HOUSEHOLD ENERGY SAVINGS SERIES

HOUSING & ENVIRONMENT

CHOOSING A NEW WATER HEATER

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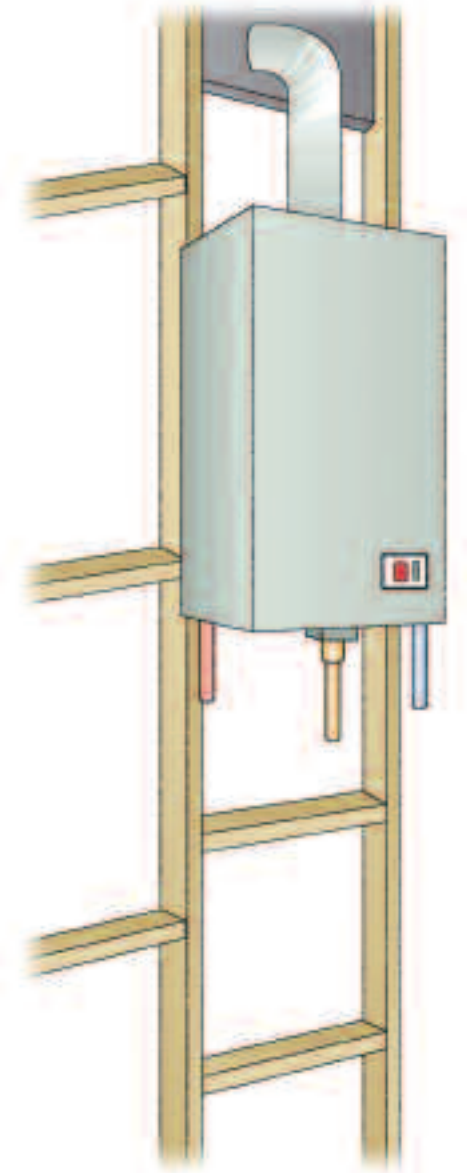
TANKLESS WATER HEATER



Choosing a new water heater is an important decision, one that you only have to make every ten or fifteen years—so it's important to choose one carefully. Most households use 15 to 25 percent of their home energy to heat water. Before you purchase a new water heater, educate yourself about the options available so that you can quickly choose the most efficient unit that meets your needs if your current unit fails.

DIFFERENT TYPES OF WATER HEATERS

Storage Water Heaters

Storage water heaters, also known as conventional water heaters, are the most common type of water heater, but not the most efficient—they use more energy because they keep a large tank of water hot at all times, even when no one is using hot water.

Tankless Water Heaters

Also known as demand or instantaneous water heaters, tankless water heaters save energy because they only heat water when you need it, without storing hot water in a tank. While more expensive, tankless water heaters can save money on energy costs and they can last five to ten years longer than traditional storage heaters.

Solar Water Heating

Solar water heating systems use outdoor panels to preheat water before sending it to a conventional water heater, which provides additional heating, if necessary. Although they cost more initially, solar water heaters may save money in the long-run by reducing the water heating bills by fifty to eighty percent.

Solar water heaters fall under two categories: active, which use pumps and controls to transfer heat from the solar collector to the water, and passive, which allow the water to circulate naturally. For more information about solar water heaters, visit **www.eere.gov**.

Electric Heat Pump Water Heaters

Although electric heat pump water heaters cost more initially, they are extremely efficient because they don't require fuel or electricity to generate heat. They only use energy to circulate water. Heat pump water heaters actually use the heat that is in the air, ground, or an outside water source to heat the water. Heat pumps have the side benefit of cooling and dehumidifying air inside the house as they remove its heat, making them an excellent choice for damp basements. Heat-pump water heaters function most effectively in moderate to warm climates where they can draw heat from warmer air.

You can buy a heat pump as an add-on to your current storage water heater or you can purchase an integral heat pump, in which the heat pump and storage tank come as one unit.

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TIPS FOR EFFICIENCY

- **If possible, do not install your water heater in an unheated area such as the garage, an unfinished basement or an unheated crawl space.**
- **If you purchase a storage water heater, purchase a unit that has adequate insulation (at least 1.5 inches).**
- **If you are installing a new electric storage water heater, try to provide insulation for the bottom of the tank. Before the tank is intalled, cut a piece of foam sheathing and place it between the bottom of the tank and the ground.**

HOW TO CHOOSE THE BEST HEATER FOR YOUR NEEDS

As you choose a new water heater, several criteria will influence your decision:

- Fuel sources
- Your hot water needs
- Compatibility with your home
- Energy-efficiency
- Warranty and lifetime of the heater
- Your budget

