Electric water heater

Water heating accounts for about 17% of your home's total energy use. So if your electric water heater is on its last legs, it could be costing you money every month. Reliable water heating is important, and your system's efficiency decreases with age if it isn't properly maintained. If it's time for your water heater to be replaced, TVA EnergyRight® and your local power company make it easy to hire with confidence. Choose a TVA-approved contractor—trained, licensed and insured to upgrade your water heater the right way—through our Quality Contractor Network (QCN).

How does an electric water heater work?

There are two main types of electric water heaters: a conventional electric water heater and a heat-pump water heater. A conventional electric water heater uses electric resistance to generate heat, while a heat-pump water heater uses electricity to move heat from the surrounding air into the enclosed water heater tank. Moving heat requires less energy than creating heat.

How much money can I save?

Expect a higher initial cost with a heat-pump water heater than a conventional electric water heater. But the lower monthly operating costs will offset the higher purchase and installation price. Compared to a conventional electric water heater, an ENERGY STAR® heat-pump water heater could cut your water heating costs by 50%, saving you about $300 annually on your energy bill. Large families that use more hot water will save even more money.

Where is the best place to install a heat-pump water heater?

The ideal location for a heat-pump water heater is in a space with excess heat, like a laundry room, basement, utility room or garage. A heat-pump water heater will naturally cool the space where it's located, so avoid installation in colder spaces. ENERGY STAR® recommends you install your heat-pump water heater in a space with year-round temperature above 40F and total space of at least 1,000 cubic feet. And expect a heat-pump water heater to make some noise during operation. Keep that in mind when you're deciding where to install it.

What about geothermal heat pumps?

If you use a geothermal heat pump to heat and cool your home, a desuperheater can be added to your system to heat the water in your existing storage water heater tank.

TVA installation requirements for electric water heaters*

- Water heater to be installed per manufacturer's instructions and applicable code; water quality to be checked for debris that may clog the equipment; water leaks to be repaired before installation.
- Non-corrosive interior of storage tank required; system installed to be freeze-resistant.
- Water heater must be accessible for service; attic installations are not allowed.
- Water temperature set to 120F or as prescribed by local code.
- If tank leakage may cause damage, install a galvanized steel pan.
- Pan to be at least 1 ½ inch deep and drained or pumped to daylight with a minimum ¾ inch pipe.
- Pan drain to terminate between 6 and 24 inches above the ground surface.
- Water heater to have a separate or combined pressure-relief valve and temperature-relief valve.
- A shut-off valve cannot be installed between a relief valve and the termination point of its discharge pipe or between a relief valve and the tank.
- Discharge pipe to terminate safely and at a safe location.
- Bottom-fed tanks to have a vacuum-relief valve.
- Expansion tanks to be securely installed as recommended by manufacturer or as required by local codes; valves cannot be located between the expansion tank and the storage tank.
- If an add-on heat pump is installed on an existing water heater, the existing tank must be leak-free and fully operational; add-on heat pump must meet ENERGY STAR requirements.
- If a recirculating pump is used, best practice is to install a timer set to operate only during intervals when hot water is normally used.
- Any penetrations to the exterior of the home created during installation must be sealed.
- QCN member to advise customer to install a working carbon monoxide (CO) monitor if the home has any gas appliances or an attached garage.

RECOMMENDED BEST PRACTICES

- Non-municipal water (i.e., well water) may require treatment or conditioning.
- If system pressure is more than 75 psi, then a pressure regulator should be installed on the incoming water line.
- Noise and additional cool air generated by heat-pump water heaters may be a concern if located in a conditioned area such as a utility room; better locations are basements and garages.
- ENERGY STAR recommends that the space containing the heat pump water heater should have ambient temperature above 40°F and a volume of at least 1,000 cubic feet.
- Recirculating pumps should be installed on a timer and set to operate only during intervals of time when hot water is normally used.
- Insulate hot water pipes and first 6-feet of cold water pipes at water heater.

Go to **EnergyRight.com** to register your home and connect to the Quality Contractor Network.

**This sheet is not a substitute for the TVA Standards.*