



# Best Practices

## Installing Heat Pump Water Heaters

Installing heat pump water heaters properly is essential for energy savings and customer satisfaction. The technology is well-established; however, key differences from traditional storage water heaters require particular attention during your installations.

### Air Circulation

Adequate air circulation is essential to performance and longevity as heat pump water heaters work by extracting some of the warmth from the surrounding air. Most traditional 240 unitary models require at least 700 cubic feet of air space (ex: a 10 ft x 10 ft room with a 7 ft ceiling), though some need as little as 450 cubic feet. If the unit is in a closet with at least 84 cubic feet, a fully louvered door will suffice.

\*Venting kits are available from all manufacturers. Always be sure to refer to manufacturer's specifications to ensure compliance for a given unit.

### Location

Heat pump water heaters typically perform best in spaces that do not regularly get colder than 38F. Locating a water heater in a basement or garage can be a great option if the space typically remains above freezing. If venting, be sure to direct cold exhaust air away from thermostats and frequently used areas and maintaining at least a 1-foot clearance from surrounding objects, including walls and ceiling.

### Recirculation Pumps

Limit continuous pump operation to comply with state energy codes. Continuous circulation strains heat pump water heaters, decreasing hot water availability and raising energy usage. Instead, use an on-demand recirculation pump that can be either wired, or wireless; or utilize units that are motion or flow-activated.

\*Space requirements vary by model and manufacturer. Some 240V models require as little as 450 cubic ft. Some 120V models designed to replace gas units require more than 700 cubic feet. Consult manufacturer instructions to ensure proper installation.



### Key Highlights

- Ensuring adequate air space is essential to product performance and longevity.
- Continuous circulation can strain the unit. Instead use pumps on timer or with motion sensors.
- Sizing is comparable to standard electric water heaters.
- Ensure the electrical panel is ready for 240V 30-amp.
- Locate in a space that stays above 38F.
- Follow local codes for seismic requirements.

## Sizing

Heat pump water heaters provide hot water delivery comparable to or greater than standard electric-resistance units. However, for gas to heat pump conversions, you will want to size up to make up for the slower recovery time of electric water heaters. For proper sizing it's important to refer to the manufacturer recommendations.

## Condensate Management

Heat pump water heaters produce a small amount of clean non-acidic condensate water which can be directed to a nearby drain or condensate pump. Ensuring the unit is level is important to ensure the condensate line flows freely.

## Electrical Considerations

A 240V heat pump water heater typically utilizes a 30-amp circuit breaker and 10-gauge electrical wire, just like a standard electric storage water heater. But some models may even work with a 25-amp or even 20-amp circuit.

Several manufacturers also offer plug-in 120V heat pump water heaters specifically designed for retrofit replacement of gas water heaters. Typically, 120V units need to be sized-up two sizes from a gas water heater (40-gallon gas to a 65 gallon). 120V models can differ in other ways as well, including whether they require an outlet to be a dedicated vs shared circuit, and even just how much air space is required. As always, it's essential to refer to manufacturer recommendations to ensure ample hot water.

## Sound and Vibration

If sound is a concern due to a unit's proximity to bedroom or office, a number of low-cost acoustical measures can be taken, including placing the heater on a unit of rigid foam. For those in areas with seismic activity, employ vibration dampening standoffs for connecting seismic strapping, and if required by code, consider using isolation pads and webbing straps to further reduce noise and vibration. Adding cushions to the straps can mitigate noise from the water heater vibrating against the mounting surface during operation.

### Did you know?

There are 25 million standard water heaters over 10 years old and will need to be replaced in the next 5 years.



### Sources

- Richard Heath & Associates, Inc.  
*Best Practices for the Retrofit Installation of Heat Pump Water Heaters*
- NEEA *Heat Pump Water Heater Installation Best Practices Guide*
- Bradford White *Industry Wide Presentation for ESMAC*