

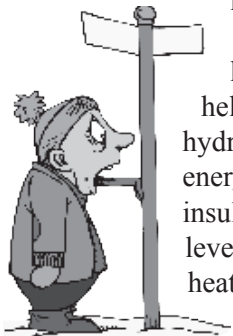
the “Juneau oversized” approach they typically use. Particularly in optimally insulated and ventilated homes, a smaller heating unit may be possible. Size your system according to your home’s heating load, as determined by an energy expert.

Other selection considerations:

If possible, zone your system so that less frequently used rooms are not heated as if they were lived in. A set-back thermostat is another worthwhile option for heating systems with fast heating response. Program your thermostat so that your home is heated only when you need it and the temperature is reduced when you are sleeping or away. Look for a unit that can easily program a variety of daily hours of operation and a weekend or holiday mode.

You might want a heating system that allows you to switch fuels as costs fluctuate. Look for a system that is easily converted, or one that is truly dual-fuel capable.

You might be interested in reducing your home’s greenhouse gas emissions. Once clean hydropower from Lake Dorothy is fully utilized, the next electric generation will be more expensive. If you choose electricity for heating, do all you can to help extend the life of our hydro resources. Whole-home energy conservation, optimal insulation and ventilation levels, and the most efficient heating system are essential.



Electric Heating Options

Electric boilers, baseboards, and furnaces will cost about the same amount to operate. Boilers and furnaces cost about the same to install and maintain over a 30-year period. Baseboard and Radiant Comfort Cove heat is less expensive to install. With Cove heat, operating costs may be as much as 15% lower than baseboard heat if occupants reduce the heat in unused rooms and use a lower temperature elsewhere.

Cove heat offers an almost instant feeling of warmth. This is because radiant heat is like sunlight, heating people and surfaces directly, and the air indirectly.

Air-to-air and ground-source heat pumps will provide more than twice as much heat for the same kilowatt-hour. A promising new cold climate air-to-air heat pump may prove to be a cost effective alternative to baseboard heaters. They also have a potential for retrofitting into existing furnace duct work. On-site research will be done to determine if these will perform well in our damp, cold climate.

Ground-source heat pumps are much more expensive to install and cost about the same to operate. They are a good option when access to a significant water table is possible without extensive well drilling.

Off-Peak Thermal Storage Units use the same kilowatt-hours as baseboard heaters but are heating thermal bricks during the off-peak night hours, for discharge during the day. Using the off-peak rate reduces operating costs, but installation can be expensive, and may require a larger electric service.



Shopper’s Guide to Home-Heating Systems



Your heating system uses about 50% of the energy required to run your home.

Regardless of the energy source, selecting a heating system is an important decision. Not only are installation costs significant, the operating and maintenance costs over the life of your system cannot be ignored.

In addition to the heating system, your home’s level of insulation, air tightness, square footage, window area, R-value of doors and windows, thermostatic control, in-home temperature, and your own particular lifestyle, all impact the operating cost of your heating system.

Finally, as we become more aware of the carbon footprint our homes leave, having a home that is as energy efficient as possible is an even higher value.

First – Your Home’s Envelope

Juneau’s Residential Building Code standards for insulation have improved over the years. Today, an investment in an optimal level of insulation can show a payback in less than seven years. Think long-term when you consider decisions related to your home’s ability to maintain heat. If you do, your home will be a Juneau asset long after you sell it.

Insulation Levels			
	<i>Basic</i>	<i>Better</i>	<i>Optimal</i>
Wall	R-19	R-25	R-33
Ceiling	R-38	R-45	R-52
Slab-on grade	None	1” rigid	2” rigid
Foundation parameter	R-14	R-15	R-20
Windows	R-2.9	R-3.5	R-4.2
Doors	R-2.9	R-3.6	R-4.3

- 1” of rigid insulation = R-5. This type of insulation can be used on the outside of your house in conjunction with re-siding.
- 2x4 construction = R-10
- 1” of batt or blown cellulose insulation = R-3.4

When “tight” is “too tight”

As you better insulate, you also need to prevent the growth of molds and mildew. Proper ventilation is the key to a healthy environment and can also increase energy efficiency.

Basic ventilation: Constant low-speed exhaust fan capable of high-speed boost when bathroom is in use.

Better ventilation: Cross-flow, so that air exchange occurs in all areas of the house.

The best option: A heat-recovery ventilator system (HRV) to provide cross-flow ventilation and maintain neutral house pressure. HRVs recover heat from the air being exhausted to warm the incoming air, reducing the cost of home heating.

Other envelope considerations

Home size and insulation levels matter. Here is an example of annual operating costs for a house using an electric hydronic boiler and radiant heat.

	<u>1,500 sqft</u>	<u>2,100 sqft</u>
Super insulated and very tight	\$1,210	\$1,480
Juneau Code and tight	\$2,180	\$2,850

Remember that cathedral ceilings effectively add to your home’s volume and heat loss, without adding living space. Super-insulate and use ceiling fans to bring warm air downward.

Use passive solar heating. It’s free heat! If possible, plan your home so the majority of your windows face south.

Limit the size of other windows and sky lights. They are like open doors. Use optimal insulation and find other ways to bring outside light in. Solar-type tubes are an energy-saving option.

Next: Electric, oil, or propane?

High oil and propane prices are raising questions about the advantage of using electricity for heating.

Most energy experts believe that petroleum based fuels are unlikely to be priced as low as they were prior to 2003. Fluctuations in price will continue, with an overall upward trend in price occurring over time. For 15 years since 1992, the price of oil has increased an average of 6.1% annually. This increase may moderate.

The price for electricity has increased more gradually. At that, the price will increase at a higher rate if electric heat use becomes more common. This is because higher demand will need to be met with new power plants and other costly infrastructure. In the near future, electricity may either be more expensive in the winter, or more costly as more is used.

Right-size your new heating system

Whatever system you ultimately choose will cost you more to install and operate if you simply allow your heating contractor to apply