

five

Equipment solutions



THE PRODUCT OPTIONS

- Furnaces
- Space heaters and wall furnaces
- Combo hydronic baseboard
- Combo radiant floor heating
- Combo fan coil and forced air
- Fireplaces
- Water heaters
- Other natural gas appliances

EFFICIENT USE OF HEATING, COOLING, VENTILATING EQUIPMENT, APPLIANCES AND LIGHTING

- Heating and air-conditioning
- Thermostats
- Fireplaces
- Water heating
- Exhaust fans
- Appliances
- Lighting

Whether you're currently using natural gas energy, or are thinking about converting to it, you can rest assured that natural gas is the best environmental choice for home heating, water heating, and appliances – particularly when compared to other fossil fuels.

Natural gas energy offers a wide choice of options to fit your budget, heating, and appliance requirements. You'll find that the manufacturers of natural gas furnaces and appliances have made many technical advances to improve their efficiency. For example, some continuous burning pilot lights have been replaced with an energy-saving electronic ignition. There is also the option of venting a natural gas furnace, water heater and natural gas fireplace directly through the wall of the basement, which reduces the heat loss that used to escape up the chimney!



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THE PRODUCT OPTIONS

High-efficiency natural gas furnaces

The high-tech design of a high-efficiency natural gas furnace offers you significant energy savings and squeezes the most heat out of every heating dollar. Another advantage of a high-efficiency natural gas furnace is that its combustion gases are exhausted directly through a side wall to the outdoors, which eliminates the need for a chimney, and the danger of backdrafting. Most units also have a direct source of combustion air from the outdoors. (Note: As of Dec. 31, 2009 the new national standard for gas furnaces will require a minimum fuel efficiency level of 90 percent).

If you run your furnace motor continuously for improved air circulation in your home consider purchasing a high-efficiency brushless direct current (DC) motor with your new furnace. Government studies have shown significant motor electrical consumption reductions of more than 50 percent in both winter and summer operation. You can't add this feature to an existing system, so be sure to ask your heating contractor about the option when buying a new furnace.

EnerGuide and ENERGY STAR® products for home heating

Product	EnerGuide 	ENERGY STAR 
High-efficiency natural gas furnace →	Printed on the back page of furnace manufacturers' literature. AFUE* rating of 90% to 98%. An asterisk (*) on the model/AFUE rating indicates a high-efficiency motor.	Natural gas furnaces that have an AFUE rating of 90% or higher
Natural gas-fired boiler →	No EnerGuide label	ENERGY STAR qualified at an AFUE rating of 85% or higher
Condensing natural gas-fired boiler →	No EnerGuide label	The ENERGY STAR program does not include natural gas-fired boiler at this time
Natural gas fireplace →	Fireplaces range in efficiency from about 30% to 70%. The higher the percentage the more efficient the model. Printed in manufacturer's literature or on websites.	The ENERGY STAR program does not include natural gas fireplaces at this time

*Annual Fuel Utilization Efficiency (AFUE)

AFUE measures the amount of heat actually delivered to your house compared to the amount of fuel that you must supply to the furnace.

Thus, a furnace that has an 90% AFUE rating converts 90% of the fuel that you supply to heat -- the other 10% is lost out of the chimney.

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EnerGuide allows you to compare the energy efficiency of the many different models of household appliances or heating and cooling products sold in Canada. For some of these products, ENERGY STAR goes one step further and identifies specific models that meet or exceed premium levels of energy efficiency. The ENERGY STAR symbol may even appear on an EnerGuide label. When you see ENERGY STAR on an EnerGuide label, you can be sure that the product is among the most energy efficient available.



Equipment solutions

Want to upgrade your electric baseboards to natural gas?

Natural gas space heaters and wall furnaces are good options to consider.

