



All-Electric Homes 101

Go Green with
an Electric Home

October 22, 2020

www.cityofpaloalto.org



Outline

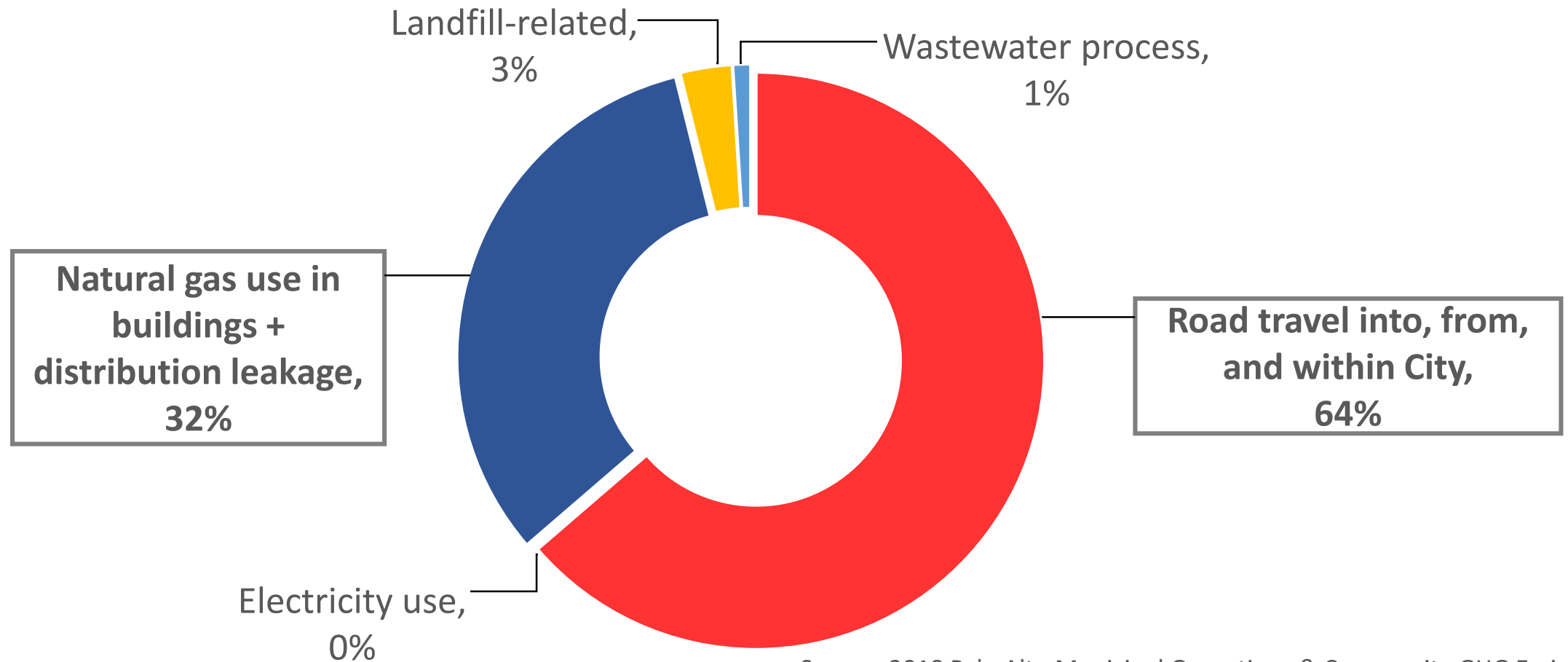
- **Background**
- **Why Choose Electric**
- **Efficient electric alternatives to gas appliances**
- **Roadmap to plan for home electrification**



Webinar Logistics

- All attendees are in listen only mode
- Please send question using the Q&A function
- Webinar is being recorded; recording & slides will be available after the webinar
cityofpaloalto.org/ClimateAction
- Short survey after the webinar

