All-Electric Homes 101
Go Green with an Electric Home
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

- Road travel into, from, and within City: 64%
- Natural gas use in buildings + distribution leakage: 32%
- Electricity use: 0%
- Landfill-related: 3%
- Wastewater process: 1%

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

Methane, 92-98%

Ethane, Propane, Butane (NGLs), 2-7%

Nitrogen, 0.1-1%

Hydrogen Sulfides, 0-.1%

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)

Global GHG Emissions by Gas

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.

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<th>Gas Tank</th>
<th>Gas Tankless</th>
<th>Heat Pump</th>
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<tr>
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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.

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<th>Mini Split (Ductless)</th>
<th>Ducted Central Heat Pump</th>
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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

“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

“Cooking with induction allows us to expand our creativity”
Chef Alexandre Couillon, La Marine, Noimoutier, France

“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

Check age of gas appliances → Check capacity of electric panel → Check for adequate attic/roof insulation → Get ready for electrification

Replace gas appliance before failure → Get contractor quotes

Planning + Action Steps:
- Upgrade electrical panel
- Install new circuits
- HPWH location and size
- Type of heat pump HVAC
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
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