Natural gas space heaters and wall furnaces

What about those hard-to-heat areas of your home like closed-in porches, add-on rooms, garages, or the basement? A natural gas-fired convection space heater may be just the right system to complement your existing heating system. These compact, energy-efficient units are directly vented outside, mounted on a wall, and can be sized to heat just one room or several. Some units have built in humidifiers, circulating fans and electronic ignitions. They are also approved for mobile and manufactured homes.

If you have electric baseboard heating in your home, consider installing a natural gas space heater, wall furnace, or a natural gas fireplace and/or a natural gas water heater.

Any one of these options will allow you to enjoy the benefits of natural gas energy without the bother and expense of installing duct work.

Combination natural gas heating and water heating units

Combo systems are an innovative design that use a natural gas water heater to provide heat and domestic hot water to your home. While some combo systems have used conventional gas storage tanks as the heat source, high-efficiency combo systems usually include either a condensing storage tank water heater or a high-efficiency tankless water heater.

There are combo systems now available that also integrate heat recovery ventilation with the space and water heating. It is important to consider the efficiency of such an integrated system, especially for heating your home. A combo or integrated system should have a space heating efficiency of at least 78 percent although some systems are capable of space heating efficiencies of as high as 90 percent.



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A combo system requires professional design for proper sizing. The Heating, Refrigeration, and Air Conditioning Institute of Canada (HRAI) provides this training to the industry based on the Unified Canadian Guideline for Integrated (Combo) Heating Systems. Ensure that your contractor (designer) has been trained by HRAI. To search for a qualified designer or contractor call 1 877 467-4724 or visit hrai.ca

Equipment solutions

There are three types of natural gas space heating systems, which can be connected to the natural gas water heater: hydronic baseboard, radiant floor heating, and fan coil and forced air.

1 Combo hydronic baseboard

Natural gas hydronic baseboards are a direct replacement for electric baseboards. Hot water from the natural gas hot water tank is piped directly to each baseboard, providing comfortable, gentle, and even heat.

2 Combo radiant floor heating

Radiant floor heating warms from the floor up, utilizing hot water circulating through a network of plastic tubing embedded in concrete floors. As a result, radiant floor heating warms everything in its path for a more comfortable and efficient distribution of heat. Because radiant floor heating systems warm from the floor up, radiating heat directly to you, you can feel more comfortable, even with your thermostat set lower.

3 Combo fan coil and forced air

The combo fan coil and forced air system uses existing duct work to distribute the heat recovered from the hot water tank.

Unlike hydronic baseboards and radiant floor heating, electronic air cleaners, humidifiers, and air-conditioners can be used with this system.

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Natural gas energy offers a wide choice of options to fit your budget, heating, and appliance requirements. You'll find that the manufacturers of natural gas furnaces and appliances have made many technical advances to improve their efficiency. For example, some continuous burning pilot lights have been replaced with an energy-saving electronic ignition. There is also the option of venting a natural gas furnace, water heater and natural gas fireplace directly through the wall of the basement, which reduces the heat loss that used to escape up the chimney.



Equipment solutions

Natural gas fireplaces

Natural gas fireplaces offer a beautiful, convenient, and economical alternative to wood-burning fireplaces. Plus, natural gas fireplaces are better for the environment, since they eliminate the smoke, ashes, lingering embers and air pollutants associated with wood-burning fireplaces.

When shopping for a natural gas fireplace, it is important to know a few facts. Natural gas fireplaces are rated for efficiency using the CAN/CSA - P.4 - 02 performance-testing standard. This rating system helps to narrow your choices when purchasing a natural gas fireplace.

A good energy-efficient model should have an efficiency rating of between 50 to 70 percent or even higher.

You will find the EnerGuide rating for gas fireplaces in the manufacturer's literature or on their website.

