



This pamphlet provides information about natural gas water heating. It does not specify brand information, and is not intended to replace the manufacturer's use and care manual, which is the primary source of information for maintenance, cleaning, and safety of your water heater. Keep your manufacturer's manual in a convenient location.

Natural gas water heaters on the market today are the most efficient and economical ever. Designed for rapid recovery, natural gas water heaters recover up to 40 percent faster than electric models and this can lower your energy bills.

Natural gas keeps up with your busy lifestyle. No more worries about running out of hot water in the middle of a shower or waiting to shower until the laundry and dishes are done. For more information or to replace your natural gas water heater, call the Energy Specialists at **1-800-654-2765** or visit us at **www.swgas.com** for a list of licensed contractors near you.



SOUTHWEST GAS

Energy Services (10/2007)

WATER HEATING



SOUTHWEST GAS

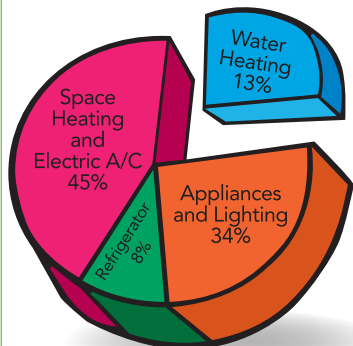
Did you know...

Water heating is the third largest energy expense in your home and typically accounts for about 13% of your utility bill? So, when you're replacing an existing water heater or buying a new home with a choice of equipment, it's important to know the facts about water heaters.

Heating water requires a considerable amount of energy, and natural gas has proven to be the most cost-effective fuel for this purpose. Gas water heaters typically cost slightly more to purchase, but are much less expensive to operate. According to the Department of Energy, the least expensive water heaters to buy are the most expensive to operate.

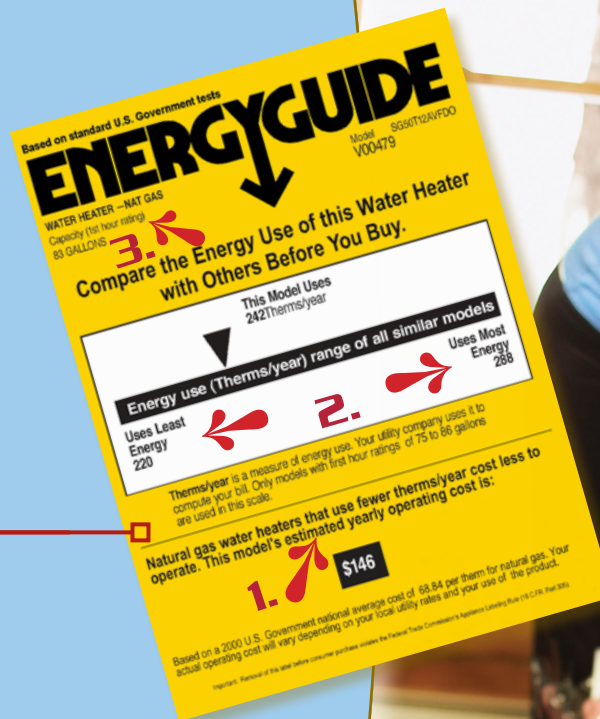
When choosing a water heater, carefully consider the unit's **Energy Factor (EF)**, which is a measure of the overall efficiency of the water heater. An EF is dependent upon how quickly the energy source (gas, electric, etc.) heats the water, how much energy is lost when the water heater is idle (only storing hot water), and energy lost as the unit cycles on and off. More efficient water heaters will have higher EFs. Due to differences in energy types (gas or electric) only compare water heaters of the same energy source. For instance, an electric water heater with an EF of .90 may cost more to operate than a gas water heater with an EF of .70. The EF may be found in the spec sheets accompanying the water heater, from the manufacturer's web site, or from the appliance dealer.

How we use energy in our homes



When shopping for a new water heater, be sure to consider both the purchase price of the unit as well as the operating costs. To compare conventional storage tank units, use the yellow **EnergyGuide** label. This label is federally mandated to help consumers make smart purchasing decisions without being confused by the product advertisements. This is the document you can use to compare like products. For water heaters, the EnergyGuide label will show:

1. annual operating costs using national average energy prices
2. how a particular model compares with other similar models
3. and the **first-hour rating (FHR)**.



