Buyer's Guide to Heat Pump Water Heaters: Efficient and Sustainable Solutions

PG&E

GET STARTED

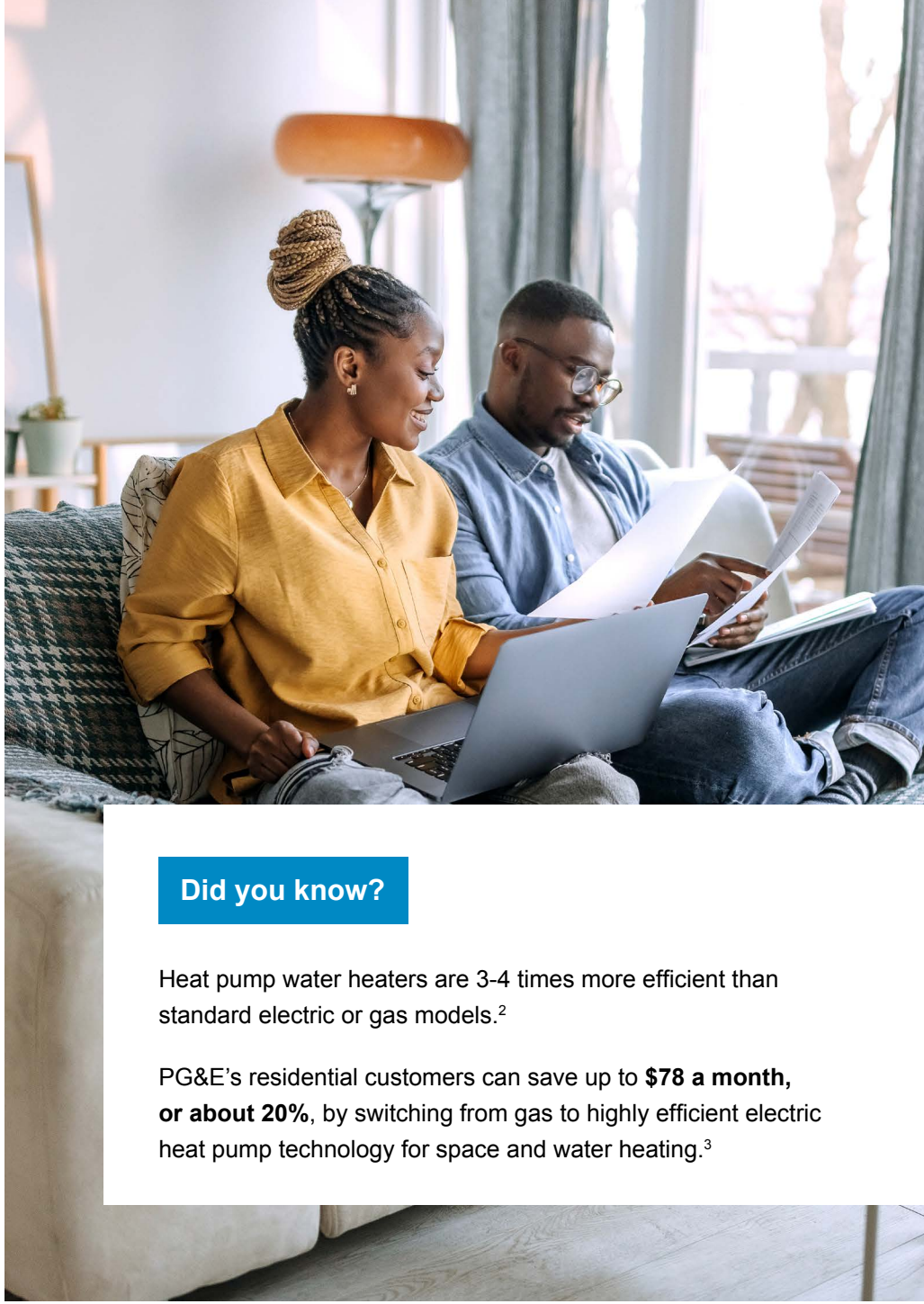
Introduction

An all-electric home can lower costs, enhance comfort, and make your home more sustainable, all while reducing your carbon footprint.

Heat pump technology is the most efficient way to heat water and heat and cool your home. Since water heaters are the largest consumer of energy and account for the most gas usage in many California homes[1], switching to an electric heat pump water heater (often referred to as an HPWH) is key in the transition to a clean, modern, all-electric home.

In this guide, you will find:

- How heat pump water heaters (HPWHs) work
- Benefits of HPWHs
- Buying considerations
- Installation and care tips
- Resources for switching to a HPWH



Did you know?