Energy-efficient fireplaces have many of the following features:

- 1 An EnerGuide Fireplace Efficiency (FE) rating over 50 percent.
- 2 Direct-vent design.
- 3 Either an intermittent electronic ignition system, a means of turning off and relighting the pilot light, or a two-stage pilot that runs with a very low flame when the fireplace is off.
- 4 Radiation-transparent ceramic glass front.
- 5 A quiet squirrel-cage type circulating fan to help transfer convective heat to the room.
- 6 Secondary heat exchanger.
- 7 Insulated outer casing to prevent heat loss through the walls to the outside if located on an exterior wall.
- 8 Good turndown control or other means such as ducting to prevent localized overheating.



Natural gas water heaters

Did you know natural gas is the preferred choice of fuel for heating water? Natural gas heats water twice as fast as electric water heaters and at a lower cost. However, when comparing electric water heating to natural gas water heating actual cost comparisons may vary depending on location and usage. Some natural gas water heaters can exhaust directly through a wall instead of up a chimney. This allows the water heater to be installed closer to the point of use, or in a more convenient location; and it also reduces excess heat loss that can escape up the chimney.

An ENERGY STAR® tankless water heater heats water on demand. This system can be sized to heat water for all uses in your home or for just one shower or sink.

Equipment solutions

You can also choose to use the sun to heat up to 50 percent of your hot water with a solar collector system. Since energy from the sun is free, solar water heaters can significantly reduce a household's water heating costs – savings that in turn can offset the higher purchase and installation costs of a solar system.

Whichever way you choose to heat your water you can substantially reduce your hot water heating costs with the installation of a Drain Water Heat Recovery system. This system recovers the heat remaining in your shower water and pre-heats the incoming water that feeds your water heater system. Up to 60 percent of the heat from drain water is recovered and used to pre-heat cold water going to the water heater from about 8°C to about 23°C. That saves energy and saves homeowners up to 30 percent* of their water heating costs.

Top 10 Reasons to install a Drain Water Heat Recovery System:

- Simple technology reuses heat energy to reduce energy consumption
- Lower water heating costs by up to 30 percent
- After space heating, water heating is your largest energy expense
- Reduces greenhouse gas emissions
- Easy to retrofit into existing homes
- Maintenance free with no moving parts
- Recognized by ENERGY STAR® for New Homes
- Increases water heating capacity
- Purchase and rental options available

For more information visit uniongas.com/dwhr



Drain Water Heat Recovery Unit

Other natural gas appliances

You can also purchase natural gas ranges, cooktops, clothes dryers, barbecues, and pool heaters. These natural gas appliances are energy efficient and cost effective when compared to the same electric appliances.

Visit uniongas.com for a listing of natural gas products. Including information on installation, cost comparisons, manufacturers, and where to buy or rent.

* Savings may vary due to individual hot water use, fluctuating energy costs and installation variables.

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TIP

Natural Resources Canada (NRCAN) maintains the EnerGuide Appliance Directory, which lists the energy consumption ratings of all new major electrical household appliances sold in Canada. The directory also indicates the models that are ENERGY STAR® qualified.

For a printed copy, call 1 800 387-2000 or visit oee.nrcan.gc.ca

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EFFICIENT USE OF HEATING, COOLING, VENTILATING EQUIPMENT AND APPLIANCES AND LIGHTING

Furnace and air-conditioning maintenance

If your furnace and air-conditioner are operating at peak efficiency, they will use less energy and cost less to operate.

You should have a heating contractor perform a yearly maintenance check on your furnace, venting, and cooling systems to ensure they are operating at peak efficiency.

