2022 ELECTRIFICATION REACH CODE

September 19, 2022

Terra Sampson, Utility Conservation Analyst

Recommended Action(s):

Pass an Ordinance of the City Council of the City of Healdsburg amending section 15.04.080 of the Healdsburg Municipal Code.

Reach Code Timeline & Direction

Oct. 2019

- Council passed resolution declaring a climate emergency

Dec. 2019

- Council passed resolution adopting local Reach Code
- Exemptions for natural gas cooking appliances, direct-vent sealed-combustion fireplaces, pool and spa heating

Feb. 2022

- Council provided direction to update all-electric Reach Code
- Exemptions for natural gas cooking appliances, direct-vent sealed-combustion fireplaces

Sept. 2022

- First reading of 2022 Electrification Reach Code ordinance

Reach Codes

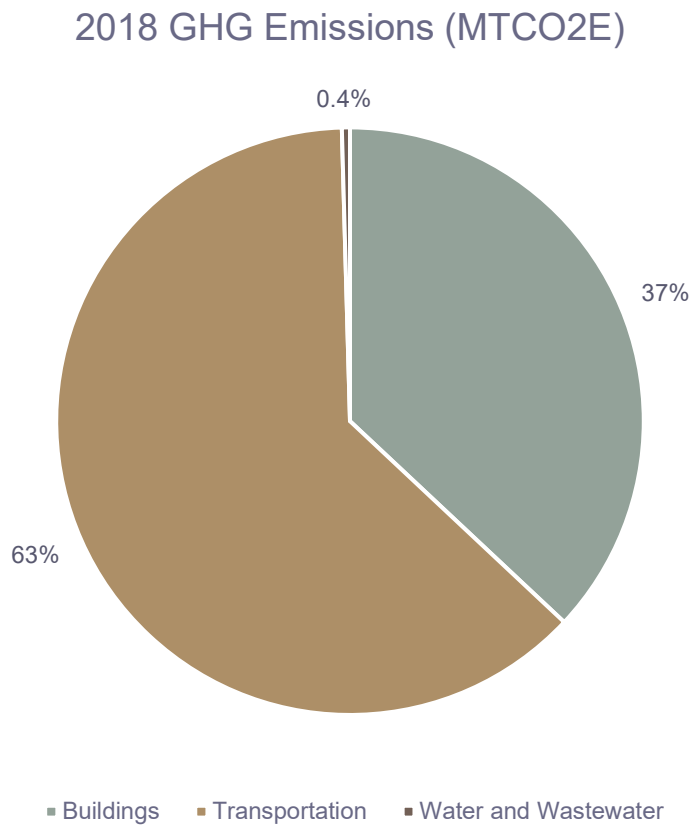
In California, Title 24 of the Code of Regulations sets the building code standards for all jurisdictions statewide.

However, local governments can **adopt more stringent requirements** (i.e., more environmentally sustainable), which are known as Reach Codes.

- All reach codes must be **re-approved with each Code update** (every 3 years).
- **Electrification reach codes amending CALGreen Part 11,** that do not require additional energy efficiency, do not have to be proven to be cost effective.
- City ordinances require **two public meetings** prior to adoption.

GHG Emissions in Healdsburg

37% of Healdsburg emissions were from building energy use in 2018



Source: RCPA Greenhouse Gas Inventory (https://rcpa.ca.gov/data-and-reports/sonoma-county-greenhouse-gas-inventory/)

GHG Emissions for New Homes for Healdsburg (2023-2025)

	Annual GHG Emissions for Mixed Fuel Dwellings ($MTCO_2e$)	Annual GHG Emissions for All-Electric Dwellings ($MTCO_2e$)	Annual GHG Emissions Avoided ($MTCO_2e$)
90 Single Family Dwellings	198	132	66
270 Multi-Family Dwellings*	307	204	103
	505	**336**	**169**

**Factor of 52% of single-family energy use is applied per dwelling in lieu of state-wide analysis, which is not yet available for multi-family.*
Note: Savings estimates have been slightly modified to reflect recent updates to the state-wide analysis.