Fuel sources

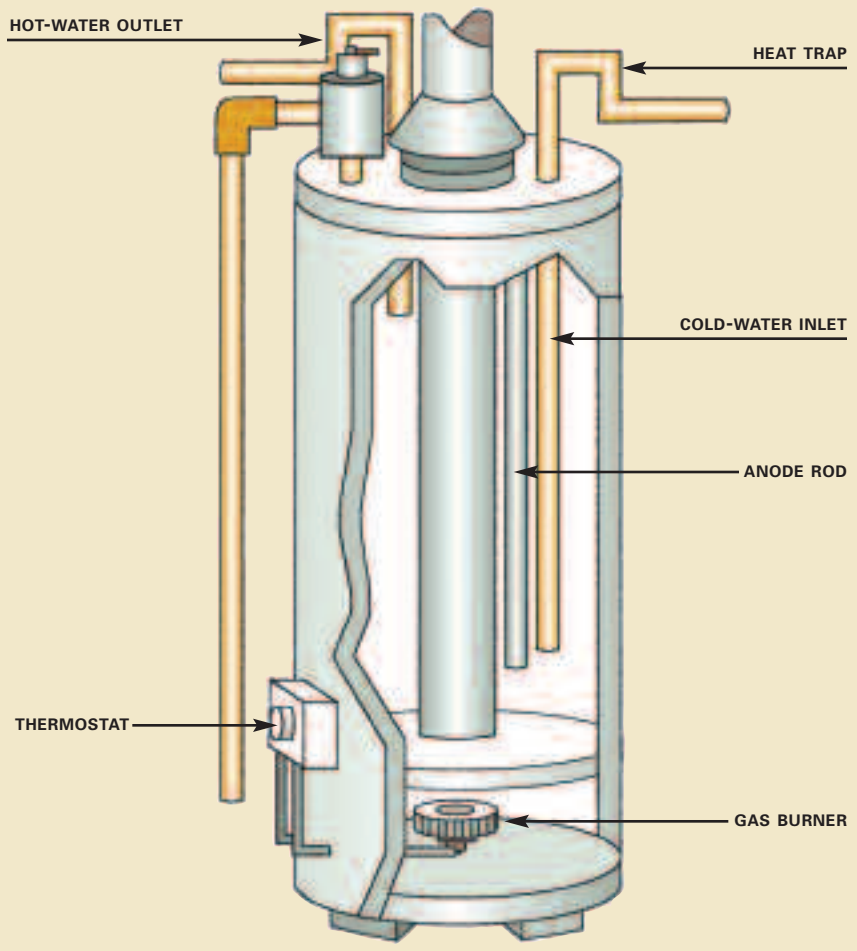
Most water heaters use electricity or natural gas, although some use fuel oil or propane. Current prices of electricity or fuel will determine each unit's operating costs. Solar energy is more efficient than electricity or natural gas, and is always used in conjunction with a conventional water heater to reduce energy use.

Compatibility with your Home

Check to see whether your home has access to natural gas lines before you consider purchasing a natural gas-fueled water heater. Even if gas is available in your area, it can be expensive to add a gas line to your home. Natural gas, oil, and propane heaters also need to be installed in a location that can provide proper ventilation to the outside.

Certain systems, such as solar and tankless water heating systems, are easiest to install during the construction of a new home. They may require more effort and money to install later. Furthermore, solar water heating is most effective in houses that receive significant sunshine year-round.

NATURAL GAS STORAGE WATER HEATER



Your hot water needs

Storage water heaters: An important consideration when you buy a storage water heater is a number called the "First Hour Rating" (FHR), which tells how much hot water a heater can provide per hour. It should match the amount of water that your household needs when it uses the most hot water each day. Check the Energy Guide label *(see illustration below)* to find the unit's FHR.

Here is a general guideline for the First Hour Ratings of several household sizes:

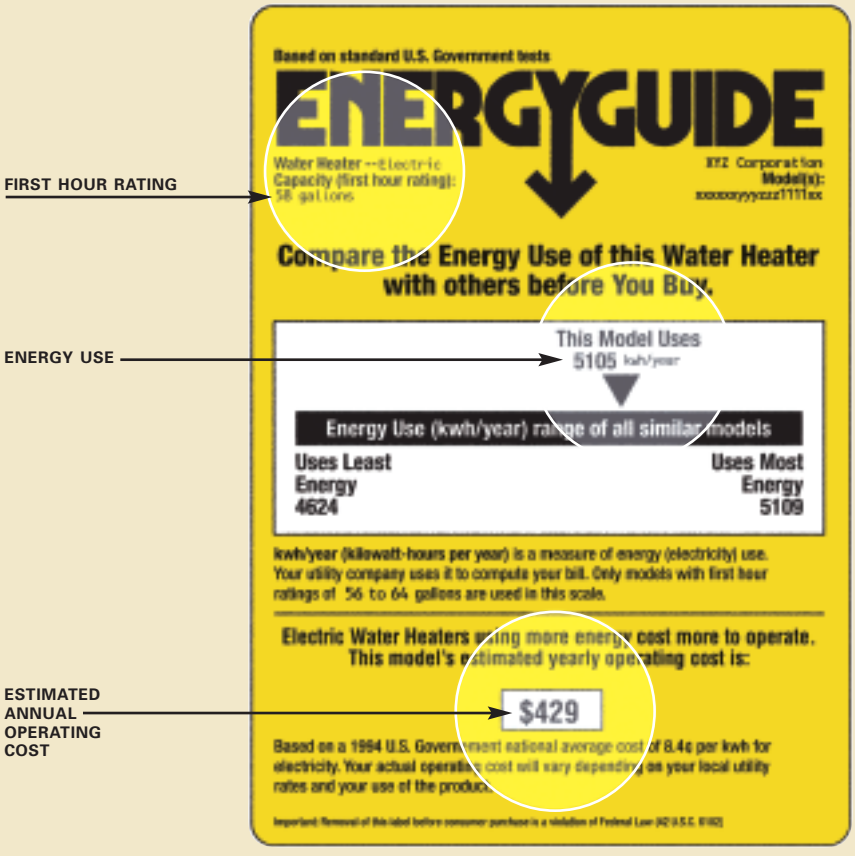
- 2 people: 45-55 gallons
- 3 people: 55-65 gallons
- 4 people: 65-75 gallons
- 5 people: 75-85 gallons
- 6 people: 85-100 gallons
- 7 people or more: 100 or more gallons