In between those visits, there are some simple do-it-yourself tasks to help keep your systems working efficiently:

- Change or clean your filter frequently (i.e. every one to two months) during the heating and air-conditioning seasons. A dirty air filter reduces the airflow to the operating equipment and forces it to run longer to heat and cool the house. Using a furnace filter alarm can let you know when the filter needs to be changed. Electronic air cleaner filters also need to be cleaned regularly (every one to two months)
- Keep return air grills, hot air registers, radiators, and space heaters/baseboards clear of furniture, rugs, and drapes to allow free movement of air
- You can ensure more heated or cooled air reaches its destination by sealing the seams of accessible furnace ducting with aluminum foil tape. TIP: Aluminum foil tape out-performs duct tape for this job, as duct tape has a tendency to dry out
- Insulate all ducts in unheated or cooler spaces with commercial duct insulation – or make your own! Simply wrap the ducts with glass fibre batts, secure lightly with string, cover insulation with plastic, and tape all edges

You'll be glad to know that making your home more energy efficient doesn't have to cost a lot of money. There are many easy ways to keep your heating and cooling costs down.

Have a Heating, Ventilation and Air Conditioning contractor (HVAC) check and inspect your heating system components including:

- Heat exchanger
- Air blower fan and motor
- Flame pattern
- Test for carbon monoxide
- Burner, pilot
- Furnace controls
- Bearings, belts, pumps
- Venting
- Chimney
- Pilot safety system
- Power exhaust
- Air filter
- Visible gas piping for leaks
- Electronic ignition system
- Electronic air cleaner

Your HVAC contractor will clean the furnace components as necessary for proper operation and can inspect your air-conditioning system.

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Making the most of air-conditioning

To provide comfortable conditions during hot, humid weather you must not only cool your home, but also reduce the humidity levels.

If you operate them properly, central air-conditioning systems will cool and dehumidify the whole house, and room air-conditioners will cool and dehumidify individual rooms.

Central air-conditioners

Use the EnerGuide rating found on the back page of manufacturers' brochures to identify the efficiency level of a central air-conditioner. Like all EnerGuide labels and ratings the scale shows you at a glance whether the air-conditioner is a good or an average energy performer in comparison to other similar models. (Note: EnerGuide ratings for air-conditioners and furnaces work in the reverse to EnerGuide labels for household appliances. Look for a larger number on the scale when buying heating and cooling equipment to ensure the highest efficiency).

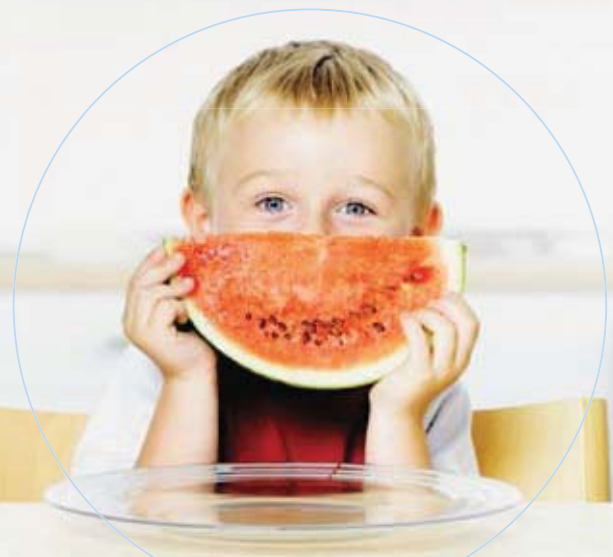
To choose the most energy-efficient model available, you can also look for the ENERGY STAR® logo alongside the EnerGuide rating. The ENERGY STAR logo means that the product has exceeded the minimum SEER* (Seasonal Energy Efficiency Ratio) level and meets the highest energy efficiency levels. To qualify for Ontario Home Energy Savings Program, central air-conditioners must meet or exceed a SEER level of 14.5.

Room air-conditioners

Refer to these tips when you're shopping for and operating room air-conditioners:

- Before you buy, you'll need the following information: exact room dimensions and room details (i.e. is the room closed off or are there open passages to other rooms); size and type of windows; and room location. Does it get morning or afternoon sun? Is there outside shading? What power supply is available in the room?
- Room air-conditioners are also rated for their efficiency. Look for the Energy Efficiency Ratio (EER) printed on an EnerGuide label, attached to the unit. The unit's EER is also normally stamped on the nameplate affixed to the outer casing of the unit

*SEER is the measure of equipment energy efficiency over one cooling season.



