EASY$ TIP SHEETS

Energy Advice Saving Yukoners Money

Quick Links

Building an energy efficient home

Building a home that is energy efficient is always easier than renovating for energy efficiency later. There are many things to consider when it comes to ensuring your new home will use energy efficiently. Make sure you have a knowledgeable contractor and understand that a little extra money up front can turn into considerable savings in operational costs over the long term as well as help ensure a safe environment for your family.

Windows

A typical window will last up to twenty years or more. Therefore, the windows you select can help define energy efficiency and comfort levels in your home for years to come. High-performance windows offer significant improvements in solar control, thermal comfort and energy efficiency. They do this by incorporating low-E coatings, inert gas fills, and better edge spacers and frames.

The Easy$ tip sheet, *ENERGY STAR® qualified windows*, explains how to plan your window purchases and describes the characteristics of high efficiency windows.

Lighting

Lighting accounts for about 15% of a home's electricity consumption. By including energy-efficient lights, lighting controls, and good lighting design in your new home, costs can be reduced considerably without compromising

Goal and Summary

This Easy$ tip sheet provides a list of things to consider when building a new energy efficient home and links you to more detailed Easy$ tip sheets on many of the list items.

comfort or aesthetics. An energy-efficient lighting design can include the use of:

- fluorescent tubes
- compact fluorescent lights
- light emitting diode (LED) lights
- dimmers
- motion sensors
- timers
- natural daylight

Not every lighting technology is a good fit for every application. The key is to know what lights and controls to use in which area of the home. It's worth paying special attention to lighting design early in the planning stages.

See the Easy$ tip sheet entitled, *Indoor lighting for comfort and savings*, for information on the types of indoor light sources, their advantages and disadvantages, maintenance and control systems.

Heating

Heating accounts for 60% or more of an average household's energy consumption. There are many different ways to heat your home. It pays to consider your energy source carefully and choose the most efficient ENERGY STAR®-labeled model that suits your needs.

If you live in an area connected to one of the Yukon's hydro-electric grids and electricity is your heating mode of choice, you should know that a heat pump is the most efficient way to produce heat from electricity.

If you plan on using oil, ensure that you get a high-efficiency boiler or furnace for your central heating system. These high-efficiency condensing appliances can save you 10% or more on your annual heating costs compared with standard-efficiency products. A boiler can even meet your hot water requirements at that high level of efficiency.

Condensing furnaces and boilers extract so much heat from their exhaust that water vapor in the exhaust condenses. Such appliances must be designed to avoid the corrosion that this highly acidic condensate might cause and may need to include a condensate pump to remove the accumulated water.

If you are planning to heat with wood, make sure you purchase a clean burning stove, such as a pellet stove or an EPA- approved wood stove. EPA approved wood stoves use up to 1/3 less fuel and emit far less smoke than non EPA-approved stoves. In the City of Whitehorse, all newly installed wood stoves must be EPA-approved.

Water

Water heating can account for approximately 55% of total household electrical energy consumption. There are three ways to ensure the efficient use of your hot water.

1. Use low flow showerheads, faucet aerators and other water-saving devices throughout the home.

2. Buy ENERGY STAR® labeled clothes washers and dishwashers as they use much less water than standard models.

3. Ensure your hot water heater is properly-sized to meet your needs. There are many different kinds of water heaters and many things to consider when choosing one, such as the size of your family, and the quantity and capacity of the hot water appliances you have in your house.

The Easy$ tip sheet, *Residential Water Heating*, walks you through selecting an energy efficient water heater that meets your needs, installing some basic water-saving devices and adjusting your water-use habits.

For advice on wood stove selection and installation, obtaining fuel and burning cleanly, read the Energy Solutions Centre publication, "The Lure and Lore of Wood" at **http://www.esc.gov.yk.ca/pdf/lure_and_lore_of_wood.pdf**

For central heating systems, an electronic thermostat can help you achieve the greatest comfort by providing more precise temperature control. A programmable electronic thermostat will help you save energy by automatically setting the temperature back when you are asleep or away. It will also give you the comfort of waking up or coming home to a warm house. See the Easy$ tip sheet entitled, *Thermostats for efficiency and comfort*, for information on selecting, locating and programming thermostats.

Insulation

Insulation is your home's "overcoat". The Building Code's requirements are only a minimum. Adding more insulation to your ceiling, floors and walls is a smart investment – the dollars you save will quickly exceed the cost. The Easy$ tip sheet, *Insulating for energy efficiency*, describes the various types of insulation, installation techniques and strategies for effectively utilizing it in your home.

Draft-proofing

It is much easier to make a house airtight when it is being built than it is to seal drafts later. Ensure that you choose a contractor who will take the extra care needed to make your new home as airtight as possible. Discuss with the contractor what draft-proofing measures are proposed.

It is important to recognize that, as the building envelope is made tighter, proper design and installation of the mechanical ventilation system becomes even more critical. Contaminated air that is not properly exhausted is not only unhealthy for occupants but can be damaging to the building as well.

See the Easy$ tip sheet, *Draftproofing your home*, for more information on this topic.

Ventilation

Older homes were built on the premise that natural air infiltration through leaks in the building envelope was sufficient for the ventilation air requirements. Today we understand that it is much better to have a reasonably tight building envelope and a properly designed and operated mechanical ventilation system. Our building codes specify that ventilation air requirements for houses be 0.35 air changes per hour, or about eight complete air changes per day. Systems can range in complexity from a simple system with bathroom and kitchen fans to a whole-house system that uses a heat recovery ventilator (HRV), which pre-heats the fresh air coming in with the heat from the contaminated air being exhausted.

Appliances

Appliances account for about 20% of the electricity used in an average home. Not all appliances are created equal, as many models are much more energy efficient than others. ENERGY STAR® labeled refrigerators, clothes washers and dishwashers will provide you with the greatest energy savings over their lifespan. See the Easy$ tip sheets, *Appliance buying tips* and *Appliance operating tips* for more information on this topic.

Look carefully into your options and speak with an expert about the ventilation requirements of your home. For a detailed look at this topic, read the Easy$ tip sheet, *Good ventilation is important*.

R-2000

The R-2000 program, administered by Natural Resources Canada in cooperation with Canada's home-building industry, encourages the building of energy-efficient houses that are environmentally friendly and healthy to live in. R-2000 homes are built to high standards that go beyond the building code. While an R-2000 home looks like any other, it works quite differently. Compared with most houses, an R-2000 home can use as little as half the energy for heat, light and hot water. R-2000 homes are built with lots of insulation and less air leakage through outside walls. R-2000 builders must be trained and licensed to build them, and every R-2000 home is designed, built, tested and certified to meet exacting technical standards backed by more than 30 years of research and development.

Speak with Yukon Housing about their low-interest loan programs and about finding an R-2000 contractor in the Yukon.

Looking for more details about building to the R-2000 standard?
Here are some helpful Websites:
- http://www.chba.ca/r-2000.aspx
- www.oee.nrcan.gc.ca/residential/personal/new-homes/r-2000/About-r-2000.cfm

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

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

Phone: (867) 393-7063 or toll-free from the communities at 1-800-661-0408 ext. 7063

Mail: Box 2703 (EMR-206),
Whitehorse, Yukon Y1A 2C6

Web: **www.esc.gov.yk.ca**

energy solutions centre

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Energy, Mines and Resources