GHG Emissions Impacts for Exceptions

Exception Considered	Annual GHG Emissions Maintained per Dwelling ($MTCO_2e$)	Annual GHG Emissions Maintained for ALL 360 Dwellings ($MTCO_2e$)	Annual GHG Emissions Maintained for STANDARD % of Dwellings* ($MTCO_2e$)
Natural Gas Cooking Appliances	.14	52	9
Decorative Fireplaces	.11	41	1
Pool and Spa Heating	*3.98*	*N/A*	*13*
		93	**10**

**Assumes standard percentage of single-family homes use natural gas for cooking, have a natural gas fireplace, and/or have a heated pool, based on U.S. Energy Information Administration Residential Energy Consumption Survey.*
Assumes no multi-family dwellings use the exceptions.

Ordinance Overview

Residential

- All-Electric
  - Gas exempt for cooking and fireplaces
  - Attached ADUs are exempt
  - Required projects for health and safety violation are exempt
  - Pre-wiring required

Non-Residential

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  - Essential Facilities buildings can be exempt
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Next Steps

First Reading of Ordinance (Sept. 6) → Second Reading of Ordinance (Sept. 19) → Submit to CA Building Standards Commission → Ordinance Effective Jan. 1, 2023

Recommended Action(s):

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Questions?

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September 6, 2022

Terra Sampson, Utility Conservation Analyst

Ted Tiffany, Guttmann & Blaevoet

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California & Regional Climate Change Goals

- 40% GHG reduction by 2030

SB 32 (2016)

Electric sector:
- 60% renewable by 2030
- 100% carbon-free by 2045

SB 100 (2018)

- Carbon neutrality by 2045

Gov. Exec Order (2018)

- 40% GHG reductions <u>in buildings</u> by 2030 (assessment)

AB 3232 (2018)

- Carbon neutrality by 2030

Sonoma Climate Mobilization Strategy (2021)

rcpa
REGIONAL CLIMATE PROTECTION AUTHORITY

California Building Standards Code (Title 24)

Updated and published every 3 years
Next code cycle goes into effect on Jan 1, 2023

- Part 1 - California Administrative Code
- Part 2 - California Building Code
- Part 2.5 - California Residential Code
- Part 3 - California Electrical Code
- Part 4 - California Mechanical Code
- Part 5 - California Plumbing Code
- Part 6 - California Energy Code
- Part 7 - Vacant
- Part 8 - California Historical Building Code
- Part 9 - California Fire Code
- Part 10 - California Existing Building Code
- **Part 11 - California Green Building Standards Code**
- Part 12 - California Referenced Standards Code

