Heat Pump Water Heaters (HPWHs) have multiple operating modes:

- **Heat Pump Only**—This mode offers the highest energy efficiency. It relies solely on the heat pump to heat the water.
- **Hybrid**—This mode maintains high energy efficiency while introducing flexibility of response. It uses the heat pump to heat water but also allows the electric resistance heating element to engage under high-demand circumstances.
- **High Demand/Boost**—This mode is similar to Hybrid mode but the electric resistance heating element is energized sooner.
- **Electric Resistance Only**—This mode offers the greatest demand response but least energy efficiency. It constantly relies on the electric resistance heating element, similar to standard electric water heaters.
- **Vacation**—This "sleep" mode saves energy during times when residents are away from home for multiple days.

**When is it a good time to consider installing a HPWH?**

If you are installing a rooftop photovoltaic system or an electric vehicle charger at your home, you may want to consider having the electrician run a 220/240V circuit from the electric service panel to the location of the water heater to be HPWH-ready. If the electric panel is not within line of sight from the water heater, then an electric disconnect switch next to the water heater location will also be needed. The electric service panel will need to be able to accommodate the additional electric load for the HPWH. Most HPWH models require a dedicated 30 amp breaker.

**How long does it take for a HPWH to heat a full tank of water?**

For a 50-gallon tank, a heat pump water heater can take four to five hours to heat a full tank of water when operating in Heat Pump Only mode, and about two hours when operating in Hybrid Mode.

**What happens to a HPWH in the event of a power outage?**

The HPWH will continue to supply the remaining hot water in the storage tank, although it will no longer produce hot water because neither the heat pump nor the resistance heating element will work without electrical power. When power is restored after the outage, the water heater will automatically revert back to the most recent user settings. If there is inadequate water in the storage tank, the HPWH will shut down and prompt the user to add water to prevent dry fire.

**Why does a HPWH have a condensate drain?**

As warm, moist air travels over the evaporator coils of a HPWH, some moisture in the air will condense, and the resulting condensate is removed from the unit through a condensate drain line. A HPWH unit produces around four to six ounces of condensate per day. This condensate must be effectively removed to prevent damage to the HPWH unit. The simplest option for condensate management is a hose connected to the condensate line and pitched downward toward a drain in the floor or to the outside if there are no issues with yard drainage. Alternatively, a condensate pump can be installed to drain the water into a sink.
**FREQUENTLY ASKED QUESTIONS**

Heat Pump Water Heaters

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**How do I find out whether a Heat Pump Only model meets the minimum Uniform Energy Factor of 2.87 to qualify for the rebate?**

You can look up the Uniform Energy Factor of a HPWH model on the Energy Star website. From the [Energy Star Heat Pump Water Heater webpage](https://www.energystar.gov), click on “PRODUCT FINDER” to list all ENERGY STAR certified water heaters, then use the “Type” filter on the left to show only the heat pump water heater units. When you click on a selected model, the website will show the detailed specifications, including Uniform Energy Factor, input (kW), tank height, and tank diameter (see example above).

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**How do I know whether my electric service panel has adequate capacity for the HPWH? What do I need to do to upgrade the electric service panel?**

You can use the [Electric Load Calculator](https://www.energystar.gov) to determine how much open capacity the existing electric service panel has. If you need to upgrade your panel, you can contact Utilities Engineering by phone at (650) 566-4500 or email utilities.engineering@cityofpaloalto.org. Click [here](mailto:utilities.engineering@cityofpaloalto.org) for the Utility Service Application form to upgrade the electric service panel.

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**What are the maintenance requirements for HPWHs?**

Maintenance requirements for HPWHs are not onerous, but they are important. Many HPWHs have air filters which should be cleaned regularly. On some units, the air filter is located at the top of the unit, and therefore extra clearance must be provided to ensure that the unit’s filters can be properly cleaned. Refer to product manuals for more information regarding proper maintenance.