Heat Pump Water Heater
Frequently Asked Questions

Energy Cost Comparisons

How do I compare the energy consumption of other water heaters to the heat pump?

We have a fuel cost calculator spreadsheet that shows the comparison of the average gas water heater and an average electric water heater to the heat pump. See below for how the three systems match up.

Natural Gas

Constant	EF Rating	Fuel Cost per Btu (Cost per therm/100,000)	# of days to calculate	Estimated Cost	
41045	0.59	$0.0000158000	365	$401.20	Annual Cost of Operation
			30	$32.98	Monthly Cost of Operation
			1	$1.10	Daily Cost of Operation

Electric

Constant	EF Rating	Fuel Cost per kWh	# of days to calculate	Estimated Cost	
12.03	0.92	$0.1065000000	365	$508.30	Annual Cost of Operation
			30	$41.78	Monthly Cost of Operation
			1	$1.39	Daily Cost of Operation

Heat Pump Water Heater

Constant	EF Rating	Fuel Cost per kWh	# of days to calculate	Estimated Cost	
12.03	2.00	$0.1065000000	365	$233.82	Annual Cost of Operation
			30	$19.22	Monthly Cost of Operation
			1	$0.64	Daily Cost of Operation

Certifications, Approvals and Code

What are the certifications for the heat pump water heater?

The HPWH has been Underwriters Laboratory (UL 1995) certified for both the United States and Canada. Here is what the logo stamp on the rating plate looks like:

Do contractors have to be EPA certified to install this unit, as they have to be to install A/C?

No, they do not. This is a water heater, not a heat pump used for air conditioning or heating a home. It is designed for a drop in replacement of a current electric water heater. Because the installer will not interact with the R410a refrigerant, there is no requirement for special HVAC licensing.

Is the HPWH approved for Canada?

Yes. The unit has been certified for use in the United States and Canada as a heat pump water heater.

Is the HPWH designed to operate on an alternate refrigerant?

No, it is not. The unit was designed and certified to use R410a refrigerant.

Heat Pump Water Heater
Frequently Asked Questions

Are we aware of any building codes (state level) limitations for the HPWH? (requiring a water heater stand for an electric heater)

Actually, yes we are. There are some pockets of communities in the United States that require ALL water heaters installed in a garage to be placed on an 18 inch stand. This includes residential electric water heaters. The idea behind that is the electrical spark generated by a thermostat or other electrical device could ignite gasoline (and other flammable) vapors stored near the water heater. Check with your local code officials if you are not sure whether your water heater needs to be on an 18-inch stand.

Does the HPWH require a condensate filter?

Please refer to your local codes for the removal of condensate into public drain facilities or onto the ground around a home.

What is the coefficient of performance (COP) for the Heat Pump Water Heater?

Two terms are used to describe the performance of heat pump water heaters, the heating coefficient of performance (COP) and the Energy Factor (EF). COP is the ratio of heat energy of the heat pump water heater to the electrical energy input when both are in consistent units. There is no standard rating condition for COP testing for heat pump water heaters, so manufacturers' claims are not comparable.

The EF is the ratio of heat output to energy input as measured during a specific 24-hour test procedure. A conventional electric resistance water heater EF would ideally be 1, but is slightly lower because of tank standby losses (heat loss through piping and tank walls). Testing procedure and calculations to determine EF are the same for all heater manufacturers. Heat pump water heater performance varies, but in typical usage, heat pump water heaters tend to operate with an EF around 2 to 2.5. This means that they heat over twice as much hot water as you would get from an electric resistance water heater with the same electrical energy input. Higher EF's typically come at the cost of performance. This means that one would need to compare more than just EF rating. FHR and Recovery must also be compared.

Installation

If the air filter plugs and is not cleaned properly... What will occur? Is there a fail safe?

Yes, there is. In the event the air filter on top of the water heater is not cleaned, it will eventually block the air path to the heat pump components. Temperature sensors will eventually detect the heat buildup and the unit will go into a safety mode. During this time, the unit operates on Electric Heating Element only mode.

What did you base the Installation Zones on?

