



The U.S. Environmental Protection Agency's **ENERGY STAR® Program** promotes the use of high-efficiency technologies and equipment. ENERGY STAR labeled homes use at least 30% less energy than homes built to meet the national Model Energy Code while maintaining or improving indoor air quality. These fact sheets are designed to help consumers learn more about the energy-efficient improvements to their ENERGY STAR labeled homes.

HIGH-EFFICIENCY WATER HEATING

MECHANICAL EQUIPMENT IMPROVEMENTS

Water heaters are in service 24 hours per day, 365 days per year providing hot water for basic household needs such as bathing, clothes washing, cleaning, and dish washing. Approximately 15 percent of home energy use is for water heating. A high-efficiency model can use 10 percent to 50 percent less energy than a conventional model and is an important part of an energy efficient home.

The most commonly used types of water heaters today are gas and electric storage units. Figure 1 shows possible improvements to gas storage type water heaters including more efficient burners, better flue design, and low input pilots. Since more heat is transferred to the water with these models, combustion gases are exhausted at a lower temperature and can be vented with PVC pipe through a wall (similar to a clothes dryer).

Figure 2 shows possible improvements to electric storage type water heaters including substantially improved insulation (particularly between the bottom

of the tank and the floor) and independently-operating heating elements to optimize water temperatures. Another option is heat pump water heaters. These devices are more efficient than electric resistance water heaters because they can extract heat from the outdoor air or ground and typically provide dehumidification or air conditioning as a useful by-product in hot climates.

For added efficiency, a "desuperheater" can be added to an air conditioning or heat pump system to capture waste heat and deliver it to hot water storage units. These systems can be particularly cost effective in hot climates.

Water heaters should be set to provide hot water at 120° Fahrenheit. Hot water at this temperature serves all household applications with the possible exception of dishwashing (only if the dishwasher does not have a booster heater).

FIGURE 1: IMPROVEMENTS TO GAS STORAGE WATER HEATERS

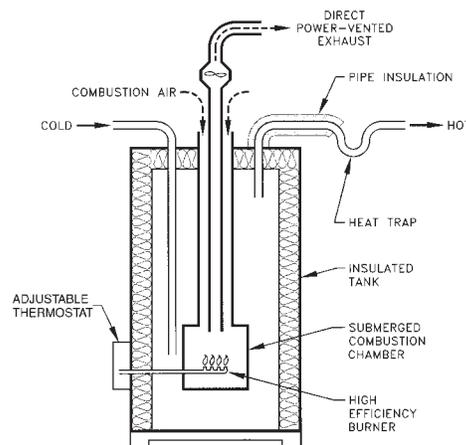
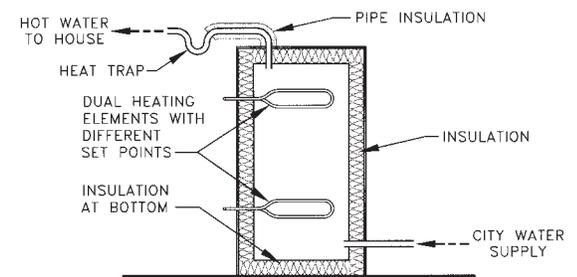


FIGURE 2: IMPROVEMENTS TO ELECTRIC STORAGE WATER HEATERS



HIGH-EFFICIENCY WATER HEATING

MECHANICAL EQUIPMENT IMPROVEMENTS

RESOURCES

The Consumer Guide to Home Energy Savings (Wilson and Morrill). Available from the American Council for an Energy Efficient Economy at 510-549-9914.

Homemade Money (Heede and the staff of RMI), 1995. Available from the Rocky Mountain Institute at 970-927-3851.

The following fact sheets are available from the Energy Efficiency and Renewable Energy Clearinghouse (EREC), P.O. Box 3048, Merrifield, VA 22116, 1-800-363-3732: ***Energy-Efficient Water Heating*** and ***Solar Water Heating***.

(CONTINUED)

ENERGY STAR labeled homes are often equipped with high- efficiency water heaters. In addition, look for these other energy and water saving features: a heat trap on the hot water pipe extending from the storage tank, an R-5 to R-11 insulation blanket wrapped around the storage tank, R-5 pipe insulation on the first 5 feet of pipe (both cold and hot), low-flow showerheads and sink aerators, horizontal-axis clothes washers, and low water use dishwashers with temperature boost.

BENEFITS

Installing high-efficiency water heating can provide many benefits including:

Increased quality. High-efficiency water heaters exceed the minimum efficiency levels established by federal appliance standards. These higher performance levels are often achieved with better components and improved technologies that can result in longer equipment life and extended manufacturer's warranties.

Improved safety. High-efficiency gas water heaters are often equipped with direct or power venting. This reduces the risk of "back drafting" combustion gases into the house when other exhaust devices (bath and kitchen fans, central vacuum, dryers, whole house ventilators) are operating. In these cases, your home is made safer because direct or power venting minimizes the risk of dangerous carbon monoxide levels accumulating inside. In addition, water heaters set to operate at 120° Fahrenheit decrease the chances of burns due to scalding.

Lower utility bills. The average home owner spends over \$200 per year on water heating. High-efficiency models can reduce this by \$20 to \$100, making homes less expensive to operate.