Energy Saving Tips For A Greener Life

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HEATING

Forced Air Furnaces

Forced-air furnaces – whether fuelled by oil, natural gas or electricity – are similar: They both draw cooler air from your house through a system of cold-air return ducts. This cooler air is then reheated and, using fans and ductwork, forced throughout your house.

1. Have your furnace serviced regularly. A properly maintained furnace works safely and at peak efficiency. Major care of your forced-air furnace should be left to a qualified technician, but you can do many things yourself to keep your furnace working well.

2. Since so much of your energy costs come from heating your home, why not let the sun do some of the work? Here are two things you can do when building your own house:

    i. Design your home so that the main living area and the largest windows are located mostly on one side of the house.

    ii. Place the home on your lot so that the side of the house with the most and largest windows face south.

    The sun's rays will easily enter your home throughout the year and help out with the household heating. This is called passive solar design, which can save you up to 20% on your house's total energy requirements. However, if the windows are inefficient and badly placed, savings will be lost.

Passive solar design is a technique incorporated into the R-2000 Standard, which can be used for any home. This made in Canada standard uses tried and tested leading edge building techniques to produce a healthy, comfortable and highly energy-efficient home that pays you back year after year in energy savings.
Before you decide what to build, speak to an R-2000 builder and ask what models are available. R-2000 builders are listed on the web site at
www.oee.nrcan.gc.ca/r-2000.
R-2000 is an official mark of Natural Resources Canada.

3. Change or clean furnace filters every one to two months throughout the year. Dirty air filters block airflow and can damage the heat exchanger.

4. A furnace filter alarm will let you know when the filter needs to be changed. These alarms make a whistling sound when they sense that filters are dirty.

5. If your furnace has a fan belt, inspect it for cracks or signs of wear and replace it if necessary when you change the filter. (Be sure to always shut off the electricity at the appliance switch and circuit breaker panel before inspecting and changing filters and fan belts and always read the furnace manual or contact a qualified technician).

6. For your safety, make sure that furnace panels and grills are kept in place and that fan compartment doors remain closed when your furnace is operating.

7. By adjusting the variable-diameter pulley on your furnace's fan motor, you can increase fan speed and air flow through your house.

8. Make sure that hoods and pipes on all fuel burning equipment are securely attached and that outside vents and chimney liners are not blocked by leaves or birds nests.

9. Keep the area around your furnace clear. Do not store items against the furnace, never store flammable items in the furnace room and do not block or close any of the furnaces air openings.

Oil Furnaces

10. Check for dirty flame. You will find a small flap covering a hole on the front of your furnace. Opening the flap enables you to see the burner's flame inside. If black smoke is coming from the tip of the flame, your burner probably needs adjustment.

11. Check for soot around the flap and chimney. As soot builds up, it reduces the efficiency of your furnace. Call a qualified service technician if you think that your furnace needs cleaning.

12. As part of your furnaces annual service visit, ask to have the chimney and furnace vent system checked. Pipes must be properly connected, and there should be no signs of rust or other damage. Ask the service technician to check that nothing has fallen into the base of the chimney or into the flue.

Natural Gas Furnaces

13. If your furnace is equipped with a continuous pilot light, you can save money by turning off the pilot light during the summer months. Although your furnaces manual may contain detailed instructions, we recommend that your heating contractor re-light the unit as part of your fall furnace maintenance visit.

14. Never insulate or seal draft hoods, wind caps and exhaust vents on natural gas appliances.

15. As part of your furnaces annual service visit, ask to have the chimney and furnace vent system checked. Pipes must be properly connected and there should be no signs of rust or damage. Ask the service technician to make sure that nothing has fallen into the base of the chimney or the flue.

16. If you are in the market for a new furnace, think about getting an EnerGuide for Houses evaluation for your home first. By air sealing and insulating your home before you install a new furnace, your heating requirements could be considerably reduced. You may even be able to purchase a smaller model. (See "Is Bigger Better?" on this page). You can ask your EnerGuide for Houses advisor to provide you with a heat load calculation to help you buy a correctly sized furnace. You can find an advisor in your area on the EnerGuide for House web site at www.oee.nrcan.gc.ca/houses.