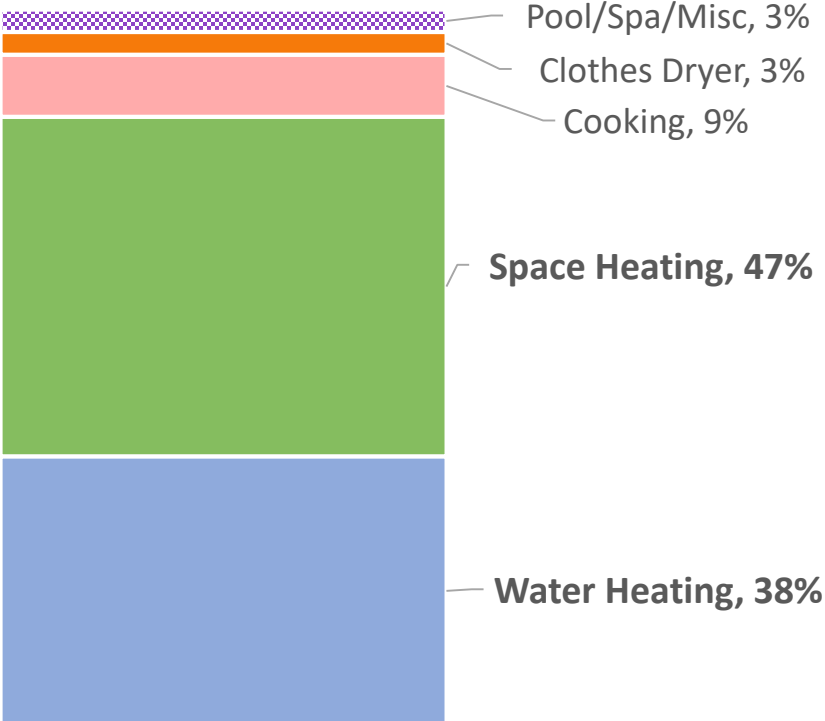
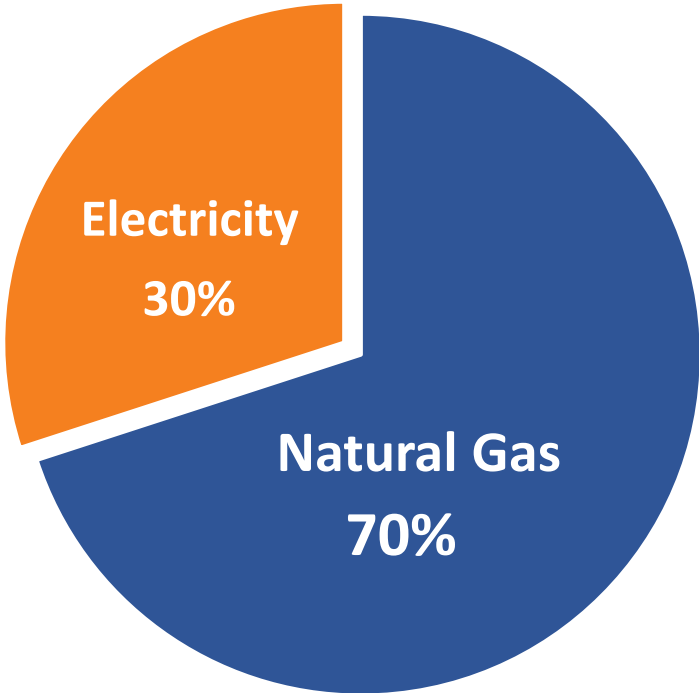
Greenhouse Gas Emission Sources within Palo Alto



Source: 2018 Palo Alto Municipal Operations & Community GHG Emissions

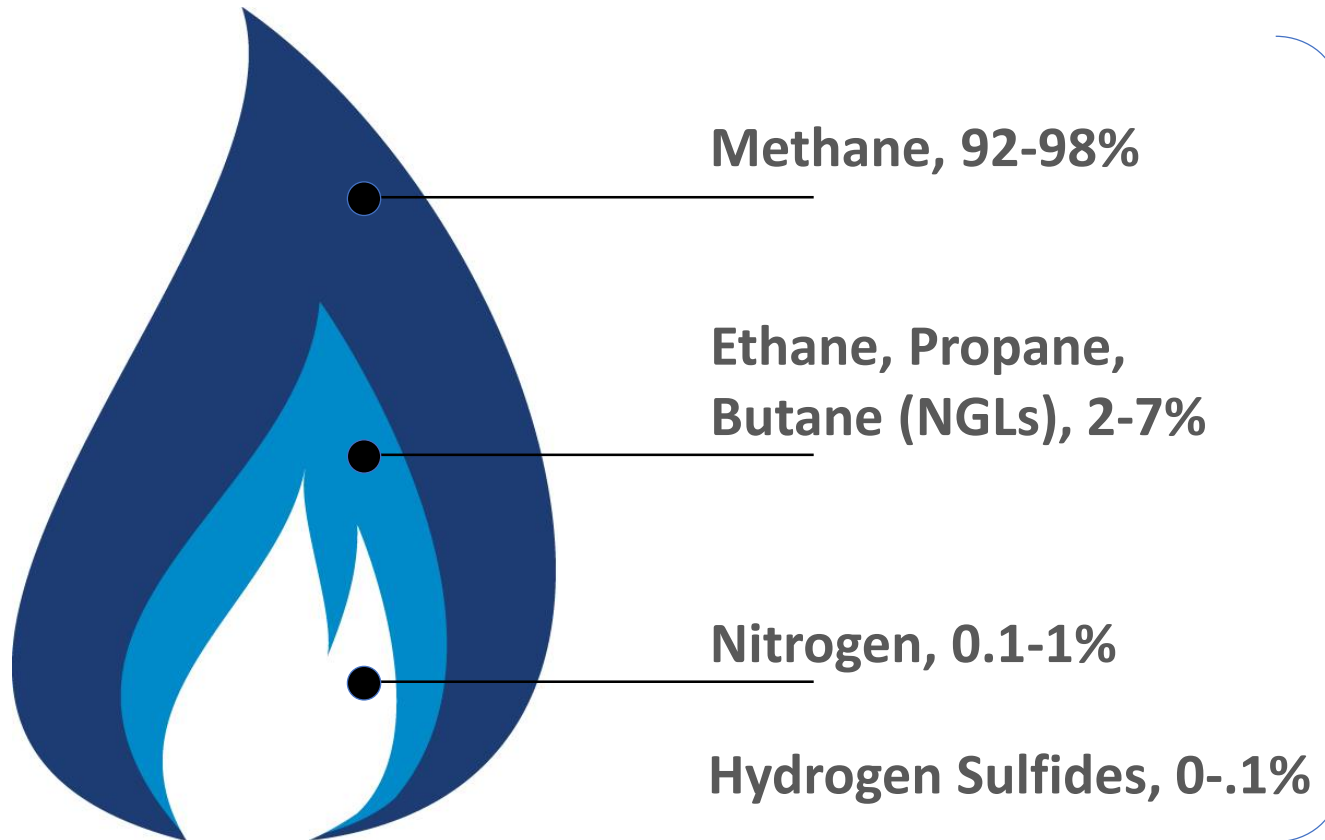
Natural Gas Use in a Single-Family Household