For best heat pump operation, the temperature in your region should average 40 degrees or above. Remember, as long as the heat pump operates, even if on a few days a week, you are saving energy. Choose a warm installation site like an attic, garage or basement.

What is the minimum space needed for installation?

Because a heat pump tends to cool the area where they are located, any type of air-source heat pump works more efficiently in a warm location. The heat pump will need 1,000 cubic feet of air space around it (approx. 10 x 10 x 10 ft. room).

What happens if the unit is put in a closet smaller than 10X10?

The heat pump tends to cool the surrounding air. As the surrounding air cools, the heat pump becomes less efficient. Eventually, the heat pump will shut down due to programming and the electric heating elements take over.

Heat Pump Water Heater
Frequently Asked Questions

What is the energy input and output of the heat pump alone?

The heat pump system draws 240 VAC of power. It produces approximately 9,380 BTU of heat energy that is transferred into the water.

How many amps does it draw?

The HPWH uses approx 21.5 amps; and is protected with a 25-amp breaker and 10-gauge wire from the breaker panel.

Is there special handling required for the HPWH?

Yes. The unit is top heavy when not installed. Take special precautions to balance the top when moving the water heater.

Any idea if the unit will work in a closet with a louvered door?

Check the installation requirements. Remember, the HPWH must have a considerable amount of air to be effective (normally a 10x10x10 room). If the unit cools the air that surrounds it too quickly, the heat pump will shut down (less efficient) and the electric heating elements will begin to heat the water.

Does the HPWH require a condensate filter?

Please refer to your local codes for the removal of condensate into public drain facilities or onto the ground around a home.

If the heater is installed in a conditioned space (laundry room), how will that affect performance?

It may enhance performance. The laundry room you talk about may be a little warmer than other parts of the home due to the clothes dryer. This warmer air is just what the heat pump water heater needs to run efficiently.

Are there installations not recommended (i.e. air-conditioned spaces etc....)?

Rheem recommends residential applications only; specifically attics, basements and garages are best. Remember, the heat pump is the primary device used to move the heat from the ***surrounding atmosphere*** to the water stored in the tank. You will see decreased energy efficiency (not water heating performance) if the unit is installed in areas that are routinely below 40^0F or above 120^0F. Installing the unit inside a home and in a conditioned air space is fine. Remember to provide ample usable air for the machine to process.

Applications

Are we supplying a condensate line?

No, we are not. The installer will be required to connect the water heater to the home's hot and cold water plumbing system; connect the unit to a 240 volt electrical source, and pipe the temperature and pressure relief valve and condensate lines (there are two of them) to an appropriate code approved location (drain or outside the home).

Will the heat pump be available for commercial applications?

Unfortunately, it will not. This unit was designed and certified for residential applications only.

Can you put the HPWH into electric only manually?

Yes you can; but only for a short time. The software programming ***wants*** the machine to run in an energy efficient mode. After about 2 weeks in the Electric Element Only mode, the software will attempt to go to Normal mode so it can be more energy efficient. If it does, you will see the mode indicator light on the user control change from Electric Heat only to Normal.

Heat Pump Water Heater
Frequently Asked Questions

Operational Characteristics

Will the unit transfer heat from its surrounding area (attic or garage area)?

Yes. That is exactly how it works. It takes any latent heat in the air and intensifies that heat thru the compressor and condenser. Then the heat is transferred into the water heater thru a heat exchanger coil located at the top of the machine. During this process, the heat pump throws off the cool air into the atmosphere around the water heater.

Is there diagnostic mode with a LED read out?

Yes, there is. Behind the user control and located on the circuit board is an LED display light that will show up to 9 flash code. Seven of them are diagnostic related; the other two are normal operations related.

How much cooling capacity is generated?

The cooling capacity is not a computed function. The temperature and quantity of cool air is not calculated. Although the unit does throw off cold air as the heat pump works, you should not have any expectation of attempting to capture or route this cool air for use in other parts of the home. The amount of cool air discharged is a function of the temperature of the surrounding air.

What is the highest achievable water temperature in heat pump mode?

See the use and care manual for a range of temperate and their settings. The unit is programmed to heat to the water to @ 135 -140 degrees F.

