



Energy-Efficient Water Heating



PowerHouse.

Presented by



A long shower, a half-full load of laundry, a water heater you haven't glanced at for years ... It's easy to take hot water for granted — except when you get your energy bill or your water heater breaks down.

Water heating costs can account for up to 25 percent of your household energy budget, and we want you to get the most value from your energy. In this brochure, you'll find great tips on:

- Rating a water heater's efficiency
- Choosing a new water heater
- Installing a new water heater
- Maintaining your water heater
- Reducing hot water consumption

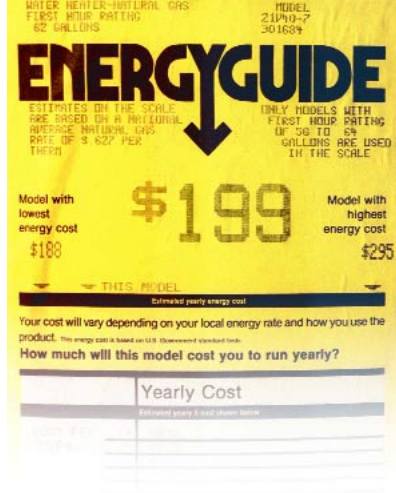


Energy efficiency ratings

A water heater's efficiency is measured by its energy factor. This number, shown on the yellow and black Energy Guide label, shows the unit's overall operating efficiency, taking into account the burner and heat exchanger efficiencies, as well as heat losses from the water tank, pipes, etc.

Two other measurements are important in assessing how well a water heater works:


- The first-hour rating shows how much hot water the unit can provide in one hour.
- The recovery rate shows how long it takes the full tank of water to heat to the proper temperature.



Energy efficiency ratings, continued

The largest number on the Energy Guide will show the water heater's estimated annual operating cost. You'll also see how the unit compares to other models of the same size.

You can also look for the Energy Star™ label from the Environmental Protection Agency and the U.S. Department of Energy. This identifies appliances as being the most energy-efficient products in their classes. They usually exceed minimum federal energy use standards by a substantial amount.



The U.S. Department of Energy suggests thinking of an appliance purchase like buying a car or even a home. The purchase price is the down payment; the energy costs are the interest rate. The lower the energy consumption, the lower the total cost of owning the appliance.

Choosing a new water heater

Many homeowners consider only the size of the tank when choosing a new water heater, but ignoring the energy factor and other efficiency measures can cost a lot in the long run.

The first decision in purchasing a new water heater is usually fuel source. A natural gas unit will cost less to operate than an electric unit; the price difference (usually around \$50) can be paid back in energy savings in just a few months.

Even if you have four teenagers, you may not need a large capacity unit. Instead of concentrating on size, start by estimating how much hot water your family uses during the busiest hour — morning showers, for example. The chart shows approximate consumption for some typical activities.



Water usage for typical household activities

Use	Average gallons of hot water per use
Shower or bath	20
Handwashing, misc.	4
Automatic Dishwasher	8
Hand Dishwashing	10-15
Clothes washer warm wash/cold rinse	7
Clothes washer hot wash/hot rinse	32
Food preparation	5



Choosing a new water heater, continued

When you're armed with this information, look for a water heater with a first-hour rating that meets your family's needs. A high-efficiency 40-gallon model might provide more hot water in one hour than an inefficient 50-gallon unit. The first-hour rating is shown on the top left corner of the Energy Guide.

If your family uses hot water all day long — dishwashing, laundry, etc. — look for a water heater with a fast recovery rate. This will ensure that you never run out of hot water. A larger-capacity water heater will likely have a slower recovery rate, so again, a smaller unit might be a better choice.

Once you've narrowed down your choices, you can choose based on the cost and the energy factor. Although the purchase price will be higher for a higher-efficiency unit, your energy savings will likely pay for the difference in a few months; a high-efficiency model can pay back the entire purchase price in just a few years. Your dealer can help you determine what your payback period will be on a particular model.

For a standard natural gas water heater, we recommend an efficiency of .61 for 30- or 40-gallon units, or .59 for a 50-gallon unit. If natural gas service isn't available, look for a new “never leak” electric water heater with an energy factor of at least .85.

Don't forget to ask about the warranties, delivery and installation charges and service contracts.



Installing your new water heater

For safety's sake, we highly recommend having a water heater professionally installed. This is especially important with a natural gas unit, because all fittings and vents must be adjusted carefully to prevent gas leaks and carbon monoxide poisoning. It's also more convenient: a professional will remove and dispose of your old unit safely.

The location of your water heater can affect its efficiency. Placing it in an unheated area forces it to work harder during cold weather. If your natural gas water heater is placed in the garage, it should be installed at least 18 inches off the floor to prevent gasoline fumes from igniting.

Distance matters too — the farther the hot water must travel through the pipe, the more heat it will lose. If you're building a large new home, make sure the water heater isn't placed on the opposite side of the house from the kitchen or main bathroom.



Setting the thermostat

One of the easiest ways to reduce your water heating costs is to lower the thermostat — for every degree it's lowered, you'll save one percent.

Before you reach for the knob, keep these tips in mind:

- Don't set the thermostat lower than 120 degrees. Water temperatures below this point allow unhealthy bacteria to develop in the tank.
- Most dishwasher manufacturers recommend a water temperature of at least 140 degrees; some dish detergents won't dissolve properly at lower temperatures. Many new dishwashers have the option of a “booster” heater; this allows you to wash dishes at 140 degrees but maintain your primary water heater at 120 degrees.
- Temperatures above 110 degrees can quickly scald, so it's a good idea to invest in “anti-scald” faucets. Never let small children turn on hot water faucets by themselves.
- If you go on vacation for more than three days, turn the thermostat down to “low”; if you'll be gone for several weeks, shut off the unit and drain the tank. When you return, allow time for all the water in the tank to reach 120 degrees before using.