Reach Codes

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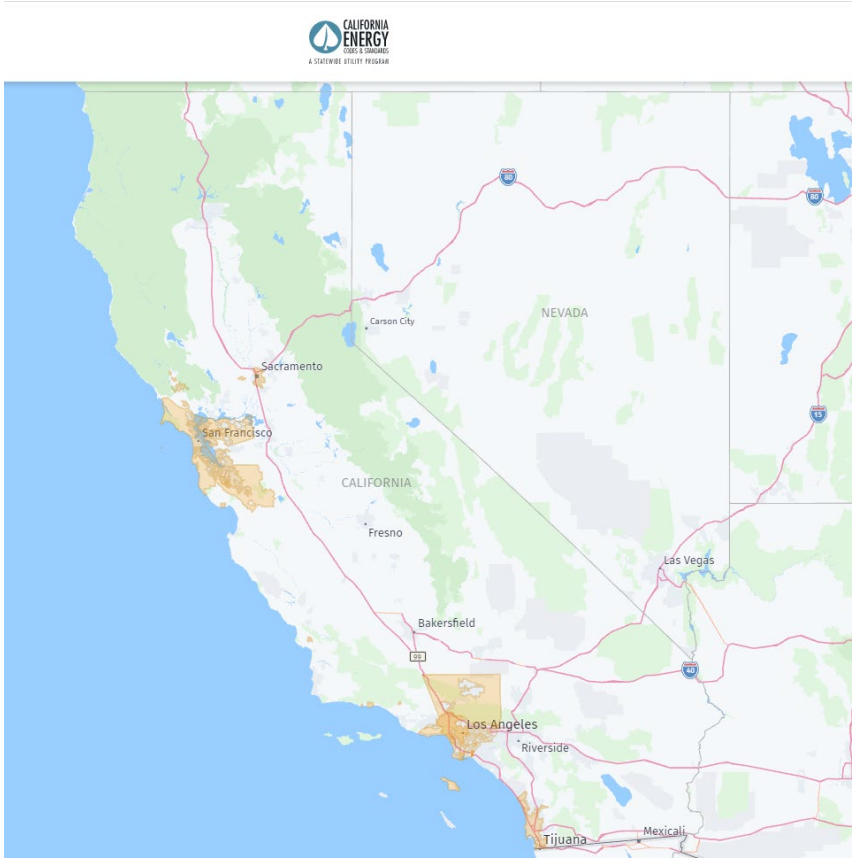
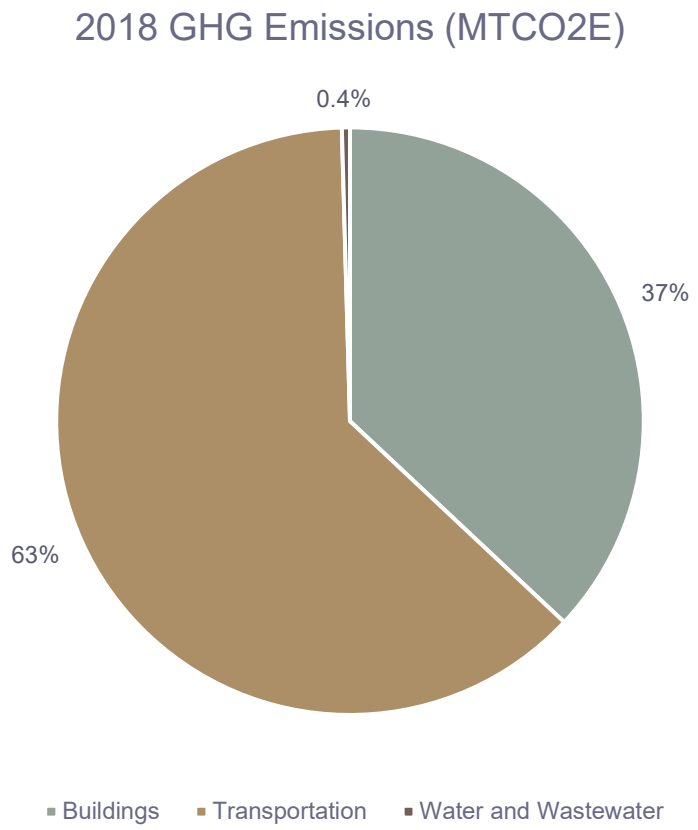
Cities With Reach Codes



- https://localenergycodes.com/content/map
- 2019 Reach Codes: 59
- 2022 All-Electric (to-date)
  - Sacramento
  - San Luis Obispo

