



**COLD CLIMATE HOUSING RESEARCH CENTER**  
**CCHRC**

*Promoting and advancing the development of healthy, durable and sustainable shelter for Alaskans and other circumpolar people through applied research.*

## Alternatives for Summer Water Heating

Water heater use in the summer months and heat loss prevention

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### Introduction

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 the size of the tanks and how water is used in the home.

### Cost analysis

A straightforward calculation comparing the cost to heat water using 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, then at \$4.50 per gallon of fuel oil, that's about \$630 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 1200 gallons of fuel oil per year if not using a wood-stove as a supplemental heat source.

The average household requires about 45 to 65 gallons of hot water per day, less in the summer. Assuming 40 gallons per day, 122 days of summer, a Golden Valley Electric Association price of 22 cents per kilowatt-hour, and a 90%

efficient water heater, it would cost about \$235 to provide hot water for the summer. That would suggest a savings of \$395 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 necessary summer heat; then the net savings would be about \$145. A 50-gallon electric water heater would cost about \$600 to install, so it would be paid back in about 4 years if the price of fuel oil remains the same.

Therefore, when using a conventional oil-fired boiler and a modest amount of hot water, it may pay to install an electric water heater, thus allowing the boiler to be shut down for four months in the summer. A smaller, self-installed tank, aided by a wood stove is the best possible scenario. However, an already efficient boiler combined with only a small amount of hot water usage would yield marginal results. Many homes already have an electric water heater in addition to a burner, so installation costs can be omitted. Overall, each house requires individual and careful evaluation.

### 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.

### Related Topics:

- *Sustainable North*, the CCHRC blog  
<http://sustainable.cchrc.org>

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