17. Compare furnaces when you shop. Check the back of manufacturers' brochures for EnerGuide ratings. You will also see a rating for AFUE, or Annualized Fuel Utilization Efficiency. The AFUE number is a measure of the furnaces efficiency – i.e. how much fuel it has to burn in a year to keep a house comfortable. The higher the AFUE number, the more efficient the furnace is. Furnaces that have AFUE numbers over 90 meet ENERGY STAR performance levels. These furnaces may cost more to buy, but they will save as much as 40% of your home heating costs each year. In most cases, it will take only a few years to recover the extra cost of a better furnace.

18. When it comes to furnaces, bigger is not always better. If your furnace is too large, the unit will stop and start often, which burns more fuel – and costs you more money. That's why it's important to buy and install the furnace that is right for your house. Some furnace installers will perform heat-loss / heat-gain calculations to find the

furnace that matches the size of your home. Independent EnerGuide for Houses advisors can also offer this service. Other installers base their recommendations simply on the size of your house; however, these calculations are not always accurate because not all homes of the same size have the same heating needs.

Electric Heaters

19. Install electric baseboard heaters at floor level along outside walls. Whenever possible, make sure that baseboard heaters are either under windows or near windows or doors.

20. Use portable electric space heaters in hard to heat areas such as home offices, garages and enclosed porches. These heaters provide warmth only when and where it is needed.

Hot Water Heating

21. To save energy, make sure that water pipes going to and from radiators are well insulated in areas of the house where extra heat is not required.

22. Air must flow freely around and through radiators to properly heat rooms in your home. Place all furniture, rugs and drapes away from radiators and never stack items on top of these heat sources.

23. Maintain your radiator's efficiency by vacuuming or brushing regularly to allow maximum air movement through the fins or castings. Fins are the thin aluminum plates in some baseboard systems. They can be easily straightened by hand.

24. Place sheets of aluminum foil or foil coated bubble wrap behind your radiators to reflect additional heat away from walls and into your rooms.

25. During the summer air can become trapped in hot water heating systems, blocking the flow of water and increasing your energy costs. To remove this trapped air, radiators must be "bled" once the boiler comes on in the fall. First, check the water-level gauge on your boiler to make sure that there is enough water in the system. Then simply open each radiator screw – one at a time – until only hot water flows from the vent. Close the screw and check for leaks. Be careful: water in these systems is extremely hot and can cause severe burns.

26. Building a new home or an addition? Turn your floors into radiators by installing radiant hydronic heating. This type of heating system uses hot water pipes installed in the floors. Heat then rises through the flooring to heat your house – and keep your feet warm. With radiant floor heating, you can set the thermostat several degrees lower. This is because the entire surface of the floor radiates about the same amount of heat that the human body does, making the occupant feel warm even though the air temperature might be only 18ºC (68ºF).

Air to Air Heat Pumps

27. To get the most savings from your heat pump, leave your thermostat set to a temperature that is comfortable year round – 20ºC (68ºF) is recommended. Raising the temperature may trigger the systems electric back up heater, which will reduce your energy savings.

28. Protect outdoor parts of your heat pump from high winds, which may cause defrosting problems and reduce system efficiency. Your heating pump manual or a qualified technician can help you do this properly.

29. Place outdoor heat pump parts away from the drip line of your house. This will prevent ice and water damage to fans and motors.

30. Check, clean and replace heat pump filters and coils monthly or according to manufacturers' instructions. Clean fans and lubricate fan motors annually. Dirty filters, coils and fans reduce airflow, use more energy and can cause compressor damage.

31. Inspect and vacuum the interior of accessible ductwork regularly. Loose insulation and dust buildup, for example, may block airflow. Ensure that all dampers are returned to their original position after vacuuming.

