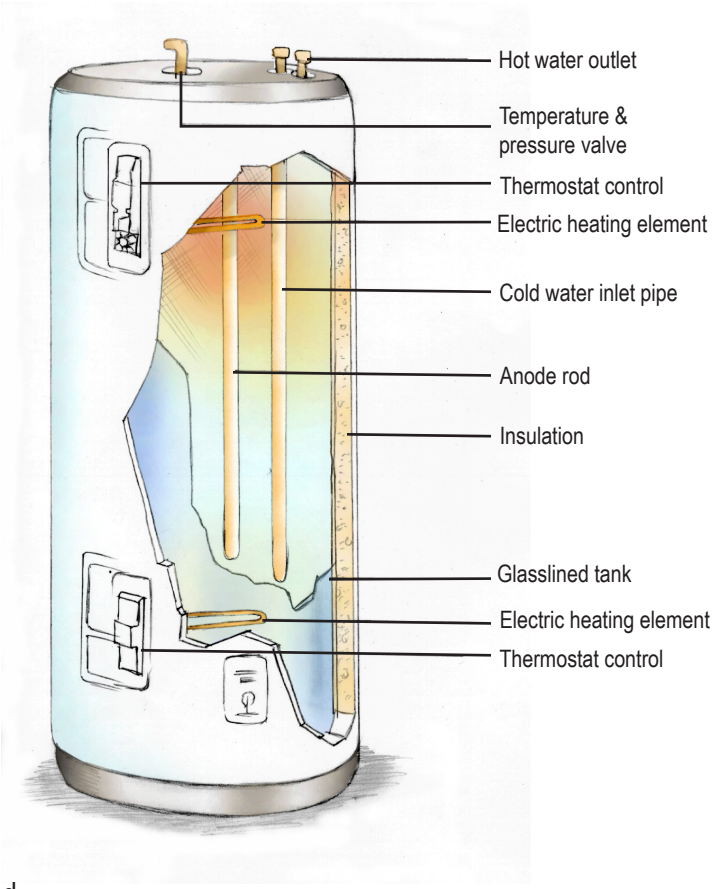
Electric Water Heaters

ENERGY STAR PARTNER

ENERGY SOLUTIONS FOR THE HOME

Three System Types To Meet Your Needs

The water heater is the second largest user of energy in most homes in Nebraska. Only the heating and cooling system equipment use more. Unlike heating and cooling equipment which are seasonal, the water heater works year round.



Get To Know An Electric Water Heater

Basically an electric water heater is an insulated tank filled with water. Electrical elements controlled by thermostats heat the water and keep it hot. Most electric water heaters have two elements; one is located near the top of the tank and the other near the bottom. Each element is controlled by a seperate thermostat but the two thermostats are interlocked; when one is off, the other is on. The top element heats water in the top one-fourth of the tank. When the water in the top of the tank reaches the correct temperature, the top element shuts off and the lower element comes on to heat the remaining water. This contributes to quicker recovery in high use situations. Since the elements are immersed in water, the heat goes directly into the water. This makes electric water heaters the most efficient water heating appliance available.

What Size Do You Need?

Residential electric water heaters range in size from 6 to 120 gallon capacity. Consider your family's present and future hot water needs and choose a unit large enough to meet those needs. A 50-gallon electric water heater should supply the needs of the average family.

Flexibility

Electric water heaters are more flexible than other water heating appliances. They require no minimum clearance so can be placed anywhere including under a remote sink or in a closet. They require no fuel line or exhaust flue and there is no pilot light to worry about. Operating cost of electric water heaters are competitive with other types of water heaters.

Technologies In Water Heating

Desuperheater

A desuperheater is an efficient means of recovering excess heat from the compressor of an air or water source heat pump. Desuperheaters heat water only when the heating or cooling system is operating. They require no special design and are available as part of a heat pump unit or as retrofits.

Instantaneous

Demand (or instantaneous) water heaters eliminate the storage tank by heating water directly when there is a call for hot water. The energy consumption of these units is generally lower since standby losses from the storage tank are eliminated. However, they have three significant drawbacks: 1) Electrical panel capacity to meet the load; 2) Utility transformer capacity will need to addressed; 3) Challenge to meet simultaneous loads. Large simultaneous uses (a shower and the clothes washer, for example) may challenge their capacity, particularly in winter, when the inlet water temperature is coldest. Retrofit installation can be very expensive.

Solar

Solar water heaters use energy from the sun to heat water. Solar water heaters are designed to serve as preheaters for conventional storage or demand water heaters. While the initial cost of a solar water heater is high, it can save a lot of money over the long term. Solar water heaters are much less common than they were during the 1970s and early 1980s when they were supported by tax credits, but the units available today tend to be considerably less expensive and more reliable.

Efficiency

Even if you aren't going to buy a new water heater, you can save a lot of energy and money with your existing system by following a few simple suggestions.

- Conserve Water: Your biggest opportunity for savings is to use less hot water. In addition to saving energy (and money), cutting down on hot water use helps conserve water supplies. Water-conserving showerheads and faucet aerators can cut hot water use in half.
- Insulate Your Existing Water Heater and Hot Water Pipes: Installing an insulating jacket on your existing water heater is one of the most effective do-it-yourself energy-saving projects, especially if your water heater is in an unheated basement or space. The insulating jacket will reduce standby heat loss—heat lost through the walls of the tank—by 25–40%. Insulating your hot water pipes will reduce losses as the hot water is flowing to your faucet and, more importantly, it will reduce standby losses when the tap is turned off and then back on within an hour or so.
- Lower the Water Heater Temperature: Keep your water heater thermostat set at the lowest temperature that provides you with sufficient hot water. For most households, 120°F water is fine (about midway between the "low" and "medium" setting). Each 10°F reduction in water temperature will generally save 3–5% on your water heating costs.

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