Natural gas use makes up 70% of the annual energy consumption in an average single-family home in Palo Alto.



Average gas use for a Palo Alto single-family home
~600 therms/year

What is Natural Gas



Combustion Byproducts:

Carbon Dioxide

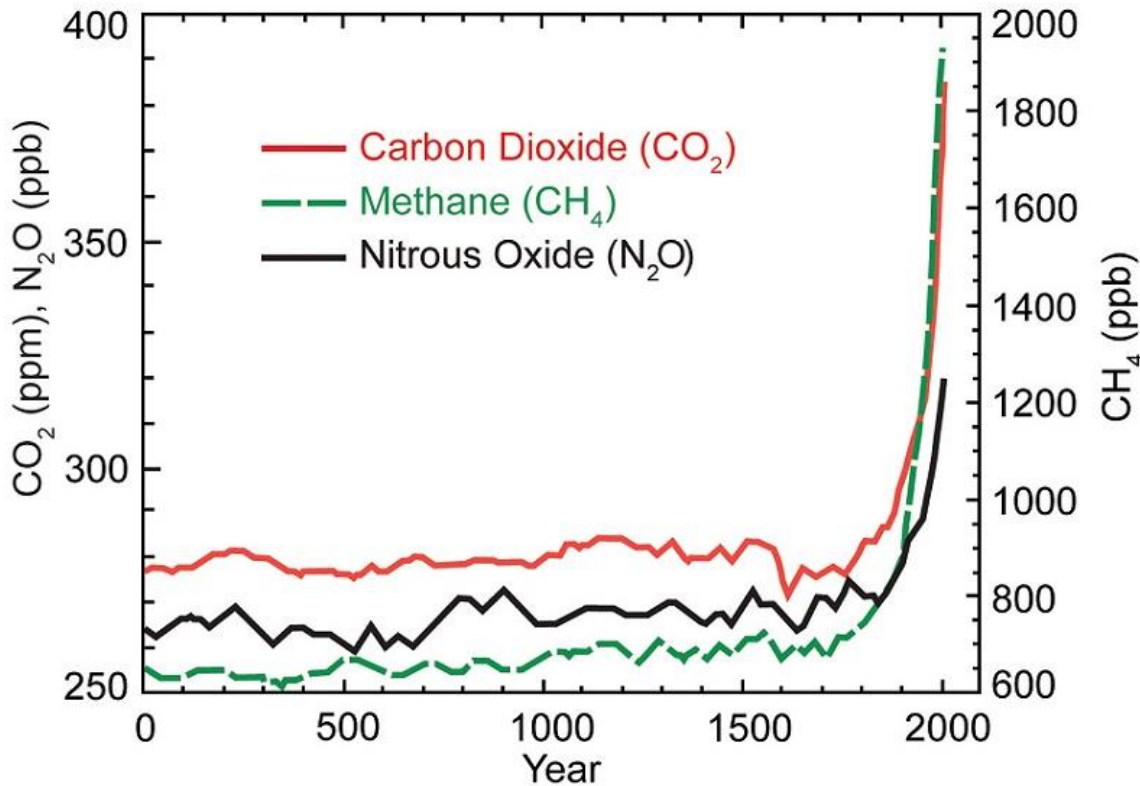
Carbon Monoxide