32. Be sure that furniture, carpets or other items that can reduce airflow do not block vents and registers.

33. Check the EnerGuide ratings on new heat pumps; units with the highest ratings are the most efficient. You can find the rating at the back of the manufacturer's brochure.

Select an outdoor unit that has a demand defrost control. This will allow you to cut down on the number of defrost cycles, which use more energy and can shorten the life span of your heat pump.
Not sure what size your heat pump should be? Consult Determining the Required Capacity of Residential Space Heating and Cooling Appliances (CSA-F280-M90). This handy booklet from CSA International will help you choose a unit that's right for you.

Fireplaces

More than 3 million Canadian households burn wood as a source of heat and enjoyment. If used properly, wood energy is economical, renewable and effective.
Consider buying an energy-efficient woodstove, fireplace or insert that is airtight. Not only are they cleaner and safer, they will also save you money. They use up to 50 percent less wood than conventional wood burning appliances, which could mean savings of hundreds of dollars each year.
A wood fire can be cozy, but breathing in the smoke isn't healthy. The best fire is a hot one that creates almost no visible smoke outdoors and no smell of smoke indoors. And don't forget: where there's smoke, there's pollution. Here are some tips on how to make your fire burn cleanly.

Wood Stoves and Wood Burning Fireplaces

34. Make sure that your stove, fireplace or insert is the right size for your house and that it is installed by a qualified professional in a location where the appliance can effectively heat the space.

35. Check for air leaks where chimneys and walls meet (you may need to remove the trim). Caulk these joints with flexible, heat resistant material.

36. Winterize your fireplace. Patch cracks and gaps in brickwork. Examine your damper by shining a flashlight up the flue. Repair the damper seals if they are worn. Close the damper when your fireplace is not in use.

37. Install glass doors on your wood-burning fireplace. When the fireplace is not in use and these doors are closed, they stop warm air from escaping your home and block cold air from being drawn down the chimney.

38. Whenever possible, keep the glass doors open while the fire burns. This allows some radiant heat to enter the room from the unit's hot masonry. Be sure to keep the spark screen in place.

39. Season your firewood properly. Cut, split and stack wood where it will be sheltered from the weather. Cover and store wood outside (keep only a small amount of wood in your house). Allow wood to dry fully – for at least six months – before burning. Cracks in the ends of the wood indicate that it is properly seasoned.

40. Split wood into pieces that are 10 to 15 cm (4 to 6 in.) in diameter. The wood will burn cleaner with more surface area exposed to the flame.

41. Make sure that your fire is getting enough fresh air to burn "hot and clean," which results in more complete combustion and less smoke. Check that the air inlet is open wide enough to keep the fire burning briskly.

42. Don't stuff too much wood inside the firebox at once; instead, refuel more often with smaller loads.

43. Don't use your fireplace at all when the outside temperature is below –7ºC (20ºF). The infiltration of cold air into your home through the open flue more than offsets any heat gained.

Gas Fireplaces

44. If your gas fireplace will be located against an exterior wall, make sure that a professional installs an insulated outer casing first to help reduce heat loss to the outside of your home. These casings can be used only with inserts and not with freestanding units.

45. Keep the glass doors on your gas fireplace clean – dirty doors block heat from escaping the fireplace. Consult your owner's manual to learn which cleaner to use for the type of glass installed in your fireplace doors.

46. If possible, choose a ceramic glass front, which resists shattering and gives off heat more efficiently.

47. Shut off your gas fireplace pilot light during summer months. If you are uncomfortable with relighting the pilot, ask your heating contractor to show you how during the next servicing.

48. For added comfort, install a fireplace thermostat to help you control room temperature.

49. When choosing a gas fireplace, make sure that the unit you purchase can be vented to the outdoors. This is especially important because units that are not vented to the outdoor can pose serious health hazards by emitting increased levels of nitrogen oxides, carbon dioxide, carbon monoxide and large amounts of water vapor.

