium Office	All-Electric + Efficiency + Load Flexibility
Retail	All-Electric Minimum Efficiency
Retail	All-Electric + Efficiency
Quick Service Restaurant	All-Electric Minimum Efficiency + Mixed Fuel Cooking
Quick Service Restaurant	All-Electric + Efficiency + Mixed Fuel Cooking
Quick Service Restaurant	All-Electric + Efficiency + Load Flexibility + Mixed Fuel Cooking
Hotel	All-Electric Minimum Efficiency
Hotel	All-Electric + Efficiency Measures

CITY OF AGOURA HILLS

Table Summary – Climate Zone 9 Non-Residential

Packages NOT Cost-effective for Climate Zone 9	
Prototype	**Packages**
Medium Office	All-Electric Minimum Efficiency
Medium Office	All-Electric + Efficiency
Quick Service Restaurant	All-Electric Minimum Efficiency
Hotel	All-Electric Minimum Efficiency
Hotel	All-Electric + Efficiency Measures

CITY OF AGOURA HILLS

ELECTRIFICATION REACH CODE STRATEGY

CITY OF AGOURA HILLS

Agoura Hills Permit Data Background

BUILDING PERMIT APPLICATIONS RECEIVED IN LAST THREE YEARS (2019-2021)

- New Residential Construction Permits
  - CY 2019 = 3 | CY 2020 = 3 | CY 2021 = 3
    - **Average = 3 New Residential Construction Permits**
- Accessory Dwelling Unit (ADU) Permits
  - CY 2019 = 6 | CY 2020 = 5 | CY 2021 = 11
    - **Average = 7 New Accessory Dwelling Unit Permits**
- New Commercial Construction Permits
  - CY 2019 = 6 | CY 2020 = 2 | CY 2021 = 0
    - **Average = 3 New Commercial Construction Permits**

TOTAL PROJECTS CURRENTLY UNDERGOING PLANNING ENTITLEMENT

- 60-unit Multi-family Residential Building
- 60-unit Townhouse
- 76-unit Senior Care Facility
- 78-unit Residential Units Mixed-use Building
- 2 Commercial Buildings (~35,000 sq ft)

CITY OF AGOURA HILLS

Reach Code Policy Considerations

- Reach Code Adoption Approach
  - Natural Gas Moratorium
  - **All-Electric Reach Code** ☆
  - Electric Preferred Reach Code
  - **Electric Only Plus Efficiency Reach Code** ☆
  - Efficiency Reach Code
- Applicable Systems and Appliances
  - **Whole Building**
  - Specific Appliances
    - Heat Pump Water Heater
    - Cooking Appliance
    - Electric Dryer
    - Heat Pump Space Heating and Cooling

CITY OF AGOURA HILLS

Reach Code Policy Considerations

- Building Types Impacted by Reach Code
  - **Residential Single-Family and ADUs**
  - **Multi-family**
  - **Non-Residential**
    - **Hotel**
    - **Office**
    - **Retail**
    - **Quick Service Restaurant**
- Exemptions for Building Types
  - H or I Occupancy Types
  - Existing Buildings
- Nonresidential Specific Exemptions
  - Commercial Kitchen
  - Laboratory
- Residential Specific Exemptions
  - Attached ADU/JADU
  - Fireplaces
  - Swimming pool

CITY OF AGOURA HILLS

DISCUSSION

CITY OF AGOURA HILLS

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)
- Present reach code to Environmental Responsibility Subcommittee. (August 2022)
- Bring reach code to City Council in Quarter 3 of 2022. (Sept. 2022)
- Undergo state approvals and begin local enforcement. (Dec. 2022-January 2023)

CITY OF AGOURA HILLS

THANK YOU.

ENERGY REACH CODE QR CODE

PLEASE SCAN*

Questions or Comments?

Please send to Lukas Quach, Building Official at LQuach@AgouraHillsCity.org or call (818) 597-7332

For additional information visit:
www.agourahillscity.org/energyreachcode

CITY OF AGOURA HILLS