Heat Pump Water Heaters

Water heating is the second largest energy expense in your home, accounting for about 18% to 25% of your energy use. The average California family spends between $700 and $1000 on water heating each year. As a result, choosing a modern energy-efficient heat pump water heater ("HPWH") can help save you money while significantly reducing your home's carbon footprint.

This technology has proven dependable and economical for the 12 years or so it has been available in the American market.

Heat pump water heaters work by pulling heat out of the surrounding air, similar in principle to how air conditioners or refrigerators work. But instead of dumping the collected heat into outside air, it puts the heat into water held in an insulated tank. Pumping heat collected from the surrounding air uses roughly 1/3 the electricity than heating water with resistance elements (the principle toasters, portable heaters, and conventional electric stoves use.). Heat pump technology is similar to that used by refrigerators, but even more efficient. Currently there are unitary hybrid heat pump water heaters, and split systems. Unitary HPWHs have an internal heat pump and electrical resistance heat for backup, where split systems have a tank placed wherever it's required to be, connected to an outdoor compressor unit. Split system heat pump water heaters can be placed outside as well, as the tanks are stainless steel.

Heat pump water heaters only draw about 550 watts of energy compared to about 4,500 watts used to heat water in electric resistance water heaters. This is why many governments and utilities are providing significant rebates for installing new heat pump water heaters.

Here are some other benefits of HPWH's

- They can engage with money-saving options, like being scheduled to operate during less expensive time of use periods when they are wifi-enabled.
- They can take advantage of money generating opportunities, like credits from your local electric utility's grid-interactive programs, which are not available to owners of old style water heaters.
- When a heat pump is running, it is expelling chilled air.
- They eliminate a potential source of Carbon Monoxide (CO) and Nitrogen Dioxide (NO2) and other unhealthy combustion gases that can leak into indoor space.

- A HPWH cuts nearly 60% of your house's overall greenhouse gas emissions that otherwise would have occurred with your natural gas water heater. This will continue to increase as the electric grid continues to shift to more renewable power sources. California's electric power supply is currently about 56% generated by clean renewables, and it is getting cleaner and greener every year..
- When matched with on-site solar generation, or enrollment in your local utility's 100% green generated electricity, heating your water can be 100% emissions free.
- Wise scheduling and utility remote control helps reduce the chance of rolling power brownouts on those extremely hot summer afternoons.
- Compatible HPWH's can be remotely controlled when connected to WiFi.

The drawbacks to HPWH's to mention are:

- Higher initial cost.
- Unitary HPWHs make noise when operating, similar to a refrigerator or dishwasher. Split systems with a separate heat pump installed outside don't suffer from this issue.
- Unitary HPWHs pull water vapor out of the air. The resulting collection of water ("condensate") must be drained to the exterior of the house.
- Unless ducted outside, Unitary HPWHs eject chilled air that can make the space in which they are located cooler.
- If replacing a gas fired water heater, a new electrical circuit must be installed.