It is important to know that some gas fireplaces are more energy efficient than others. The most accurate measurement of energy efficiency for vented gas fireplaces is based on CSA International's P.4 rating of between 50 and 70% or even higher.

Choose a fireplace that has an automatic starter or electronic intermittent ignition. An alternative is to choose a unit in which the pilot light can be shut down when not in use.
Look for direct-vent fireplaces with features such as two-stage pilot lights, which run a very low flame when the fireplace is turned off, and intermittent electronic ignition systems, which enable you to easily turn off and relight pilot lights.

50. Always burn:
    - Clean, dry wood
    - Properly seasoned, split wood
    - A mix of hardwood and softwood, whenever possible, depending on what is available in your region

    Never burn:
    - Wet or green wood
    - Household garbage such as plastic or cardboard
    - Painted or stained wood
    - Pressure-treated wood
    - Particleboard or plywood
    - Driftwood
    - Glossy magazines
    - Any materials prohibited by local by-laws

    These items may release toxic chemicals into the air and damage your stove or fireplace – and your health.

51. To reduce the chance of chimney fires, clean the flue regularly. Simply remove the flue cap and clean the interior of the pipe with a chimney brush, available at most hardware stores. The stiff bristles remove creosote buildup and loosen soot, which falls into your woodstove.

52. Before buying a stove or fireplace insert, carefully consider the size you need. Remember: a clean burn comes from a hot fire. An oversized unit will create too much heat for your space. As a result, you'll have to burn wood more slowly and at lower temperatures. This increases the amount of smoke and the buildup of dangerous residues in your chimney.

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AIR CONDITIONING

53. Install an automatic setback thermostat that turns off your air conditioner at night.

54. Opening windows costs nothing but saves a lot of energy. Keep your windows open in the evening and overnight to allow cooler air into your home, and don't forget to turn off your air conditioner. Close the windows during the day to keep the cool in and the heat out.

55. Use fans as your first line of defense against summer heat. Ceiling fans for instance, cost about $0.05 an hour to operate – much less than air conditioners.

56. You can reduce air-conditioning energy use by as much as 40% by shading your home's windows and walls. Plant trees and shrubs to keep the days hottest sun off your house.

57. Keep blinds and curtains closed during the day to keep your home cool.

58. Bigger is not necessarily better. Oversized room air conditioners use more energy and often cool and dehumidify poorly. Measure your room and the window in which you will mount the unit to make sure you buy only what you need. Put the money you save on a smaller air conditioner toward a better model – perhaps one with a programmable thermostat or timer.

59. You will use 3 to 5% more energy for each degree your air conditioner is set below 25ºC (75ºF), so set the thermostat of your room air conditioner at 25ºC (77ºF) to provide the most comfort at the least cost.

60. A good air conditioner will cool and dehumidify a room in about 30 minutes, so use a timer and leave the unit off during the day.

61. Poorly mounted and sealed room air conditioning units allow cool air to escape outside, which means that the air conditioner must work harder and use more energy. Make sure that your unit is properly installed. Seal any gaps around the air conditioner with foam insulation strips or removable caulking.

62. Keep doors to air-conditioned rooms closed as often as possible.

63. Clean the air conditioner filter every month. A dirty air filter reduces airflow and may damage the unit. Clean filters enable the unit to cool down quickly and use less energy.

64. Remove window air conditioners for the winter. If they must stay in place, seal them with caulking or tape and cover them with an airtight, insulated jacket.

65. If your room air conditioner is older and needs repair, it's likely to be very inefficient. You are better off buying a new energy efficient room model.

66. The cost of new energy-efficient room air conditioners may seem high, but they may actually save you money within a few months, especially if you've been using an older unit that's always on and barely able to cool your space.

Central Air Conditioners

67. As with room air conditioners, bigger central air conditioning units aren't necessarily better. Oversized air conditioning systems use a lot more energy but often don't cool your home any better than a properly sized system. Measure the square footage of your house carefully to get the system that is right for you. And be sure to have your system installed by knowledgeable and qualified technicians.