Nitrogen Oxides

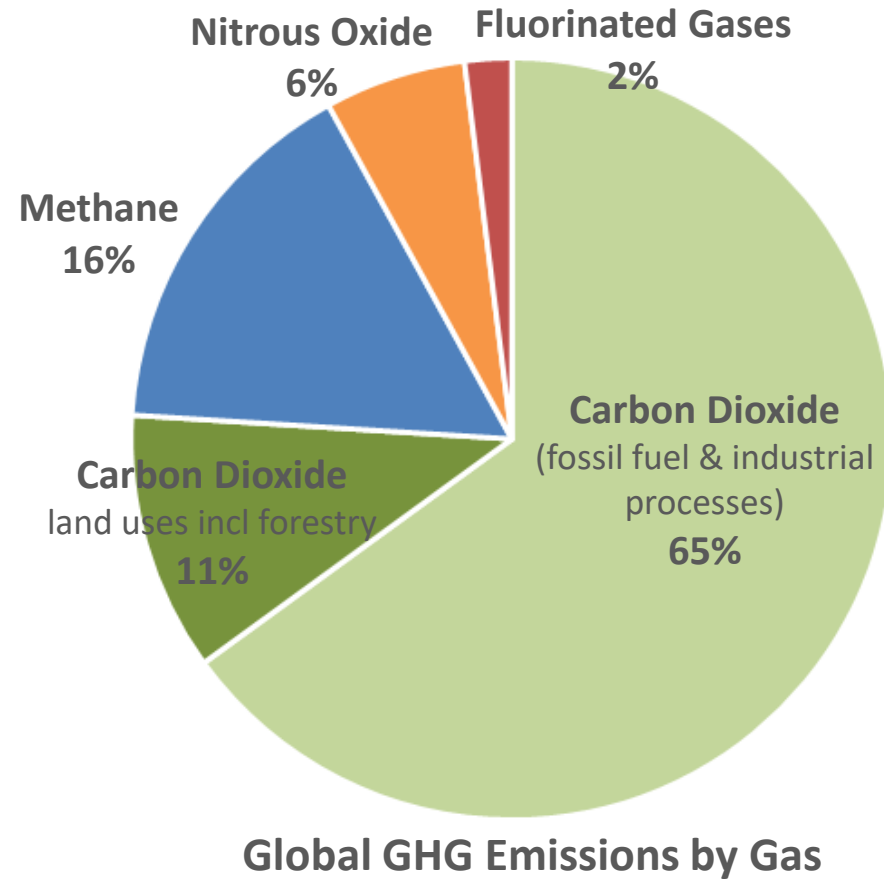
Sulfur Oxides

Natural Gas is a Key Contributor to Global Warming

Methane warms the planet 86 times as much as CO₂ over a 20-year period.



Source: U.S. National Climate Assessment (2014)

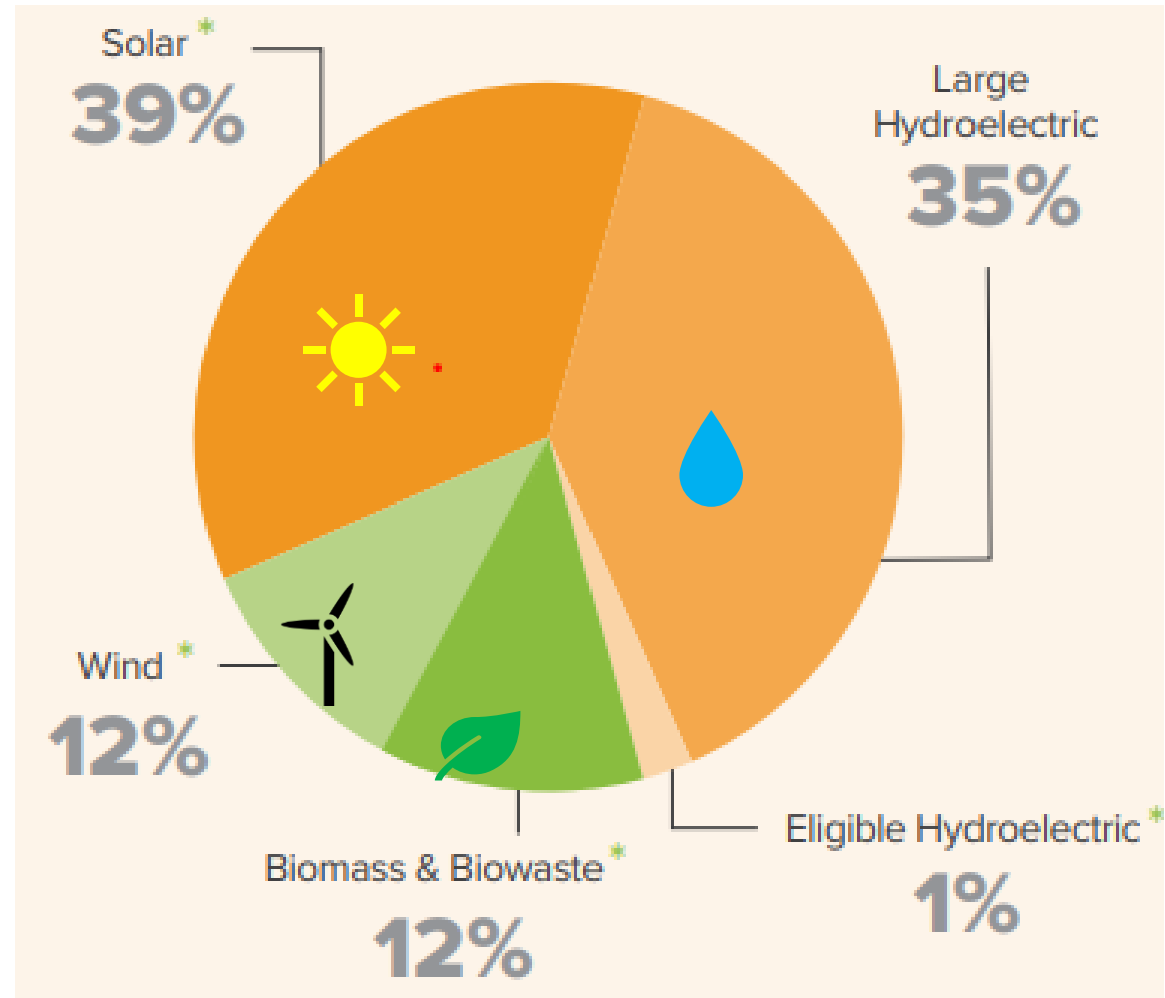


Source: IPCC (2014)

