

Fact Sheet

Air-Source Heat Pump Hot Water Heater

WHY INSTALL ONE? Air-Source Domestic Hot Water Heaters –

- Provide reliable hot water for your home.
- Reduce energy use (almost 20% of all home energy use goes to heat water).
- Have an overall annual performance for operation that is 2 to 3 times more efficient than conventional storage or demand water heaters.
- Can often pay for themselves and are an extremely cost-effective way to reduce the greenhouse gas footprint of a home.

HOW DO THEY WORK?

- Heat pump water heaters use electricity to move heat from one place to another instead of generating heat directly. This makes their operation far more energy efficient than conventional resistance electric heaters or those fired by natural gas, oil, or propane.
- Heat from the air is transferred to water in a tank, which is heated to 130 to 135 F. This is the process of a refrigerator, in reverse.

WHERE CAN THEY BE INSTALLED?

- Hot water heat pumps are best in a location where the temperature remains 40° – 90°F (4.4 – 32.2°C), but most can function like a traditional electric water heater if conditions get colder.
- Location needs to have at least 1,000 cu ft. of air space around the heater; heat pump unit is on top and so required floor to ceiling clearance is higher than conventional models.
- HeatSmart encourages a full replacement of fossil fuel systems, but, if that isn't practical, positioning it to capture waste heat from a furnace or boiler can enhance energy efficiency.
- Operation of the unit both slightly cools and dehumidifies the space it is in.
- Installation is comparable to that for a traditional electric storage hot water heater; a drain for the condensate is required.

HOW DO GREENHOUSE GAS EMISSIONS (GHG) COMPARE?

- GHG emissions associated with modern hot water heat pumps range from 0% (if powered by electricity from solar, wind, hydro) to 20% (electricity from coal) of the GHG associated with a typical natural gas hot water heater (fracked shale gas).

source: Hong, B., and R.W. Howarth. 2016. Greenhouse gas emissions from domestic hot water: heat pumps compared to most commonly used systems. *Energy Science & Engineering* doi:10.1002/ese3.112



WHAT ARE THE COSTS?

- Modern, high-efficiency hot water heat pumps are now readily available in the market place.
- Total cost (unit plus installation) is currently about twice that of conventional water heaters. However, lower operating costs can offset the higher purchase price in as little as 2 years, depending on household size and type of unit replaced (fuel source, size).

https://www.energystar.gov/products/water_heaters/heat_pump_water_heaters

WHERE CAN I GET MORE INFORMATION?

- Come to a HeatSmart meeting or home tour!!
- Visit our website for current pricing, news blogs, more fact sheets, and schedules for meetings and tours: www.HeatSmartTompkins.org
- Heat pump water heaters and efficiencies:

<https://neea.org/our-work/advanced-water-heater-specification>)