Heat pump water heaters are 3-4 times more efficient than standard electric or gas models.[2]

PG&E's residential customers can save up to **$78 a month, or about 20%**, by switching from gas to highly efficient electric heat pump technology for space and water heating.[3]

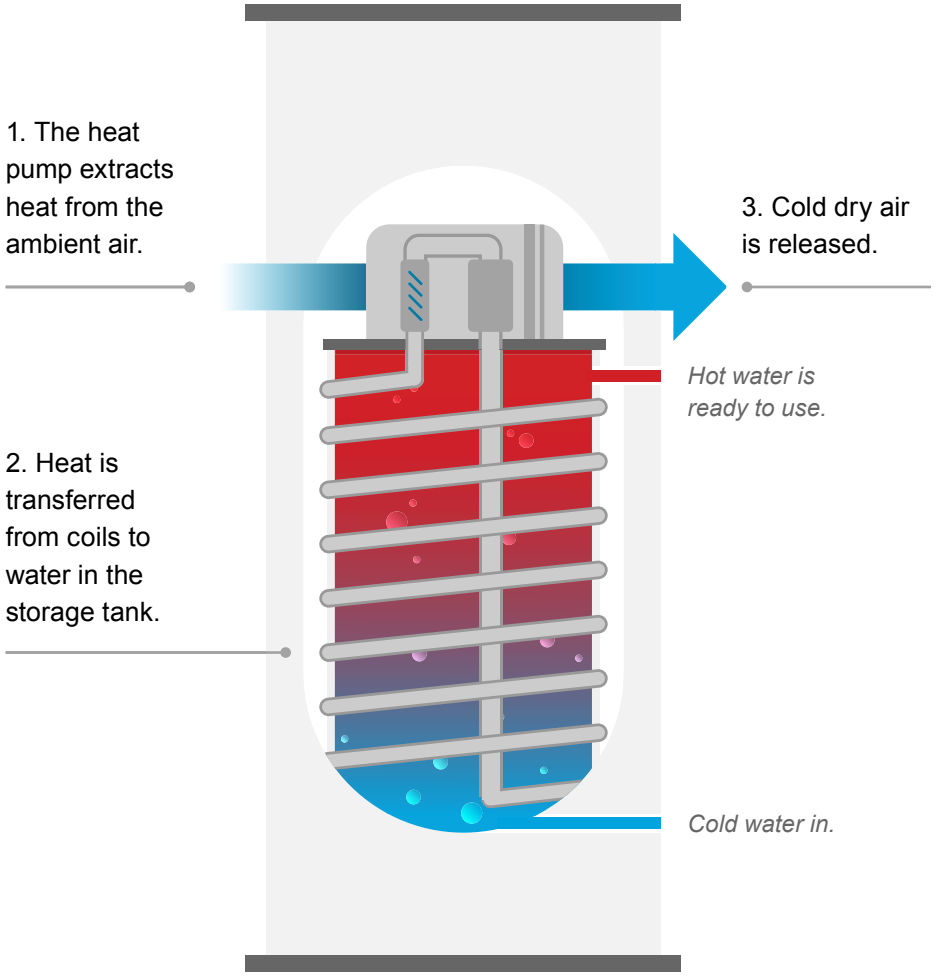
[1] https://www.energy.ca.gov/sites/default/files/2021-08/CEC-200-2021-005-PO.pdf
[2] https://www.energystar.gov/products/ask-the-experts/what-goes-cost-installing-heat-pump-water-heater
[3] This estimate is based on an analysis using the Fixed Charge Rate Plan Design and Bill Impacts Model prepared for California Public Utilities Commission (CPUC) by Energy Environmental Economics (E3), Inc. in April 2023. It considers customers transitioning from Time-of-Use to Electric Home rate plan. The potential savings will vary depending on the customer's location, energy use, enrollment in PG&E programs, and current rates in effect.

How heat pump water heaters work

While gas water heaters release CO2 into the air, heat pump water heaters emit cold air.

Instead of generating heat directly, heat pump water heaters pull and move the heat from the surrounding air to heat water in a storage tank. **Yes, even cold air contains a certain amount of heat that the heat pump can extract.**

After the heat is transferred, the water in the tank is now heated and available to flow to your home's faucets, while the cooled dehumidified air is exhausted.



Multiple settings to fit your lifestyle:

- **Heat Pump Setting**
  Maximize energy efficiency and potential savings.
- **Energy Saver or Hybrid**
  Ideal for daily use. It uses the heat pump to efficiently heat water, ensuring you have hot water when you need it.
- **High Demand**
  Similar to Energy Saver or Hybrid but will provide even more hot water during high usage periods while optimizing energy savings.
- **Electric Resistance**
  To be used only when the heat pump or filter is being serviced, and is not for normal operation.
- **Vacation**
  When away from home, the unit can save energy by being put in “sleep” mode until you return.

Benefits

An electric heat pump water heater offers a range of benefits that may make it an excellent choice for your home.

Energy savings

HPWHs use up to 50% less energy than traditional electric resistance water heaters because they transfer heat rather than generate it. This more efficient technology helps lower energy use.