Where does Palo Alto's Electricity come from

Palo Alto electricity has been
100% carbon neutral since 2013

cityofpaloalto.org/CarbonNeutral



Source: City of Palo Alto Utilities 2018 Power Content Label

Why Choose Electric

Better for your safety

Better for your health

Better for the planet

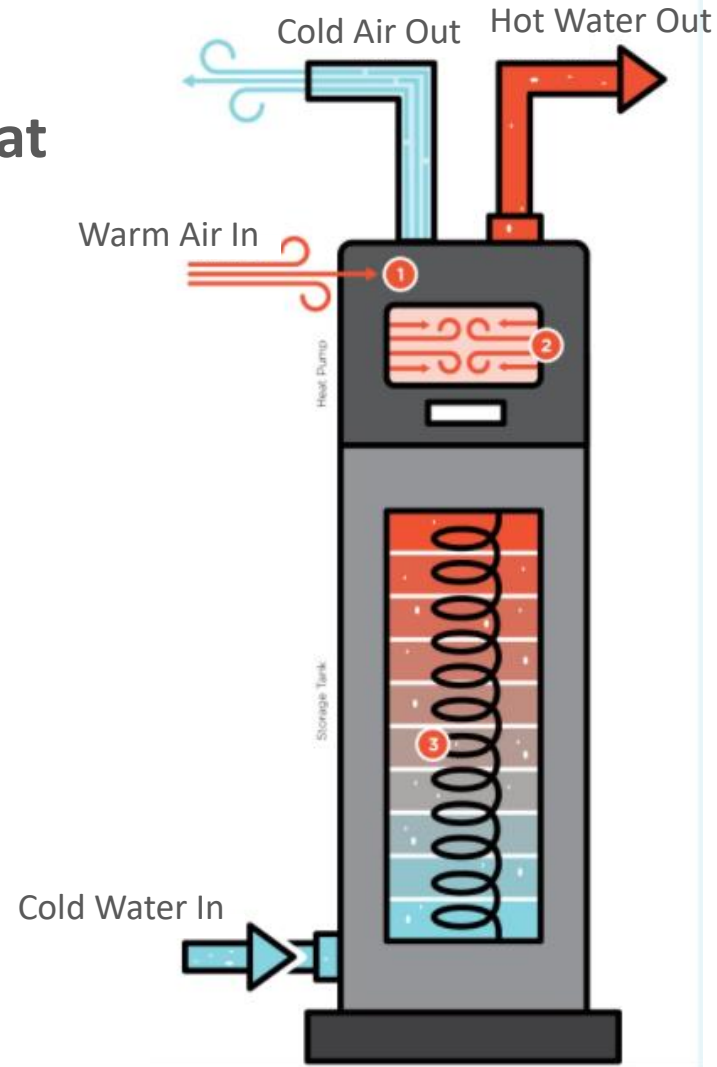


Electric Alternatives to Gas Appliances

What is a Heat Pump

A Heat Pump is a device that uses a small amount of energy to move heat from one location to another.

For every 1 unit of electric energy input, a heat pump produces 3 - 4 units of energy output.



- 1 Heat Pump pulls warmth from the air
- 2 Warm air is compressed, increasing its temperature
- 3 Condenser coils transfer heat to the water

Heat Pump Water Heater

With heat pump water heater, there is no risk of back drafting. Several settings are available to maximize efficiency savings, including vacation mode.

	Gas Tank	Gas Tankless	Heat Pump
Efficiency	☹️ Poor	😊 Ok	😄 Best
Costs	\$	\$\$ - \$\$\$	\$\$ - \$\$\$



Heat Pump HVAC (Heating, Ventilation & Air Conditioning)