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68. Service your central air conditioning system at least once a year. Coolant leaks are a particular problem, as they release greenhouse gas emissions into the atmosphere and cause your air conditioning system to use more energy.

69. Close air vents in unused rooms.

70. Turn off all sources of heat whenever you can, including lights and appliances especially at the hottest times of the day. Do your baking, washing, drying and ironing early in the morning or in the evening.

71. When looking to purchase an air conditioner, consider the following:

    - ENERGY STAR qualified room air conditioners contain compressors that are more efficient, usually operate more quietly and often have energy saving timers.

    - ENERGY STAR qualified central air conditioners use 20% less electricity than conventional units.

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VENTILATION

Ductwork

72. Keep furniture, rugs and drapes away from all return air grills and hot air registers to allow free movement of air.

73. Install plastic deflectors on hot air floor vents to direct heat away from cooler outside walls and into main living areas.

74. Prevent air leaks by covering ductwork joints with mastic or aluminum foil duct sealing material. Don't use fabric duct tape, which will dry out and crack over time. For major work, get a professional to help to insulate and repair all ducts.

75. You can also seal joints on exposed ductwork with fiberglass or mineral-wool insulation. Never insulate heating ducts with foam plastic, which may melt or cause fire.

76. If your basement has been converted to a living area, install supply and return registers in the basement rooms.

Exhaust Fans

77. Be sure to keep your kitchen and bathroom exhaust fans clean. Regularly wash or replace any filters.

78. Ensure that all bathroom, kitchen and other exhaust fans in the house are vented all the way to the outside, not into the attic or crawl spaces. Make sure that the places where the exhaust columns exit through the roof or sidewalls are properly caulked to prevent air leakage into the wall and ceiling cavity. Baths and showers create a lot of warm, moist air. Trapped in the attic, this air can cause moisture buildup, which will damage the attic's woodwork and insulation.

79. Install a timer switch on your bathroom fan so that it runs only as long as you need.

Ceiling Fans

80. Ceiling fans use less electricity than air conditioners or furnaces. The trick is to get all these units working together to keep your house warm in the winter and cool in the summer.

81. Most ceiling fans can be switched to change the direction of the airflow. In the winter, let the fan push warm air toward the floor where it will cool and be drawn back to the furnace to be reheated. In the summer, the fan can draw air upward, cooling the room and ensuring a constant airflow. This is especially good for houses that have electric baseboard heaters.

82. High, cathedral ceilings can be beautiful, but they tend to collect heat because hot air usually rises. Install a ceiling fan and push that valuable warm air to the floor.

83. Look for ENERGY STAR qualified ceiling fans. If they have lights, use compact fluorescent light to further reduce electricity and heat buildup.

Vents and Air Intake

84. Vents and air intakes are the points inside and outside the house where stale air is vented outdoors and outdoor air is drawn in.

85. Always check that vents are kept clear of snow, leaves and other garden debris to keep your fans and ventilation systems running safely and efficiently.

86. Avoid storing garbage or idling your car (which is very energy inefficient anyway!) beside or near your home's air intake.

Whole House Ventilation Systems

It is important to properly ventilate your home in order to keep air fresh and reduce moisture. If condensation builds up on you window, for instance, chances are that your ventilation system needs an upgrade. A heat recover ventilation system not only helps improve energy efficiency but can also make for a healthier and more comfortable indoor environment. A heating and ventilation contractor can help you decide what is best for your home.

87. If your home has a whole house ventilation system, such as a heat recover ventilation (HRV) or energy recovery ventilator (ERV), it pays to keep it running efficiently with regular servicing.

Operating your HRV continuously even in the non-heating season will keep your home cooler, quieter and cleaner. By removing some of the heat from incoming air, most HRV's will reduce the load on the air conditioner and save you money.
Filters should be cleaned or replaced every one to three months. Washable filters should be vacuumed and then washed with mild soap and water. Most washable filters will last several years before they need to be replaced.

