

Water heater choice and maintenance can reduce energy costs

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(PhysOrg.com) -- Between 16 and 18 percent of home energy is used to generate hot water, so hot water tank maintenance can pay big dividends on your energy bill.

There are three main strategies for saving energy with a conventional hot water tank: thermostat control, insulation wrap and flushing the tank. In addition, when building a new home, consider that the siting of the water tank influences the energy you need to heat water.

The same water heater can be more or less efficient depending on where it is located and how it is maintained. A heater that is located closer to the place where it delivers hot water will use less energy than one located farther away from the site of its final use. Often that means that a central location for the heater, which requires less distance for water to travel through pipes, will be more efficient. It also reduces water use, since you won't be letting the water run as long to get hot water. If possible, locate the water heater in a heated space.

Generally, natural gas provides the cheapest fuel for water heaters.

Actual water heating costs change frequently, but according to the default values in the "fuel comparison calculator" at the U.S. Department of Energy's Energy Information Administration's Web site (search "calculator" at www.eia.doe.gov), electric and propane energy costs are similar (\$33 to \$35 per thermal unit) and higher than the cost of gas (\$19 per thermal unit), with wood heating potentially being slightly cheaper

than gas but depending on the species of wood and other factors.

Working with a water heater that's already in place, a little extra care can significantly reduce its energy use, and the care often has a noticeable pay-back.

Adjusting the thermostat to an appropriate level should be the first step in energy conservation. Most homes have their water heater set hotter than necessary. Generally, water heaters only need the high setting of 140 degrees Fahrenheit if there is a dishwasher without a booster heater. Turning the temperature down to 120 degrees F or midway between low and medium on a gas heater dial, often cuts water heating costs by six to 10 percent.

Electric water heaters have both an upper and a lower thermostat to adjust. Before removing the thermostat access panels, be sure to first turn the electricity off at the circuit breaker or fuse box.

When you will be away from home for several days, consider turning a gas water heater thermostat to the pilot setting or turning an electric heater off at the electrical breaker box. It takes about an hour to reheat once you return. If you have a gas model and shut the heater off, be sure to learn how to re-light the pilot light.

If the water heater is older and located in a cold space, then wrapping the tank in a blanket of fiberglass insulation reduces standby heat loss by 25 to 45 percent, which translates to a savings of four to nine percent on your water-heating bill. Water heater insulation kits are inexpensive and generally available at your local hardware store. They are easy to apply and pay for themselves in less than a year. It's especially important not to cover exhaust vents and air intakes on gas models and access thermostat panels on electric heaters with insulation.

If the water heater is relatively new, it is likely to be well insulated and there may be a warning against insulating further due to potential for overheating.

Flushing your tank also pays dividends. Over time, sediment and mineral deposits from water build up inside your water tank, reducing both heating element efficiency and the overall capacity of the water heater. You can reduce this buildup by regularly flushing water from the tank. In some areas, depending on the hardness of the water, monthly flushing is recommended, and in others the tank need only be flushed once a year.

The drain valve is located near the bottom of the tank. If the valve hasn't been opened in years, you may want to have a garden hose cap in hand in case it is difficult to shut off. It's important to be able to see what is in the water. Drain about a gallon into a shallow pan, like a baking pan to see how much sediment is present. If you drained it six months ago and there isn't much debris this time, you may be able to drain it off once a year. If the water is murky, drain it until it runs clear (usually after one to two gallons).

To save even more energy, consider insulating hot water pipes to further reduce standby heat loss and installing heat traps. Heat traps are one-way valves placed inside both the hot and cold water lines running into your water heater. They help to keep the hot water from rising out and the cold water from dropping into your water heater when you're not drawing water from a tap.

New water heaters are considerably more energy-efficient than those of 20 years ago. Pay attention to the yellow EnergyGuide labels when you shop, since they provide information on both energy efficiency and estimated annual operating costs for each model. Models with the lowest price tags are often the most expensive to operate.

Tankless water heaters use burners to heat water on demand rather than keeping water hot in a tank. A recent issue of Consumer Reports indicated that gas tankless water heaters are 22 percent more energy efficient on average than the gas-fired storage-tank models. However, they have traditionally cost enough more to buy and install that the energy savings may not pay for the unit over its lifetime. Still, it's a "green" choice that you may want to consider. Consumer Reports did not rate electric tankless units, commenting that they frequently did not deliver enough hot water fast enough when groundwater is cold.

Provided by Montana State University

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