Equipment solutions

The higher the EER, the less electricity the unit uses to do the same job. Although there may be a higher price tag for a more efficient unit, the energy savings over the life of the unit should more than offset the difference in purchase price. ENERGY STAR® labels are attached to room air-conditioners that use at least 10 percent less energy than conventional models.

- Consider replacing your old room air-conditioners – today's ENERGY STAR qualified units use 30 to 40 percent less energy than most models sold 10 to 15 years ago
- An air-conditioner's ability to cool is rated in British Thermal Units (Btu/hr) and/or tons. About 18 Btu/hr are required to cool and dehumidify one square foot of floor space in the average house or apartment. For example, a 20' x 25' (500 sq. ft.) room would require approximately a 9,000 Btu/hr unit
- If the unit is too large, it may lower the room temperature quicker, but it will not be on long enough to remove excess humidity. Cool, humid air is uncomfortable
- If the unit is too small, it has to run longer to reduce the room temperature, so your operating costs are high. Also, it may not cool properly
- Operate room air-conditioners on timers. They only require about 30 minutes to cool and dehumidify a room, so there is no need to leave them on if there's no one home during the day



- If possible, remove window air-conditioners for the winter. If they must stay in place, seal around them with caulking or tape and cover the unit with a purchased or homemade, airtight, insulated jacket
- For more information on cooling your home efficiently, visit NRCan's Website (oee.nrcan.gc.ca) to order a free copy of Air Conditioning Your Home.

Keeping your cool

- Air sealing, insulating, and keeping windows and doors closed are just as effective at keeping the house cool during the summer as they are in keeping the heat in during the winter
- Exterior shading, such as awnings, over-hangs, and deciduous trees, are the most effective ways to block excessive solar heat gain in your home in the summer. Interior shading, such as drapes, blinds, and reflective window film, is also effective

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Wind or sun breaks

Plant evergreen trees or a dense hedge as a wind break between the prevailing wind and your home; usually the north-west side.

Deciduous trees planted on the east and west side of your property near the house will help block the summer sun, and allow the winter sun to warm your home once the leaves have fallen. Research indicates that a mature shade tree cools a home similar to an air-conditioner, with no operating cost!

Equipment solutions

- Your appliances and incandescent lights give off heat that a cooling system must counteract. Turn off lights that are not in use! Minimize the use of appliances at the hottest times of the day. Bake, wash, dry, and iron in the early morning or in the evening
- Use a ceiling fan alone or in conjunction with an air-conditioner to help circulate cooled air. Fans use less energy than air-conditioners. ENERGY STAR® qualified ceiling fans move air up to 20 percent more efficiently than standard ceiling fans

Thermostats

The greater the temperature difference between the inside and outside of your home, the greater the potential for heat loss or gain. You can reduce energy consumption by lowering the temperature on your thermostat a few degrees while you're away or while you're sleeping. During the heating season, if you reduce the temperature in your home by 1°C over a seven-hour period each day, you can save one percent on your heating bill.

As a rule of thumb, don't turn the temperature down more than 6°C (10°F) below your normal setting in the winter. Also, remember no matter how high you turn up the thermostat, you will not heat your home any quicker.

Programmable thermostats allow you to pre-program temperature settings and they never 'forget' to raise or lower the temperature of your house. For example, you can program the thermostat to turn down the temperature of your house at night when you are sleeping and raise it again before you get up. Some programmable thermostats even have a separate setting for weekend use and are compatible with most air-conditioning systems.

If you have an air-conditioner in your home, you should turn UP your thermostat a few degrees during the hot summer months to reduce air-conditioning costs. It is not as easy to state recommended temperature settings for air-conditioning as it is for heating because the air-conditioning system must do two jobs; cool and dehumidify the air to make you comfortable. Generally, an efficient and comfortable temperature zone to maintain is between 24°C (74°F) and 26°C (78°F), and never set the thermostat more than 8°C (15°F) below the outdoor temperature.