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HOUSING

Thermostats

88. Thermostats are wall-mounted, temperature sensitive devices that control heating and cooling equipment.

89. Make sure that your thermostat is located on a central interior wall in a main living area and away from heat sources such as stoves and fireplaces, appliances, bright lights, sunlight, heating vents and radiators. Thermostats should never be installed near windows or doors or in halls where drafts may affect their ability to properly sense and control the temperature in your home.

90. If your house's temperature is 16ºC (60ºF) and you want to raise it to 20ºC (68ºF), turning the thermostat to 25ºC (77ºF) will not heat your house any faster – but it will use more energy.

91. To work properly, your thermostat must be kept clean and perfectly level; have it checked seasonally when your furnace is serviced. (applies only to old analog thermostat)

92. In the winter, wear warm, loose clothing to save energy and money. By wearing a sweater, for instance, you could lower the thermostat by 2ºC (4ºF) and save as much as 4% on your fuel bill.
93. To save energy and money in the winter, set your thermostat to the lowest temperature that's comfortable for you. Remember: for every 1ºC (2ºF) you lower the thermostat, you save 2% on your heating bill.

    Activity Setting
    Sitting, reading or watching TV 21ºC (70ºF)
    Working around the house 20ºC (68ºF)
    Sleeping 18ºC (64ºF)
    Out for the day or on vacation 16ºC (60ºF)
    Basement (if not used often) 16ºC (60ºF)

94. Programmable thermostats can be set to automatically adjust the temperature in your home day and night. During the workweek, for example, a programmable thermostat could be set to lower your home's temperature while you are out and raise it again just before you come home. If you go out on an evening when you would normally be home, simply over-ride the thermostat's automatic setting and lower the temperature manually. Remember not to lower the temperature too much: because of other implications.

    By lowering the set-point temperature too much, the inference that the energy savings would be lost is not entirely correct. By lowering the set-point temperature, the furnace will operate for a few hours during the setback, however, when the temperature is raised, the furnace will operate longer hours to meet the heating demand. The overall effect would be generally positive or at least neutral for energy savings.

    There is also the one other aspect you should consider while lowering the house operating temperature too much (say below 16ºC). In this case the wall surface and the cavity temperature may fall below the dew point causing condensation of moisture. Frequent or persistent occurrences of condensation on walls, windows and wall cavities may cause mold problems. This has been reported in several studies. Therefore, the condition for limiting temperature for the programmable thermostat is on maintaining the acceptable indoor conditions.

95. "Zone Heating" divides your home into a number of areas, each with its own thermostat. By controlling temperatures throughout your house, you are better able to control your heating bill. But remember: doors that separate zones must be kept closed.

96. If you are installing a new thermostat in your home, look for programmable thermostats that meet ENERGY STAR performance levels. These thermostats feature at least two programs with four temperature settings each. Used properly, these thermostats can save you up to 30% on heating and cooling bills.

HUMIDITY CONTROL

Four people in a house produce about 10 kg of moisture per day from cooking, washing, respiration and perspiration.

Most indoor air is a common reason that windows frost over in winter, which can lead to mold buildup and damage to walls from dripping water. This is bad for your house, causing deterioration in the structure, and it is bad for your family's health. It is important to maintain healthy indoor ventilation levels, ideally using an energy-efficient heat recover ventilator (HRV) at all times – especially in winter.

Is your home humid? Install a dehumidistat, which turns the furnace fan or ventilation system on and off to help control moisture in the air.

Humid air feels cooler in winter and hotter in summer, so correct humidity levels will improve your family's comfort.

Moisture levels are always much higher in newly built houses. A newly built house should be over ventilated for the first year to allow it to "dry out".

Dehumidifiers

97. Dehumidifiers remove moisture from the air. They are especially handy in basements, which are often uncomfortable due to dampness. The dampness could be due to poor ventilation or to basements that need to be better insulated.