GHG Emissions in Healdsburg

37% of Healdsburg emissions were from building energy use in 2018



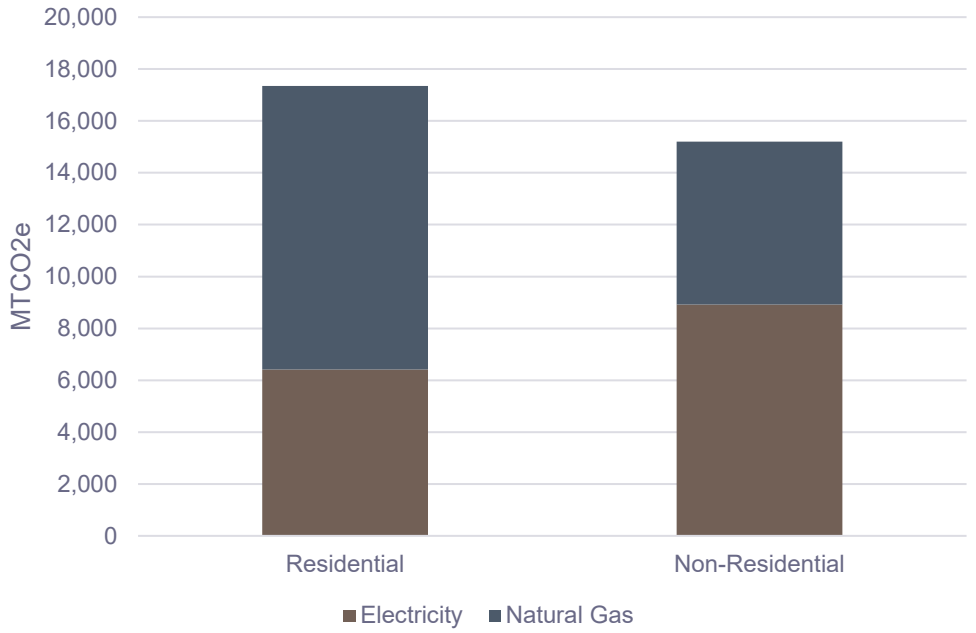
Source: RCPA Greenhouse Gas Inventory (https://rcpa.ca.gov/data-and-reports/sonoma-county-greenhouse-gas-inventory/)

Building Energy GHG Emissions

Building energy emissions in 2020 (preliminary results):

Electricity: 47%

Natural gas: 53%



GHG Emissions from Building Energy in metric tons of carbon dioxide equivalent (MTCO2e)

Sector	Energy Type	2020 Emissions	2020 Percent
Residential	Electricity	6,421.26	20%
	Natural Gas	10,933.11	34%
Non-Residential	Electricity	8,915.76	27%
	Natural Gas	6,286.81	19%
	Total	**32,556.95**	**100%**

Avoided GHG Emissions for New Homes for Healdsburg (2023-2025)