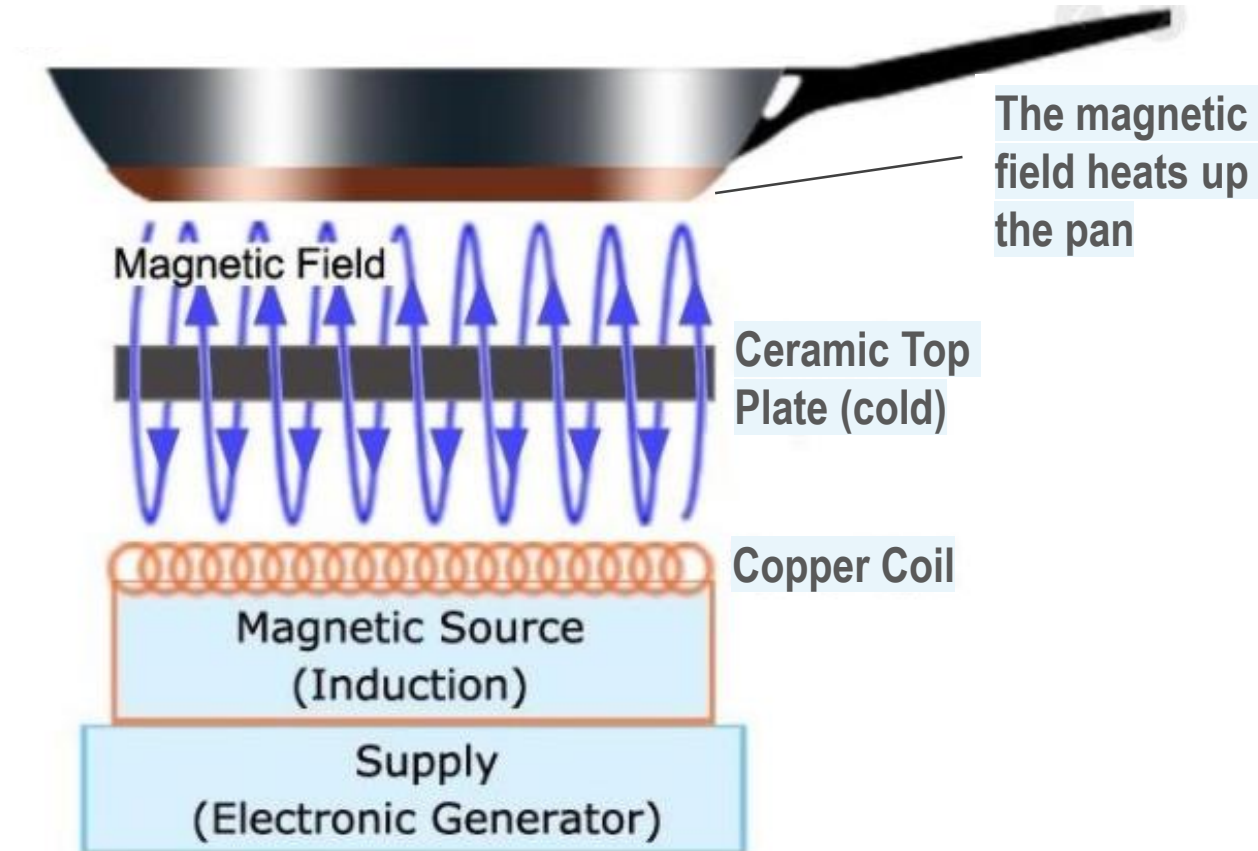
A Heat Pump HVAC provides efficient, quiet heating, air conditioning, and air filtration for better indoor air quality.

	Gas Furnace	Mini Split (Ductless)	Ducted Central Heat Pump
Air Conditioning	✘	✓	✓
Efficiency	☹️ Poor	😊 Best	😊 Best
Comfort	☹️ Ok	😊 Best	😊 Best
Costs	\$\$	\$\$ - \$\$\$	\$\$ - \$\$\$