Your family may have an FHR one or two levels higher than described by the chart above if you have teenagers, more than two full baths, a very large bathtub or an oversized whirlpool bath.

Note that a unit's FHR is not the same as tank size. In fact, most units have an FHR that is greater than the tank capacity. Don't buy a larger tank than you need—it takes more energy to heat the extra water that big tanks hold. Natural gas heaters generally have higher FHR's than electric models that have the same tank size.

Demand (tankless) water heaters: Demand (or tankless) water heaters have become more common in recent years. They vary in the number of gallons that can be heated per minute. While units are available that can provide hot water for a whole house, tankless water heaters may be unsuited to providing hot water for several purposes at the same time.

Since tankless water heaters take up little space, they are especially beneficial as point-of-use heaters. They can fit beneath the sink or on the wall to ensure adequate hot water supplies for rooms and appliances that require more hot water



REFER TO THE ENERGY GUIDE LABEL AND TO THE MANUFACTURER'S LITERATURE

When you are shopping for a new water heater, check the yellow and black Energy Guide sticker attached to each unit. It will tell you the unit's First Hour Rating and estimated annual operating cost. When you consider purchasing any unit, it's a good idea to compare its estimated annual operating cost to that of a comparatively sized unit that has the highest Energy Factor. If the unit you are considering has a much higher operating cost, then you should probably buy a more efficient unit.

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or that are located far away from the main water heater (such as a bathroom, laundry room, kitchen sink or dishwasher). Tankless water heaters are also a good option for smaller households and vacation homes.

Natural gas tankless heaters are capable of higher flow rates than electric tankless heaters, which means they can provide more hot water per minute. Natural gas heaters can usually supply five gallons per minute and electric heater can usually provide about two or three gallons per minute. Installing low-flow showerheads and faucet aerators along with a tankless heater can lessen the effects of lower flow rates.

Energy efficiency

Purchase an efficient unit. Paying more for an efficient water heater may save you money in the long run. Large households or households that use large quantities of water will especially benefit from more efficient units.

Pay attention to the "Energy Factor" when shopping for a storage water heater.

The "Energy Factor" (EF) is a number that describes how efficiently a water heater operates. It is a number between zero and one, and the closer it is to one, the more efficiently it operates.

The most efficient gas-fired storage water heaters usually have an EF between 0.6 and 0.65. Look for an EF of at least 0.63. The most efficient electric storage water heaters are usually between 0.93 and 0.95. Look for an EF of at least 0.89.

To find a unit's Energy Factor, you may have to read the manufacturer's literature that comes with the unit. The "Consumer's Directory of Certified Efficiency Ratings" also lists the Energy Factor and other information about many water heaters. The directory is available in the consumer's section of the GAMA website, **www.gamanet.org**.

No standard method exists for measuring energy efficiency of demand (tankless) water heaters. Methods of measuring efficiency vary between manufacturers, but you should pay attention to the temperature rise the unit can generate (how much it can heat the water) and the flow rate. If you purchase a gas-fired demand heater, units that have electronic-ignition are more efficient than units that keep a pilot light burning.

Warranty and expected lifetime of the unit

It's a good idea to spend a little extra money for a longer warranty. Although units with shorter warranties cost less initially, you may spend more in the long-run due to maintenance or early replacement costs. Purchasing a longer warranty doesn't cost much more and, if the unit fails early, you will be glad you did!

Unit lifetimes vary, but storage water heaters usually last ten to fifteen years, while tankless water heaters usually last over twenty years.

Your budget

To get the most out of your money, try to buy the most efficient water heater you can afford that meets your family's needs.

When comparing different types of water heaters, you should consider several factors to determine which unit is more affordable in the long run. Neither a lower initial cost nor greater efficiency guarantees lower costs over a unit's lifetime. Compare the cost of purchasing and installing each unit, as well as maintenance costs, fuel prices, efficiency, warranties, and expected lifetimes. For example, before you purchase a solar water heating system, estimate whether energy savings over the water heater's lifetime would make up for higher purchase and installation costs.

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For more household energy savings information please visit the **UGA COOPERATIVE EXTENSION** website at **www.fcs.uga.edu/Housing**.