How to measure your first-hour rating (FHR) and find your capacity needs

1. Determine the hour of the day when you use the most hot water.
2. Use the following chart to find the quantity of hot water you use for each activity during that hour.
3. Add all the quantities for that hour. The total is your FHR.
4. Choose a water heater with a FHR close to the total amount of hot water you use during the hour you selected. The FHR also includes the "recovery rate." This is a combination of how much water is stored in the water heater and how quickly the water heater can heat cold water to the desired temperature.

Average Hot Water Use

Activity	Gallons per Use
Automatic washer	25 to 40 gallons per load
Non-automatic washer	10 to 20 gallons per load
Dishwasher	5 to 10 gallons per load
Hand dish washing	3 to 4 gallons
Tub bath	15 to 20 gallons
Shower bath	3 gallons per minute
Bathing an infant	2 gallons
Shaving	2 to 3½ gallons
Shampooing	5 gallons
Hand washing	1 to 2 gallons
House cleaning	5 to 12 gallons
Food preparation	3 to 6 gallons



Payback

Is it worth paying a higher purchase price for a water heater in order to gain additional efficiency? Your "up-front" costs will include the purchase of the water heater and the cost to install the unit. After that, there are maintenance and energy costs. You can calculate the "payback" period for buying a higher efficiency model. (This is the number of years it takes to "pay yourself back" for the initial higher cost.)

- Using the Energy Guide label, compare the annual operating costs of all models you are considering.
- Look at the price premium (additional cost of higher efficiency model).
- Divide the price premium by the annual operating cost savings. A result that is less than one is a fraction of a year (.5 equates to 6 months).

Types of Natural Gas Water Heaters

Storage [tank] Water Heaters are by far the most common type of water heater used today in this country. Water is kept hot and ready for use at all times in insulated storage tanks with capacities ranging from 30 to 75 gallons. Known for rapid recovery, they are able to supply substantial water flow rates over short periods of time. The energy lost through the walls of the storage tank is called "standby heat loss." New energy-efficient storage water heaters contain higher levels of insulation, substantially reducing standby heat loss.

Tankless Water Heaters are sometimes called "instantaneous" or "on demand" hot water heaters. Tankless water heaters circulate water through a large coil called the heat exchanger and water is heated only on demand. There is no storage tank continuously maintaining hot water. Usually compact and wall-mounted, instantaneous heaters may fit situations where space is limited. They can also be installed centrally or at the point of use, such as under a bathroom counter, depending on the amount of hot water required. Many models can be installed indoors or outdoors. When purchasing, check to make sure the capacity will meet your needs for simultaneous uses.

Storage [tank] Water Heater



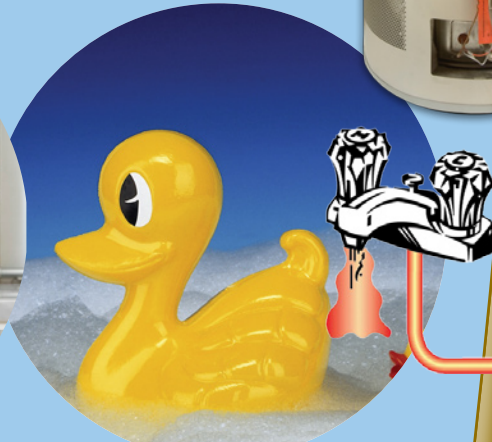
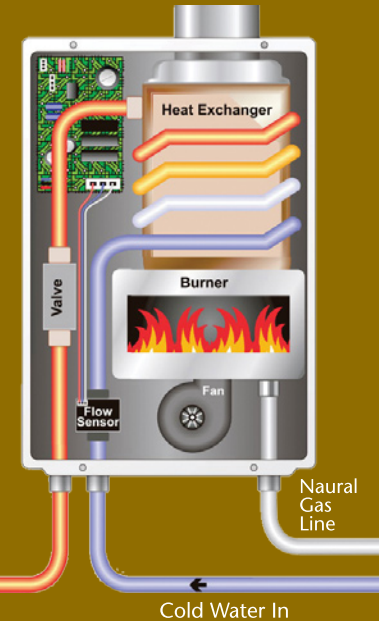
How Does a Tankless Water Heater Work?