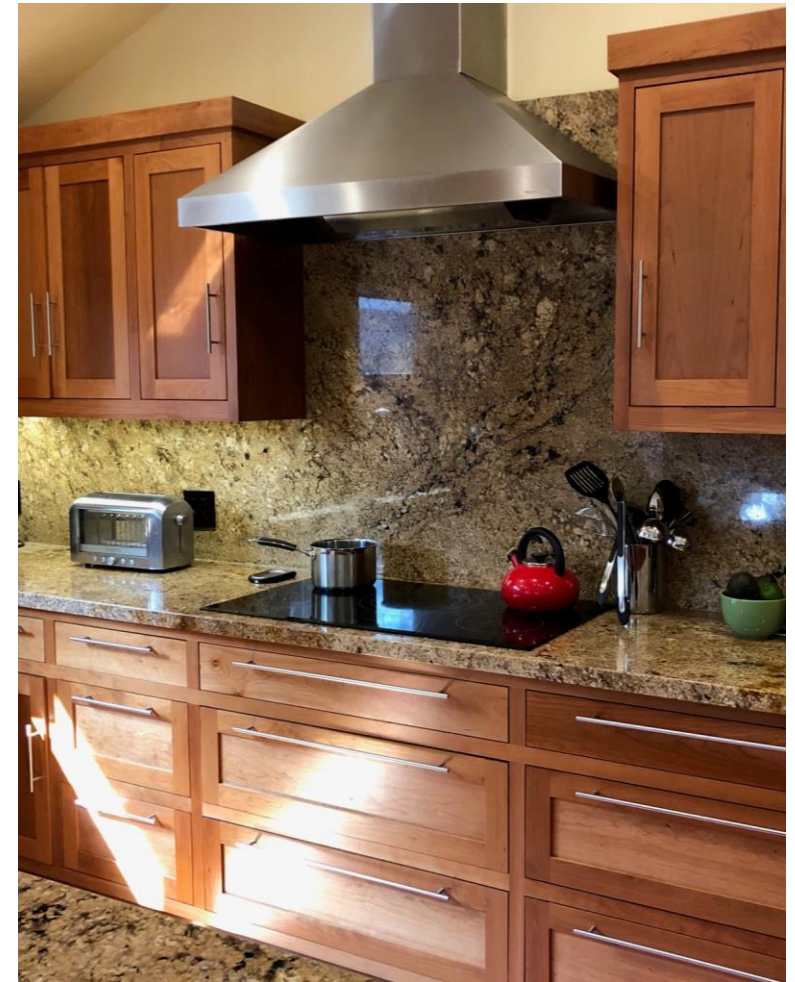
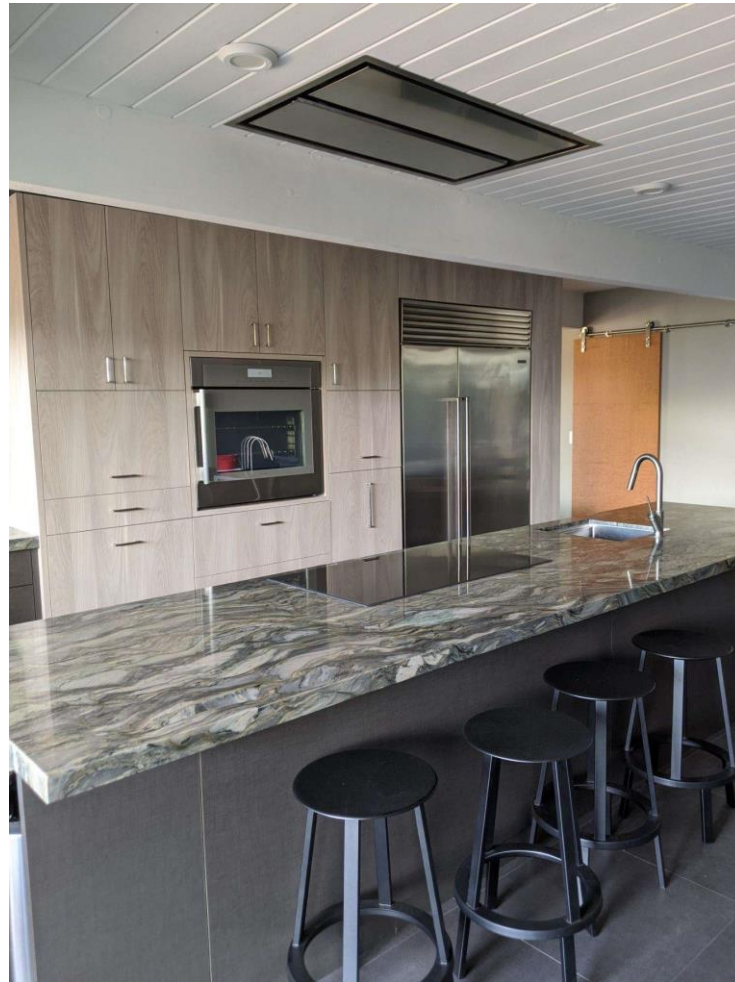


How Induction Cooking Works

Induction cooktop uses electromagnetism to create heat inside the cooking pan, which in turn heats the food or water.



Induction Stoves are safer, better heat control & easier to clean



Induction Cooktops are favored by many Celebrity Chefs

“It is incredibly clean, incredibly fast, incredibly efficient”

Chef Wil Gilson, Puritan & Company, Cambridge

“It’s safe, aesthetically it’s nice, and it’s also very practical because you can move your pans on the side and put them back on the heat very quickly”

Chef Eric Ripert, La Bernadin, New York

“Cooking with induction allows us to expand our creativity”

Chef Alexandre Couillon, La Marine, Noimoutier, France

“Any place where space is an issue, you want induction”

Chef Ming Tsai, Blue Dragon, Boston

“I love, love, love the induction technology”

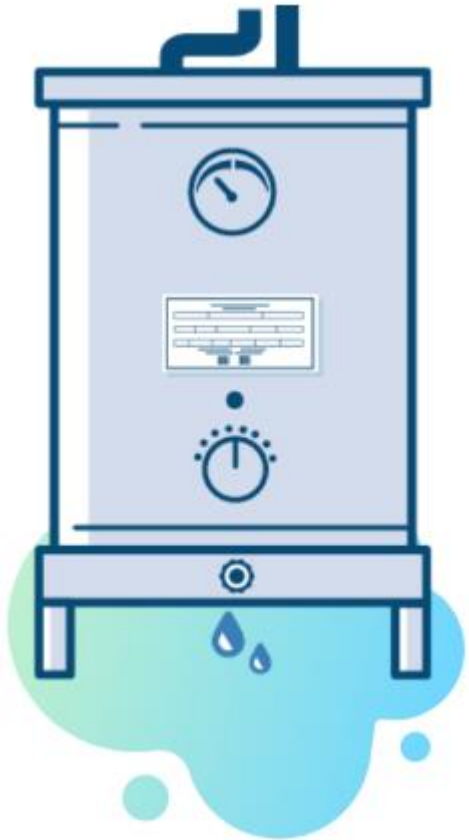
Chef Rick Bayless, Frontera Grill, Chicago

“It’s cleaner, it cuts down on heat in the kitchen and allows a more precise way to work”

Paul Liebrandt, “A Matter of Taste”

