

EASY\$ TIP SHEETS

Energy Advice Saving Yukoners Money

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Regardless of the type of heating system you have in your home, the thermostat plays an important role in ensuring your home is comfortable. Your thermostat determines when your heat comes on and off, what temperature your home will be heated to, and it can help reduce your heating bills. Essentially, the thermostat is the “brains” behind your heating system.

Selecting a thermostat

When choosing a thermostat, look for the ENERGY STAR® symbol. ENERGY STAR® qualified thermostats save energy by offering four convenient, pre-programmed temperature settings – settings that try to anticipate when it’s convenient for you to scale back on heating or cooling. You can program the thermostat for your particular schedule to reflect when you wake, leave and return to your home and go to bed. At a minimum, these thermostats allow you to set two different programs for your weekday and weekend schedules. Some of these thermostats will allow you to set a different schedule for every day of the week. Other features may include: digital, backlit displays; a reminder when it is time to change air filters; and smart logic that allows the thermostat to “learn” when to start heating so that your house is up to temperature at the time you want.

Goal and Summary

This Easy\$ tip sheet describes different types of thermostats and provides advice on selecting and operating a thermostat in a way that meets your needs.

Types of thermostats

There are two basic types of thermostats: “line-voltage” and “low-voltage” with a number of options for each type.

Line-voltage thermostats

Line-voltage thermostats are used to control unitary heating systems, such as baseboard and radiant systems. The thermostats are installed in-line (in series) with the heater, usually at 240 volts. The full current going to the heater also goes through the thermostat, causing it to heat up when the heater is on. This may cause the thermostat to sense its own heat and shut off before the room is comfortable. Line-voltage thermostats are simpler to install and less expensive than low-voltage thermostats.

Low-voltage thermostats

Low-voltage thermostats are used with gas, oil and electric central heating systems, zone valves in hot water heating systems, and electric unitary systems where better control is required. Low-voltage thermostats operate at 24 volts, rather than 240 volts. They are more responsive than line-voltage thermostats, provide more accurate control and are more adaptable to programmable controls.

Thermostat options

Whether your thermostat is line-voltage or low-voltage, there are three general options to choose from.

Mechanical

Mechanical thermostats are inexpensive and easy to install. Thermostats with mechanical operators (i.e. not electronic) have either a bi-metallic strip or a vapor-filled bellows to react to temperature change. Some are relatively slow to respond, which may result in larger temperature swings above and below the thermostat set point.

Electronic

These thermostats use electronic rather than mechanical components to sense temperature and control the heating system. They are available in both line-voltage and low-voltage models.

They can provide accurate temperature control and react more quickly to temperature changes. Many electronic thermostats have added features such as automatic setback and programmability. This makes them generally more expensive than mechanical models.

Programmable

Programmable thermostats automatically adjust the temperature set points at pre-set times. When you pre-set your desired room temperature to correspond to your daily activities you can save energy because the thermostat can be pre-set to automatically turn down the heat at night or when the home is

empty and turn up the heat when you are home. Models range from simple clock-like thermostats that provide day and night temperature settings, to electronic models that let you set different day-of-week and time-of-day temperatures.

If you have a unitary “packaged” heating system, such as baseboard heaters, the Canadian Electrical Code requires a thermostat be placed in each room. If you find that it is too expensive to install a programmable thermostat in every room, you can start by installing programmable thermostats only in large rooms that have a great deal of activity, like a living room or family room. This way it can be programmed to be on during active times and turned down at times when the room is empty.

Special-purpose thermostats

Special-purpose thermostats have features designed to work with specific types of equipment. For example, two-stage thermostats are used for hybrid heating systems using two fuels, such as electricity and oil, to turn on the backup heating system when the primary system cannot cope with the demand for heat. Heat/cool thermostats are used for homes with summer air conditioning. Some thermostats allow you to switch on the furnace fan from the thermostat to circulate the air in your home in the winter or summer.

Thermostat location

Thermostats should be placed about 1.5 metres (5 feet) above the floor, centrally located on an inside wall. Never install thermostats in areas subject to drafts, direct sunlight or sources of heat such as warm air registers, refrigerators, ranges or other appliances. All of these factors can inadvertently affect the thermostat by causing it to read the actual room temperature incorrectly, not enabling it to respond appropriately.

Recommended thermostat settings for heating

Recommended thermostat settings provide comfort and avoid overheating. Thermostats in rarely-used rooms can be set lower than those in major living areas, but should not be set so low that excessive condensation forms on the windows. Setting the thermostat back from 21°C to 16°C at night can result in energy savings of up to ten per cent, depending on where you live.

Remember, cranking your thermostat up to 30°C, for example, will not heat your house any faster. Your heating system will work most efficiently if you set the temperature where you want it for long periods of time (8 hours).



This Easy\$ tip sheet is provided by the Energy Solutions Centre.

If you have additional questions or comments, please contact the Energy Solutions Centre:

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