Cost savings

While the initial investment may be higher than expected, modern electric appliances like an HPWH, are more efficient than gas-fueled options, which can save you money in the long run. Selecting a rate plan that best fits your new appliances, along with available incentives, can help you maximize savings.

Environmental impact

HPWHs can reduce your yearly CO_2 emissions by roughly 2,000 pounds compared to traditional gas storage water heaters.[1] This is equivalent to recycling 77 bags of trash each year instead of putting them in a landfill or planting 15 trees and growing them for 10 years.[2]

More control

Additional controls allow you to adjust heating and temperature settings, which can help you avoid peak hour use, optimize efficiency, reduce costs, maintain home comfort, and support grid stability.

[1] New Buildings Institute
https://newbuildings.org/wp-content/uploads/2023/04/HPWHvsGasTankCO2eCalculator_NBI.pdf
[2] "Greenhouse Gas Equivalencies Calculator,"
United States Environmental Protection Agency, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Buying considerations

Choosing the right heat pump water heater for your home is essential for optimal efficiency, cost savings, and the most reliable performance.

Tank size

Consult with a plumber to determine the appropriate tank size for your home and hot water needs. The HPWH may also require a new enclosure if the current space isn't suitable. HPWHs can be larger than gas units, but larger units provide more storage and tend to be more efficient.

Uniform Energy Factor (UEF) rating

This rating evaluates the efficiency of heat pump water heaters, with the highest rating reaching up to 3.5 or slightly higher. You should look for a rating of at least 3 for better long-term savings.

Financial incentives

Take advantage of the available incentives to help reduce upgrade costs. Be sure to review eligibility rules before making your purchase. Find available incentives in your area by visiting Switch is On.

Warranty

Most conventional water heaters come with a six-year warranty and have an expected lifetime of 10 to 15 years. Electric HPWHs come with a standard 10-year warranty to give you more peace of mind.

Pre-heating and thermostatic mixing valve options

Some heat pump water heaters can be programmed to preheat water during off-peak hours helping you save on electricity costs, and a mixing valve can increase your hot water storage while maintaining safe, warm temperatures.

Installation

Prior to installation, consider these project elements:

Contractors
Make sure you work with an experienced contractor to install an electric heat pump water heater. Your contractor can manage the required permits for replacement. Find a qualified contractor in your area by visiting Switch is On.

Clearance and positioning
Position the control panel so you or a technician can access it for regular cleaning of the air filter and condensate lines.

Installation location
Consider spaces where the cooled, dried exhaust air will not impact your comfort, such as hallways, garages, laundry or utility rooms. Locations with waste heat, like a laundry room, can be beneficial. Work with your contractor to choose the right size and placement for optimal performance.

Electrical panel and Infrastructure
Check with your contractor to see if your main service panel can handle the electric load. When switching to heat pump technology, call PG&E at 1-877-743-7782 to make sure the outside infrastructure like powerlines and transformers can handle your energy needs.

Sound
Heat pump water heaters can produce modest noise from their fan and compressor, typically under 55 dBA*, about the level of a background conversation. Some models are quieter, with sound levels as low as 45 dBA, similar to a quiet dishwasher. To minimize noise, consider placing the unit away from bedrooms or adding sound-dampening insulation in the installation area.

*dBA" stands for "decibel A-weighted," which is a unit used to measure sound levels that takes into account how the human ear perceives different frequencies.

Care

Like all water heaters, heat pump water heaters require modest servicing. Follow these six quick tips to maintain your heat pump water heaters:

1. Clean the air filter every 6-12 months (more often in dusty areas).
2. Clean condensate lines regularly to ensure proper drainage.
3. Don’t let standing water build up in the drain pan. This may indicate a clogged condensate line.
4. Regularly check the tank, valves, and pipes for any signs of leakage.
5. Schedule professional service maintenance every 12-18 months — especially if you notice issues like reduced performance and unusual noises.

Resources

Financial incentives

Switch is On. Find incentives and programs available in your area.
incentives.switchison.org

Golden State Rebates. Get instant savings on energy-efficient products.
goldenstaterebates.com

Where to buy

Through a qualified installation contractor. Find a local licensed contractor who is trained to administer available rebates for your heat pump upgrade.
switchison.org/contractor-finder

Local hardware or home improvement centers or online retailers. Speak to a representative at a qualified HPWH retailer who can help you explore your options.

PG&E's Energy Action Guide. Search and compare the most efficient electric heat pump water heaters and other modern, efficient appliances.
guide.pge.com

Rate plans and customer programs

PG&E offers a variety of rate plans to maximize the benefits of an electric home. Review the available rate plan choices to find the best option for your electricity usage.
pge.com/electrification#rateplans

WatterSaver program. Connect your water heater to automatically heat water when electricity rates are lower, taking advantage of the least expensive times of the day.
watter-saver.com

For more information on electric homes, visit pge.com/electrification.