Insulating your water heater

Your attic isn't the only thing that needs insulation. If you have an older water heater, wrapping the tank and hot water pipes with insulation can significantly reduce the amount of standby heat loss, saving you money on your energy costs. You can find water heater insulation kits at your hardware store or home center for about \$20. This cost can be paid back in energy savings in just a few months.

Pipe insulation comes as either a foam tube slit lengthwise or as fiberglass wrap. Install the insulation on both the cold and hot water pipes connecting to your water heater, and on any hot water pipes accessible throughout the house.



Insulating your water heater, continued

The tank wrap is a thick fiberglass blanket, secured around the tank by waterproof tape. When installing tank wrap, follow the manufacturer's directions exactly to ensure maximum efficiency, and be sure to leave these areas uncovered:

- Pressure relief valve
- Control panel
- Drain

On a natural gas water heater, you also need to avoid covering the pilot light access, air intake and draft diverter.

If you have a newer water heater, a tank wrap isn't necessary and might even void the warranty for your unit, so be sure to check your owner's manual. However, you can still add pipe insulation.

Before installing any water heater insulation, shut off the power to the unit first.

Maintaining your water heater

Your water heater generally is a low-maintenance appliance. There are only three regular tasks to remember:

1. Once every three months, drain one gallon of water from the tank. If you have hard water, do this every month. This reduces the amount of sediment collecting in the bottom of the tank, which can make the burner or heating coils work harder. Don't worry if the water is rusty or brown — this is normal.



2. Once every two or three years, have a service technician replace the anode rod. This small metal device sacrifices itself for the good of the entire unit: instead of attacking the tank itself, the corrosive chemicals in the water are drawn to the anode rod. Failing to replace the anode rod can drastically reduce the life of your water heater.
3. Whenever you pass by your natural gas water heater, check the color of the pilot light. The flame should be at least 80 percent blue; if it's mostly yellow, the natural gas isn't combusting properly, putting you at risk for carbon monoxide poisoning; have the unit checked by a professional as soon as possible.

Before doing any maintenance work on your water heater, be sure to turn off power to the unit first.

Reducing hot water consumption

Even if you have a brand new, high-efficiency water heater, you can still cut your energy costs by reducing the amount of hot water you use.



Reducing hot water consumption, continued

There are lots of easy ways to save throughout the house:

In the bathroom

Contrary to popular belief, water-saving or “low-flow” showerheads do not reduce water pressure — only the cheap ones do. Here are the facts:

- A high-quality showerhead can actually increase the force of the spray by directing the water more efficiently.
- A good showerhead will have a two to three gallon per minute flow rate, compared to five to eight gallons per minute for a conventional model — a difference of four cents per minute.
- A family of four, each taking a five-minute shower a day, can cut their water heating costs by \$250 a year by switching to a water-saving showerhead.
- Test the amount of water your current showerhead emits: if it takes less than 20 seconds to fill a one-gallon bucket, you need a water-saving showerhead. Be sure to use COLD water for this experiment!

In the kitchen

Yes, it's true, an automatic dishwasher uses less water than washing dishes by hand. The average dishwasher uses about eight gallons per load; washing and rinsing the same amount by hand takes about 10-15 gallons.



These tips will help you use your dishwasher efficiently:

- Follow the manufacturer's advice on proper loading, and use the recommended type and amount of detergent.
- Wash only full loads.
- Let dishes air-dry instead of using the forced-air heater.
- Use the “energy-saver” and “short cycle” options as often as possible.
- Instead of pre-rinsing dishes, scrape them with a rubber spatula.
- Avoid using the “rinse and hold” feature — it can use almost as much water as a full cycle.

If you're shopping for a new dishwasher, look for a model with a “booster” water heater [see page 7]. The \$30 difference in price will be paid back in energy savings in just a few months.



Reducing hot water consumption, continued

Another easy hot water-saving tip: use cold water to run the garbage disposal — it helps solidify grease. And don't forget to install an aerator on your kitchen faucet.

In the laundry

Did you know that up to 90 percent of the cost of washing clothes comes from heating the water? You can significantly reduce your hot water consumption by using your washing machine carefully:

- Wash only full loads of clothes; if you need to wash a small load, adjust the water level appropriately.
- Always use cold water during the rinse cycle, and use hot water only for very dirty clothes.
- Use the recommended amount of detergent to avoid having to wash or rinse the load again.

If you're shopping for a new washing machine, be sure to check out the new front-loading models. They get clothes cleaner using 60 percent less water — saving you up to \$100 a year in water heating costs!

If an average family of four changes from a standard washing machine to a front-loading model, they will save more water in one year than a person consumes in an entire lifetime.

Other ways to save



Do you have a dripping hot water faucet? It could be costing you more than you think: one drop per second can add up to more than 165 gallons a month. That's more than one person uses in two weeks!

Do you have to let the water run for several seconds before it gets hot? Don't turn on the faucet full force — it won't get the water hot any faster, and it can waste several gallons of water. If it's a chronic problem, you may want to consider investing in an “on-demand” water heater that attaches near the fixture itself, providing instant hot water. This is also a great option if you have a whirlpool tub or outdoor spa — you'll save a tremendous amount of wear and tear on your primary water heater, and your other family members will still have hot water.

If you're building a new home, ask your builder about a heat recovery device for your bathrooms. This special pipe section is installed directly below the tub or shower; a copper coil inside the pipe absorbs heat from the water flowing down the drain and uses it to preheat the cold water supplying the water heater.

For more
information

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We're on for you.™