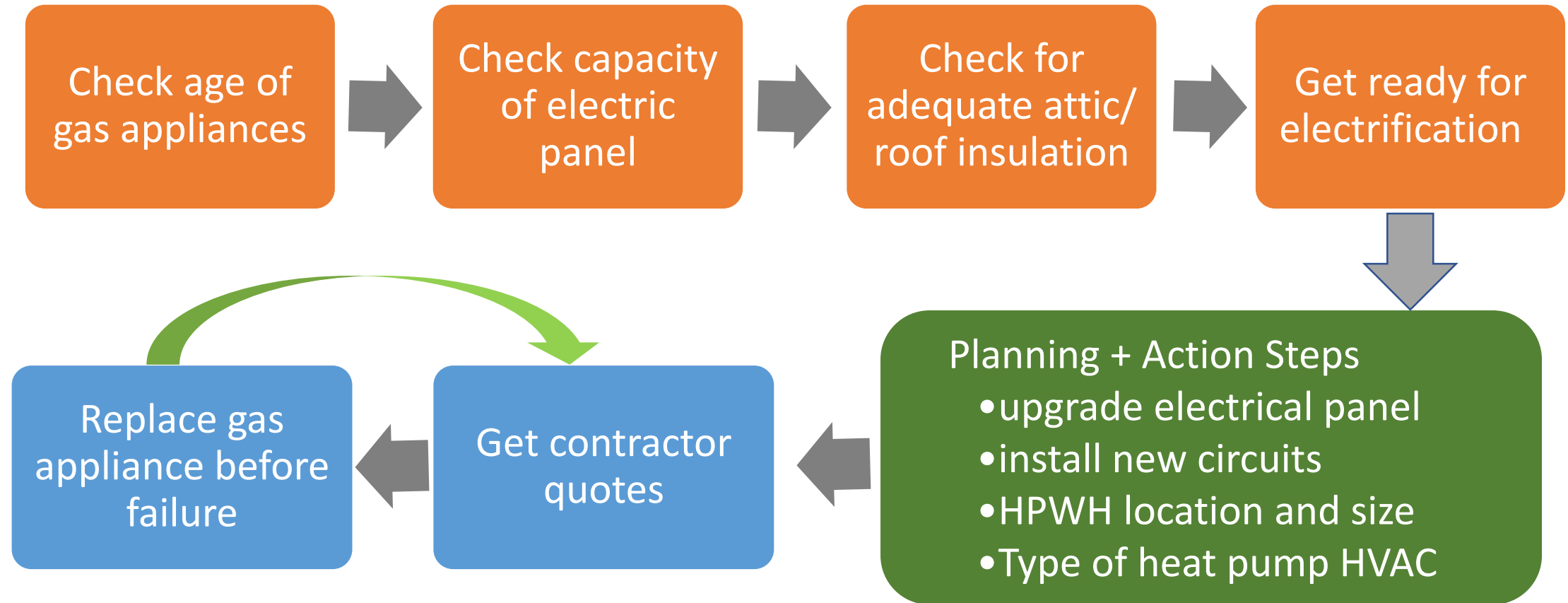
Planning for Home Electrification

Be Proactive about Replacing Gas Appliances



- **Water heater tank 10-15 years**
 - Often fail without warning – plan proactively
 - Age of water heater – web sites look ups
 - <https://hotwatersolutionsnw.org/news/how-old-is-my-water-heater>
- **Furnace/AC 15-20 years**
 - Plan before a winter failure
 - Bonus: heat pump adds air conditioning
- **Stove/oven**
 - Planning a kitchen remodel?
 - Talk to your designer or architect

Mapping the journey to electrify your home



The Home Efficiency Genie is here to help you

- **Genie is your trusted advisor**
- Home Electrification Readiness Assessment
 - Evaluation of existing electrical panel size
 - Review of existing appliances and equipment
 - List of local electricians
- Contractors for upgrade projects
- Independent advice for any type of project

efficiencygenie.com



HPWH Rebate

- Incentive for replacing gas water heater
 - \$1200 for up to 79 gallons
 - \$1500 for 80 gallons and larger
- List of local contractors
- Project advice from Home Efficiency Genie advisor
- Garages, basements and outdoor water heater enclosures are well suited for HPWHs

cityofpaloalto.org/hpwh



Neighbor Testimonials

“I feel good about switching from a dirty energy source to a clean energy source that will continue to get cleaner over time.” - Jim

“I love my heat pump for their efficiency and gentle warmth and the surprising air conditioning bonus. They’re powered by my solar panels and my immense satisfaction is I’m off fossil fuels” - Robin

“Replacing gas appliances allows us to shift from an energy source we paid for (gas) to a source we actually could produce ourselves (with our solar system). We are electrifying AND saving money.” - John

"Our new heat pump system heats (and cools!) quickly and is super quiet and energy efficient. We are much more comfortable year-round -- winters downstairs and summer in the attic are no longer to be feared!" - Javier

Summary



An All-Electric Home is cleaner, safer and healthier.



There are very efficient electric alternatives to gas appliances.



**Plan ahead for your electrification journey.
The Genie is here to help.**



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Questions

Web Resources:

cityofpaloalto.org/electrification
efficiencygenie.com

Email additional questions to: sustainability@cityofpaloalto.org

Post-Webinar Survey <https://www.surveymonkey.com/r/Allelectric101>