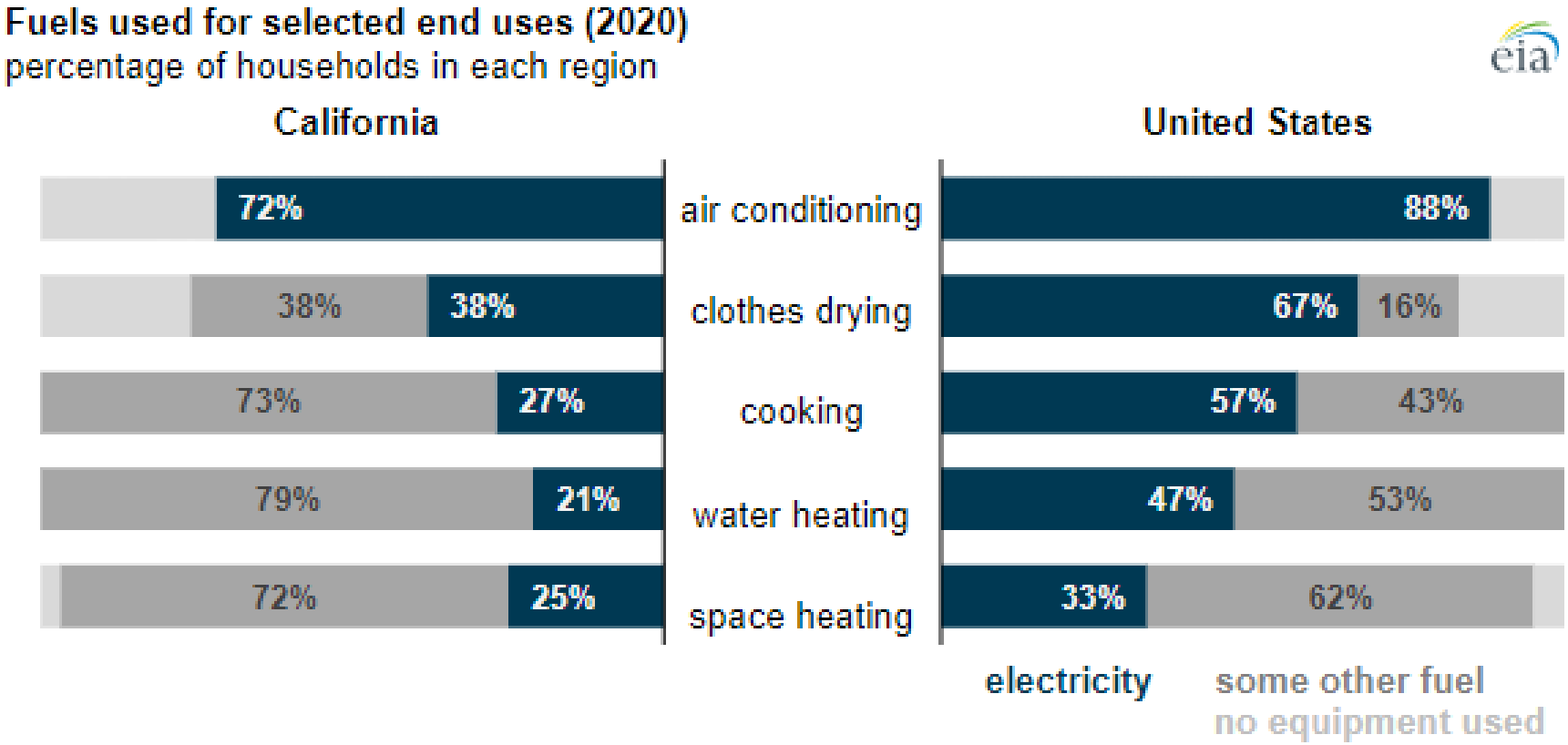
Electrification Reach Code (All-Electric)	Annual GHG Emissions Avoided per Home (MT CO_2e)	Annual GHG Emissions Avoided for all Homes (MT CO_2e)
90 Single Family Dwellings	.723	65.07
270 Multi-Family Dwellings	.374*	100.99
		166.06**

**Factor of 52% of single family energy use is applied in lieu of state-wide analysis, which is not yet available for multi-family.*

***If all new dwellings use natural gas cooking exemption, estimated 31% fewer avoided emissions*

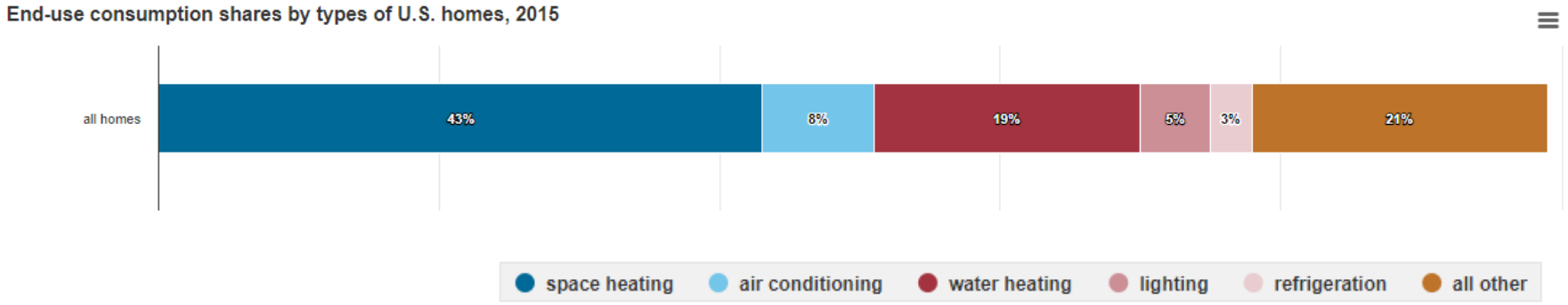
***If all new dwellings use natural gas fireplace exemption, estimated 25% fewer avoided emissions*

Natural Gas and Electric Cooking



Data source: U.S. Energy Information Administration, *Residential Energy Consumption Survey*

Energy Uses in Homes



Space heating and water heating accounts for approximately two-thirds of average residential energy use.