Equipment solutions



Where is your thermostat located? This can affect the efficient operation of your heating or cooling system. Be sure your thermostat is located away from direct sunlight and blasts of cold air from an opening exterior door.

Avoid locating it above or near appliances such as lamps, TVs, or other appliances that give off heat.

Efficient use of fireplaces

Once you have purchased and installed your fireplace, it is important to use it wisely. The following guidelines will help to maximize your fireplace's performance and minimize its energy consumption, saving on your overall heating bill:

- If your unit has a pilot light, ensure it is turned off during the summer
- Turn down your home's main thermostat if possible when the fireplace is operating
- If the fireplace has a thermostat, keep it at the lowest setting possible when not in use (otherwise the thermostat could cycle the fireplace on when you are not home, or when the room is not occupied)
- Radiant heat transfer is maximized when the glass is clean. A standard wood-burning fireplace may be traditional, but it is not energy efficient! In fact, it removes more heated air up the chimney than it provides. Cold air rushes in through cracks and leaks in the home to replace the air that exits up the chimney – even when the fireplace is not operating. A direct vent, natural gas fireplace eliminates this problem with a direct, outside combustion air supply. Consider a natural gas fireplace for hard-to-heat areas or as a supplement to electric baseboard heating

If you can't replace your wood-burning fireplace, here are some tips to minimize your heat loss:

- Provide outside air for combustion. It may be as simple as opening a window in the room or installing a fresh air vent for the fireplace. Contact your local fireplace specialty store for further advice and options
- Install tight fitting glass doors and keep them closed when the fireplace is not in use to prevent the home's warm air from escaping up the chimney
- Seal off an unused fireplace with a home-made insulated plug. Simply cut a piece of rigid polystyrene insulation to fit snugly in the front opening and decorate the plug with either wallpaper or paint
- If your fireplace has a damper, make sure it is closed when the fireplace is not being used

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To keep your fireplace running efficiently, regular maintenance is a must.

Equipment solutions

WATER HEATING

After space heating, your water heater is the second largest user of energy in your home. It pays to use hot water wisely! Here are some simple tips on how to use hot water more efficiently without affecting comfort, cleanliness or safety:

- Insulate at least the first two meters of the hot water pipe and the first meter of the cold water pipe running from the tank, to reduce heat loss or gain and reduce pipe 'sweating' problems in the summer. For safety reasons, do not place any pipe wrap insulation within 15 cm of the exhaust vent at the top of the natural gas water heater. The two basic types of pipe insulation are wrap-around or slip-on, pre-formed foam. Both are easy to install and are available at building supply stores
- Operating your water heater at unnecessarily high temperatures increases energy consumption and shortens tank life. It also increases the likelihood of scalds; this is of particular concern for young children and seniors. In fact, the building code requires the installation of a mixing valve when installing a new water heater to ensure a maximum delivery temperature at the fixture of 49°C. For existing water heaters without a mixing valve be sure to set your water heater temperature no higher than 60°C. To reduce scalding consider lowering the temperature to 54°C. You can test your water temperature with a cooking thermometer held under a running tap

- Install an energy-efficient showerhead (less than 11 litres/minute) which can reduce the amount of water you use for showers by up to 50 percent. You'll use less water and energy and still enjoy hot, skin-tingling showers!
- Fix dripping taps immediately. Replacing a worn washer (just pennies in cost) can save you up to 800 litres monthly, at one drop of water per second
- Replace existing kitchen and bathroom faucet aerators with energy-efficient ones (13 litres/minute)
- One-quarter of your hot water use is for laundry. You can reduce that by washing clothes in warm or cold water and always rinsing in cold. Use the water level controls, if your washing machine has them



How your energy dollar is spent*

Space heating and cooling	60%
Water heating	20%
Appliances	14%
Lighting	6%

Source: Ministry of Environment and Energy
*Based on an average of the three main fuels over a year.

