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Summer water heating options

There is some debate on whether shutting down an oil-fired burner during the summer and installing an electric water heater is a viable option to save energy and money. The answer depends on several variables, including the size of the tanks, the efficiency of your boiler, your water use and, of course, the cost of fuel oil.

Cost analysis

A straightforward calculation comparing the cost to heat water with electricity versus oil shows that it is more expensive to use electricity on a cost-per-BTU basis. A BTU (British Thermal Unit) is the amount of energy needed to raise the temperature of one pound of water one degree Fahrenheit.

However, because the boiler is sized to be able to provide a lot of heat when it is really cold in the winter, it is not very efficient at heating a small quantity of water in the summer. As an example, if a conventional Weil-McClain boiler burns about 140 gallons of fuel oil during the four months of summer, at \$4.10 per gallon of fuel oil, that's about \$574 per summer. Note that this boiler heats the house using baseboard hot water and heats domestic hot water in a storage tank using a coil in the boiler. It uses a total of about 1,200 gallons of fuel oil a year if not using a woodstove as a supplemental heat source.

The average household requires about 45-65 gallons of hot water per day (less in the summer). Assuming 40 gallons per day for 122 days, at Golden Valley Electric Association rates of 22 cents per kilowatt-hour, with a 90-percent efficient water heater, it would cost about \$235 to provide hot water for the summer. That would equate to a savings of \$339 per summer.

However, the boiler is also providing some heat on cooler days and nights even in the summer. To account for the difference, assume that one cord of wood, at a cost of about \$250, would provide enough heat for the summer. Then the net savings would be about \$89. A 50-gallon electric water heater would cost about \$600 to install, so it would be paid back in 6.5 years at the current price of fuel.

So if you use a conventional oil-fired boiler and a modest amount of hot water, it may pay to install an electric water heater and allow the boiler to be shut down for the summer. The best possible scenario is a smaller, self-installed tank plus a wood stove to provide space heating. However, if you already have an efficient boiler and you only use minimal water, the system would yield marginal returns. Many homes are already using an electric water heater as a storage tank for boiler heat, so they would face no installation costs. Overall, each house requires individual and careful evaluation.

Another option is an on-demand propane heater. These start at about \$300, but add-ons that make life more comfortable (like a mini buffer tank and a pump to boost water pressure) will drive the price up to more than \$1,000.

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Insulation

No matter how much water is used in the summer, or the size of the house, insulating the tank is one of the simplest and cheapest ways to save energy. Insulating a tank involves wrapping it with some form of covering. Typical hardware stores sell blankets for the average 50-gallon tank. When insulating, make sure the covering does not interfere with the pressure or temperature valves, and leave an opening for electric heating outlets.

Through 2016, anyone who installs solar (PV or thermal) systems is eligible for a 30% tax credit for the cost of the system—including installation and material costs. In addition, on-grid PV systems are eligible to participate in Golden Valley Electric Association's SNAP (Sustainable Natural Alternative Power) program, which further reduces the payback period.