The Process

1. A hot water tap is turned on.
2. Water enters the heater.
3. The water flow sensor detects the water flow.
4. The computer automatically ignites the natural gas burner.
5. Water circulates through the heat exchanger.
6. The heat exchanger heats the water to the designated temperature.
7. When the tap is turned off, the unit shuts down.



Tankless Water Heater



Hot Water Out

Cold Water In

Natural Gas Line

The FVIR (tank) Water Heater

FVIR stands for Flammable Vapor Ignition Resistance which describes safety standards that first came into effect in 2003. Although gas tank-type water heaters are safe, the water heater industry, in cooperation with the **American National Standards Institute (ANSI)**, established new safety standards. These standards require that all hot water heater manufacturers use design features to prevent flammable vapors, like gasoline and paint thinners, from igniting outside of the water heater.

Here's how FVIR water heaters work: Flammable vapors can only enter the combustion chamber through a special air inlet. Once the flammable vapors are inside the combustion chamber, they ignite but are trapped and allowed to burn out safely in a sealed area. At the same time, controls shut off gas flow to the burner and pilot light. The new safety standard prevents flames from "flashing" or igniting outside of the combustion chamber.

Comparing Storage Tank to Tankless

Tank Features

- Lower initial cost
- No electricity required
- Large variety of sizes available
- High gallon-per-minute flow rates

Tankless Features

- Continuous hot water
- Electronically controlled
- Compact, space saving
- Eliminates standby loss



FVIR Water Heater



Recirculating Pump

In typical plumbing, hot water is pumped from the water heater through the pipes to the faucet. Once the faucet is shut off, the water remains in the pipes, cooling off—hence the familiar wait for hot water the next time you turn on the faucet. A recirculating pump uses a small motor to pump the hot water and keep it circulating in your water pipes. You have instant hot water to any room in the house when you turn on the faucet. A timer on the pump can lower your energy costs by turning off the circulation during downtime, like nights or mid-day when there is no demand.



Venting

All gas water heaters must be vented according to manufacturer's recommendations and local code requirements. There are a number of venting options available to suit your home's interior space, the model of natural gas water heater, and its manufacturer's specifications.

Vertical (or natural draft) vent

Most standard and mid-efficiency models require a vertical vent. This style of venting draws air from inside the house for combustion and venting so it's important that you have an adequate air supply, particularly if your home is airtight.

Direct vent

Direct vent systems do not need a vertical chimney. They go through an outside wall (right angle and horizontally). A direct vent system takes combustion air from the outside and vents the products of combustion to the outside, using a sealed two-way pipe.

Power vent

When venting must travel some distance, power venting may be used. Standard, mid- or high-efficiency water heater models can be power-vented units with an electrically-powered fan or blower.

Power direct vent

A power direct vent is the same sealed combustion system as direct vent, but fan or blower assisted to travel a longer distance. Again, a sealed two-way pipe is used for air intake and the exhaust.

TIPS

conservation and comfort

- Lower the thermostat on your water heater. The temperature adjustment is located on the control. A setting of 120°F provides comfortable hot water for most uses. Refer to the manufacturer's instructions for specific settings. Set the temperature control knob to the lowest setting when away for extended periods of one week or more.
- Buying a water heater blanket may be an inexpensive way to save 4 to 9 percent on your water heating bill. However, before purchasing a blanket, check your manufacturer's instructions. In some cases, installing a water heater blanket may void your warranty.
- For new water heaters only: If your water heater is not a self-cleaning unit, draining a couple of gallons of water from your tank monthly will help remove sediment that impedes heat transfer and lowers the efficiency of your water heater. Refer to the manufacturer's manual for specific steps to follow.
- Use low-flow showerheads and water-conserving faucets.
- Insulate exposed, uncovered water pipes.
- FVIR: Keep screened area at the bottom free of lint, dust and oil per manufacturer's instructions. For optimum performance, KEEP SCREENED AREA FREE FROM OBSTRUCTION.
- A permit and earthquake straps may be required when installing a new water heater. Contact your city or county building officials for requirements.

VERTICAL VENT



DIRECT VENT



POWER VENT