Equipment solutions

Exhaust fans

Here are some energy-saving tips for the efficient operation of your exhaust fans:

- Check that your exhaust fans vent directly outside and not simply into the attic. Are there special exhaust hoods or vents on your roof, in your soffit or on the outside wall? Look in your attic – can you see where and how the ducting exits? Venting moist air into the attic can damage the attic wood and insulation
- Replace exhaust covers if they are broken or rusted open
- Clean your kitchen fan filter periodically with soap and water
- Replace your bathroom exhaust fan's on/off switch with a timer switch or dehumidistat control. A timer switch allows the exhaust fan to remove moisture for a set amount of time. A dehumidistat control turns the exhaust fan on and off automatically when prescribed relative humidity levels are reached
- If buying a new exhaust fan look for an ENERGY STAR® qualified product which uses 65 percent less energy than standard models. A more efficient blade design and motor means they move more air with less noise, last longer and cost less money to operate
- Clear the lint that gathers in the dryer's exhaust cover on a regular basis. The lint stops the exhaust cover from closing properly. A properly closed exhaust cover prevents the cold outside air from entering the dryer when it's not being used
- Internal venting of electric dryers is not recommended. Though you recover some heat, you gain excessive moisture, odours, and lint. For safety reasons, natural gas dryers must never be vented inside the home

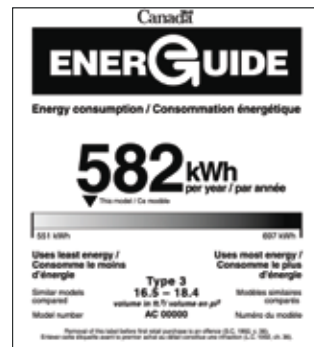


To calculate the second price tag for one year of operation – multiply the EnerGuide rating (kWh/yr) by local electricity rates (dollars/kWh).

For example, the EnerGuide label shown here for a refrigerator model indicates a yearly operating cost of: $582 \text{ kWh/year} \times \$0.10/\text{kWh} = \$58.20$ per year

Refrigerators are rated to function for about 17 years, so the second price tag would be: $\$58.20 \times 17 \text{ years} = \989.40

These calculations are to be used only as an estimate for comparison purposes. Since everyone uses their appliances differently, your energy use may not be exactly the same as that indicated on the EnerGuide label.



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Operating your appliances efficiently

- All of your appliances will work more efficiently if you keep them clean. For example, vacuum the coils at the back of the refrigerator and clean door seals, drip pans, and filters
- Full loads are most efficient, but overloading can result in dishes and clothes that don't come clean
- Avoid overloading your fridge with food, since air needs to circulate in the compartment. Your freezer, on the other hand, works best when kept nearly full
- Keep your appliances in good working order. A malfunctioning appliance is energy inefficient
- After purchasing a new refrigerator, you may be tempted to put the old fridge in the basement as a spare for overflow. Today's refrigerators/freezers are nearly three times more energy efficient than those built 20 years ago. That spare fridge can cost you between \$120 to \$150/year in electricity or more, depending on its age! Consider only plugging it in for special events or getting rid of it altogether. Check with your local electric utility for a refrigerator removal program
- Small appliances use about half the wattage of an electric range, so use the smallest appliance available for the food you want to cook. For example, a microwave oven, electric kettle, toaster oven, and electric frying pan are more efficient than your electric range
- If you're going away for an extended period of time, consider clearing out the refrigerator and unplugging it (be sure to prop the door open), turning off the water heater, and unplugging TVs with the instant-on feature



Equipment solutions



Turning on energy-efficient lighting

Today's market offers you a bewildering array of light fixtures and bulbs. If you purchase and use energy-efficient light bulbs, over the course of a year your savings will certainly add up – even though lighting constitutes only six percent of your total monthly energy costs. But remember, the best energy-saving device for lighting is the switch! Turn lights off when not in use.