What is the maximum ambient air temperature to operate? Coldest ambient air temperature?

The HPWH will operate in any temperature just like our other water heaters. It is designed to be installed "out of the elements". In Energy Saver or Normal modes (utilizing the heat pump), the unit will operate from 40^0F to 120^0F. Outside that temperature range, the unit runs in Electric Heat Only Mode.

What is the decibel rating on the unit?

The decibel rating is less than 49 Db.

Is there dry fire protection for the heating elements?

No, there is not. The water heater must be purged of all air in the storage tank in accordance with the installation instructions before electricity is sent to the unit.

Does water temperature have an effect on the EF?

No, it does not. The EF is a rating of how much energy is consumed versus how much energy is transferred into the water. The cold-water temperature has nothing to do with the EF. It will affect how rapidly the unit can bring that water up to shower temperature.

What is the temperature differential between the room air and the cool air discharged by the heat pump?

There is no data or testing on this function. In fact, it would be a fleeting number. There is no comparison to the ambient temperature of the room air used by the HP and the correlation to the temperature of the cold (waste) air as a by-product of the HP process. Most of the cold air concerns we are hearing are from northern states. The HP will probably be installed indoors – and folks are worried about air conditioning their homes with a heat pump water heater while the furnace is on and heating their homes. The fact is that the HP does throw off cool air as a by-product of how it works. It is not going to alter the effort of a home furnace heating system. The amount of cool air from the HPWH is comparable to the amount of warm air coming from a refrigerator. This effect is only during HP operation. These units should be installed in unconditioned spaces with approx. 1,000 cubic ft of ambient air to draw from.

Heat Pump Water Heater
Frequently Asked Questions

Warranty and Service

Are we expecting plumbers to service the heat pump segment of the water heater?

No, we are not. If you do not have a license appropriate for sealed, high-pressure refrigerant gases (HVAC license), then you may not service the heat pump components. Some of the heat pump components may be diagnosed with a multi-meter. In those cases, we will expect qualified plumbers to replace faulty components (transformers, thermistor, capacitors, relays, heating elements, etc)

Is there diagnostic mode with a LED read out?

Yes, there is. Behind the user control and located on the circuit board is an LED display light that will show up to 9 flash code. Seven of them are diagnostic related; the other two are normal operations related.

How will we handle defectives? What is the warranty?

The HPWH has a 10-year tank leak warranty and a 10-year parts warranty. It also has a first year in-home labor warranty. If the heat pump R410a refrigerant loop is breached for any reason, we will replace the water heater as if it was a leaker. All other electrical components will be replaced on site per the parts warranty.

Will our service contractors be trained to work on these?

Yes they will.

Does the refrigerant need replacing? Whom does the homeowner call for this?

The R410a refrigerant is designed to last the warranty period of the water heater. For the time being, any refrigerant losses in the heat pump will initiate a replacement (in warranty) action by Rheem.

What happens to the warranty if the heat pump is installed in a light commercial application.?

If the heat pump water heater is installed in anything other than a single family dwelling, the warranty is reduced to one year tank leak, one year parts warranty and no labor allowance.

Sales & Marketing

Will there be other brands?

Yes. We will also have Ruud, Richmond and EcoSense brands.

What are some selling points of this over an existing electric water heater?

Try these selling features:

- Rheem brand and reputation
- High 2.0 Energy Factor (EF)
- Energy Star Compliant (tax savings)
- 21" diameter fits through access doors and rafters
- 10-Year Limited Tank and Parts Warranty
- 3 Operation modes
  - Energy Saver (heat pump)
  - Normal (heat pump with element backup)
  - Electric Heat Only (two elements)

Does this heater qualify for the Buy American Act?

Unfortunately, it does not.

Heat Pump Water Heater
Frequently Asked Questions

Can you add the extended warranty package?

Unfortunately not. There are no 'upgrade' warranties to this product. Since we have a hot outlet side connect, the Protection Plus kit will not work either.

Will utilities be able to adapt their energy saving cutoff relays to the HPWH?

Yes, they will. However, with an EF of 2.0, you would have to ask yourself why you want to continue a policy related to an older model electric water heater when this one is so much more efficient.