GHG Emissions of Mixed Fuel v. All-Electric

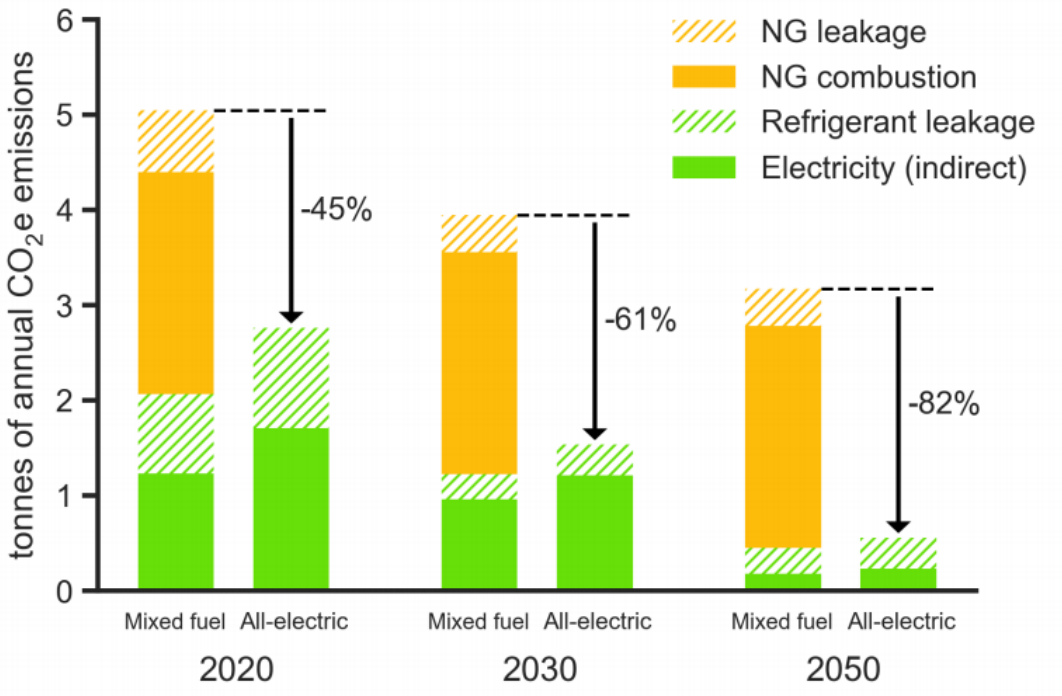
SB 100 sets a goal of:

60% renewable energy by 2030 and;

100% carbon-free electricity by 2045

This chart shows building related emissions of a mixed fuel home compared to an all-electric home as SB 100 thresholds are met.

Figure 1-1: Annual GHG emissions from a mixed-fuel and all-electric 1990s vintage home in Sacramento

