

Selecting a New Water Heater

You have a lot to consider when selecting a new water heater for your home. Water heating typically accounts for about 13 percent of your utility bill. You should choose a water-heating system that will not only provide enough hot water but one that will also be energy efficient and save you money. Consider the different types of water heaters available and determine the right size and fuel source for your home.

Types of Water Heaters

It's a good idea to know the different types of water heaters available before you purchase one.

Conventional storage water heaters

A storage or tank water heater operates by releasing hot water from the top of the tank when the hot water tap is turned on. The hot water is released into the hot water line. As the hot water leaves the tank, cold water enters the bottom of the tank to fill the tank. The water in the storage tank is kept at a pre-set temperature whether you are draining water from the tank or not. At the point of use, cold water flows until the hot water reaches the faucet. These types of water heaters can be fueled by gas or electricity.

Demand (tankless or instantaneous) water heaters

Demand water heaters do not have storage tanks. Cold water travels through a pipe into the unit, and either a gas burner or an electric element heats the water when needed.

Heat pump water heaters

Heat pump water heaters use electricity to move heat from one place to another instead of generating heat directly. To heat water for homes, heat pump water heaters work like refrigerators in reverse.

Solar water heaters

Solar water heaters use the sun's heat to heat the water. They include a collector and a storage tank and are typically classified as passive or active systems. These systems often use a conventional heater as a backup.

Tankless coil and indirect water heaters

Two types of water heaters use a home's heating system: tankless coil and indirect. In the tankless coil, water is heated directly inside the boiler in a hydronic (i.e., hot water) heating system. The water flows through a heat exchanger in the boiler whenever a hot water faucet is turned on. The indirect water heater circulates water through a heat exchanger in the boiler. This heated water then flows to an insulated storage tank.

Point-of-use water heater

This system provides a heating unit at the point of use, where hot water will be needed. It is typically used at the kitchen sink for small amounts of hot water. It is the only system that delivers hot water instantly.

Selection Criteria

When selecting the best type and model of water heater for your home, you also need to consider the following criteria.

Fuel type, availability, and cost

The fuel type or energy source that you use for water heating will not only affect the water heater's annual operation costs but also its size and energy efficiency. Natural gas, oil, and propane water heaters are generally less expensive to operate than electric models. If you are considering an electric water heater, check with your local utility company or electricity supplier to see if they offer off-peak electricity rates. If available, heating your water during off-peak hours will save

you money. Heat pumps and solar water heaters also have lower operating costs. The Energy Guide label will give an estimated yearly operating cost based on the national average cost of electricity. The label will also show the estimated energy consumption on a scale showing a range for similar models.

Size

To provide your household with enough hot water and to maximize efficiency, you need a properly sized water heater. An important factor when comparing water heaters is the First Hour Rating (FHR). The first hour rating measures how much hot water the heater will be capable of delivering during the hour of highest use. Estimating your peak hot water usage will help you identify an appropriate tank for your household.

Energy efficiency

To maximize your energy and cost savings, you want to know how energy efficient a water heater is before you purchase it. The Energy Factor (EF) of the water heater will tell you the efficiency of the unit. The systems available are electric resistance water heaters with an EF in the range of 0.7 to 0.95, gas water heaters with an EF of 0.5 to 0.6, oil

water heaters ranging from a 0.7 to 0.85 EF, and heat pump water heaters with the highest efficiency and an EF of 1.5 to 2.0. Energy efficiency can be compared on each unit by the reading the Energy Guide label on the tank.

Costs

Before you purchase a water heater, estimate its annual operating costs, and compare those costs with other less or more energy-efficient models. The initial purchase price is not the full picture on cost.

Finally, it can save you energy and money to put some thought into the best location for your water heater. Whenever possible, do not install the water heater in an unheated basement, attic, or garage. Also try to minimize the piping runs to your bathroom and kitchen. Basically there are four ways to cut your water heating bills:

- use less hot water;
- turn down the thermostat on your water heater;
- insulate your water heater; and/or
- buy a new, more efficient water heater

References:

http://www.eere.energy.gov/consumer/your_home/water_heating/index.cfm/mytopic=12770?print
http://www1.eere.energy.gov/consumer/tips/water_heating.html
<http://homeenergy.org/archive/hem.dis.anl.gov/eehem/96/960510.html>
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Fact sheet written by Janie Harris, Extension Housing and Environment Specialist, Texas AgriLife Extension Service, Texas A&M System. Updated March 2008.