YOUR LIGHTING CHOICES

When buying light bulbs, you probably think of watts as a measure of brightness. In fact, the watt (W) is a measure of energy, not of light output. A 40-W bulb uses 40 watts of electricity, no matter what type of bulb it is. But the amount of light it produces will vary, depending on the bulb type. Light output is measured in lumens.

1 Incandescent bulbs

Incandescent bulbs are the standard, familiar bulbs you use throughout your home. They are considered to be energy inefficient because they produce more heat than light. Some incandescents have been made more efficient by reducing the wattage (though there is a slightly reduced light output). Look for these energy-saving replacement bulbs, which are commonly available: a 34-W for a 40-W; a 52-W for a 60-W; and a 90-W for a 100-W.

Although you may find incandescent bulbs with efficient sounding names like 'long life' or 'extended life', they are not energy efficient. They do have a longer life span because they only produce about 70 percent of the light that they could, while using the same amount of energy as an equivalent wattage regular bulb. Incandescent bulbs are slated to be banned from the Canadian market by the year 2012, making way for more efficient lighting choices.

2 Compact fluorescents

You are probably familiar with the standard long tube fluorescent ceiling fixtures used in homes, stores and offices. The same technology has been improved for energy efficiency and light quality, and is packaged in a small compact shape for use in lamps and other lighting fixtures.

There are a variety of wattages, shapes, and styles of compact fluorescents for different locations and uses in



A standard 40-W incandescent bulb produces about 510 lumens, whereas a 40-W fluorescent tube produces about 2150 lumens – nearly five times as much light for the same amount of money!

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Look for compact fluorescent bulbs and fixtures that carry the ENERGY STAR® symbol to ensure you are purchasing the most energy-efficient lighting products on the market.

your home. Although they are 70 percent more efficient than incandescent bulbs and last 10 times longer, because of their initial cost, they should only replace those bulbs that are used for a minimum of three hours/day.

Follow these steps to determine where and what kind of energy-efficient lighting you should install for maximum benefit:

- Note which light fixtures are used for a minimum of three hours/day. If certain lights aren't used extensively each day they are already very efficient
- Once identified, record what the light is used for (reading, general room lighting); where the fixture is located (ceiling, table lamp, inside or outside); style and dimensions of the fixture (space available for a new bulb); and the wattage of the existing incandescent bulb
- When you take into consideration the amount of time the light is used, the shape and style of the existing fixture, and the function of the light, your home may have only eight to twelve light fixtures which are appropriate for the new energy-efficient compact fluorescents, halogens, and light emitting diode bulbs

3 Halogens

When compared to incandescents, halogens produce a whiter light, last two to four times longer, and use about 40 percent less energy to produce the same amount of light; however, they are slightly more expensive to purchase. They are a good replacement for outdoor flood and spot lights. For example, a 45-W PAR (parabolic aluminum reflector) halogen spot light replaces a 75-W PAR incandescent spot light.

There is another type of halogen bulb, often called a low voltage or quartz, which requires a specifically designed halogen fixture. This bulb provides a bright, white, focused light suitable for highlighting art work or use as a desk lamp.

4 Light-Emitting Diodes (LEDs)

The latest addition to efficient lighting is light-emitting diodes (LEDs). LEDs are commonly used for traffic signals, exit signs, flashlights, and seasonal light strings. They are just starting to be developed for home lighting. LEDs boast a 90 percent efficiency over traditional lighting and have a much longer lifespan. They are small in size, very durable, and produce an intense white light with very little waste heat. However they are relatively expensive but this barrier will weaken as their availability strengthens.

The best energy-saving device for lighting is the switch. Turn lights off when not in use.