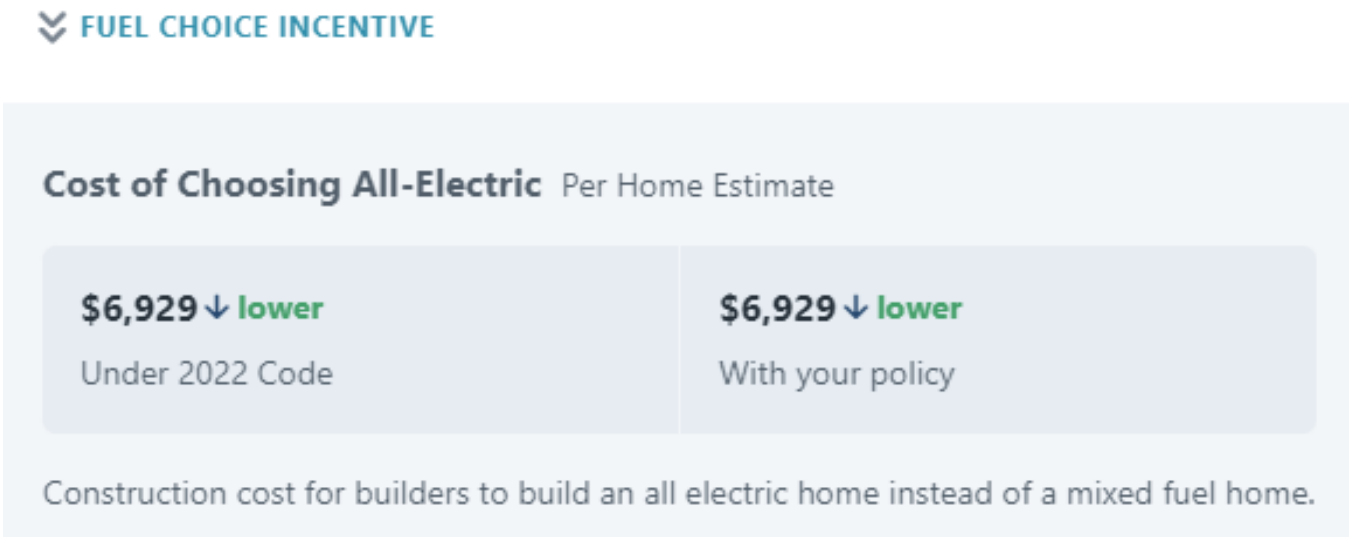


Electricity emissions are based on the High Electrification scenario consistent with SB 100; see the greenhouse gas methodology section for more details. The 2030 and 2050 bars assume that the next generation of low-GWP refrigerants are used in all applicable heat pump systems modeled, including air conditioners, HVAC heat pumps, heat pump water heaters, and heat pump clothes dryers. We do not estimate refrigerant leakage from refrigerators and freezers, but these fugitive emissions would be the same in both electric and natural gas homes. We assume that by 2030, fugitive methane emissions are reduced by 40%, as mandated by the CARB Short-Lived Climate Pollutant Strategy and as previously set as a goal by the Obama administration. We based our calculations of fugitive refrigerant emissions on CARB data as described further in Appendix C.

E3 Quantifies the Consumer and Emissions Impacts of Electrifying California Homes: https://www.ethree.com/e3-quantifies-the-consumer-and-emissions-impacts-of-electrifying-california-homes/

2022 Cost Effectiveness Studies

- **Cost effectiveness is not a requirement for amendments to CALGreen**
- 2022 state-wide results currently available for single-family homes
  - Cost savings experienced upfront in the construction phase by avoiding the cost to install natural gas infrastructure
  - Code prescriptively required heat pumps for space heating and water heating
  - Code requirement for pre-wiring for all-electric appliances in residential mixed-fuel buildings



2019 Cost Effectiveness Studies

- California Statewide Codes & Standards Program, which includes the State's Investor Owned Utilities (PG&E, SoCal Gas, SDG&E, and SCE) developed the 2019 Statewide Cost Effectiveness Study for Nonresidential Development and Low-Rise Residential New Construction.

- The studies were updated by the Codes & Standards Program analysts to reflect Healdsburg Electric rates.

Chart below shows cost savings for building all-electric:

Cost savings for all-electric buildings		
Building Type	**Construction Savings**	**Operational Savings**
Single family home	Up to $5,349	$ 4,416.00
Multifamily - three stores or less	Up to 2,337	$ 1,755.00
Medium Office	$ 73,695.00	$ 32,266.00
Retail	$ 7,464.00	$ 22,981.00

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