98. You can buy dehumidifiers that can be used to treat individual rooms or, if you've got a forced-air heating and cooling system, to remove moisture from your entire house. If your house is new and well insulated, an air-to-air heat exchanger might work better than a dehumidifier to improve ventilation.

99. Whatever you choose; make sure that the system is the right size for the space you need to dehumidify. Dehumidifiers use a lot of energy to take moisture out of the air. Energy use is based on the number of watts the unit uses to take a litre of moisture out of the air. To find the unit that does this most efficiently, look for the ones that meet ENERGY STAR guidelines. Better still, visit Canada's ENERGY STAR website at www.oee.nrcan.gc.ca/energystar to choose the best model and size for your needs.

100. Because of the amount of air and moisture that flows through your dehumidifier, bacteria can build up quickly. Make sure that you regularly clean your unit, especially its filter and the bucket where the water accumulates. Brush the coils with a mixture of water and bleach, and rinse the filter under hot soapy water.

Insulation

101. Thanks to your heating and air-conditioning system, temperatures inside your house throughout the year are often very different than those outside. A good insulating system will keep it that way, blocking heat from getting out in the winter and getting in during the summer.

102. Is your house well insulated? To find out, check your roof during the winter. If snow regularly melts – even on cloudy days – chances are that your attic is poorly insulated and heat is escaping. Check around the foundation as well. If snow has disappeared from the sides of the house, it is probably because heat escapes from your basement walls.

103. Installing or adding insulation is neither difficult nor particularly expensive. However, there are safety issues in proper installation. It is always recommended that you get professional advice before insulating an attic or roof space. Insulating materials are rated by R-value, which measures a material's ability to block heat. The higher the rating, the less heat can pass through the insulation.

104. Check the insulation throughout your home – in the attic, ceilings, exterior and basement walls, floors and crawl spaces.

105. Where possible, when renovating, add insulation to the levels and in the manner indicated in your local building codes. You can get this information from your local municipal office.

106. An EnerGuide for Houses recommendation, which typically improves on local code minimums, will offer even better guidance.
107. An EnerGuide for Houses advisor will assess the status of your home's insulation and recommend upgrades during the visit. He or she will also recommend where more complex insulation jobs that require the services of a qualified contractor are worth the investment. Your EnerGuide for Houses advisor will also recommend the best types of insulation to use in each application.

    On average, a homeowner who has an EnerGuide for Houses energy assessment performed and implements the recommended improvements saves 20% on heating bills (and up to 1.4 tons of greenhouse gas emissions per year)!

    You can learn more about the EnerGuide for Houses service by visiting the website at www.oee.nrcan.gc.ca/houses.

108. Are your floors cold? Don't turn up the heat – throw down a rug. Rugs, not only help to insulate your floors, especially above unheated spaces such as garages and crawl spaces, but also insulate against noise, helping to make your house quieter.

109. Want to save energy and help the environment? Then spend a little time on your own environment. Plant evergreen trees and thick hedges to block winter winds from blowing against your home. For most Canadian homes, the best place to plant is on the northwest side.

    Plant deciduous trees on the east and west sides of your property to help block your house from the summer sun. After their leaves have fallen in the autumn, the sun will shine through to help warm your home in the winter.

Attics

110. Proper attic ventilation serves two important purposes in your home: relieving heat buildup and removing unwanted moisture. During the summer months, proper attic ventilation expels hot, stale air, making it easier to cool your home.

111. Moisture can cause serious damage to wood framing and has a big impact on the effectiveness of your attic insulation. That is why it is important to make sure that all exhaust fans in the house – in the bathroom and kitchen, for instance – are vented all the way to the outside, not into the attic or crawl spaces.

Basements

112. Your basement's concrete floors will be much more comfortable if they are covered with area rugs or carpets. Rugs help insulate and save energy.

113. Install carpets on concrete basement floors only when you are sure that the floor is fully waterproofed. Mold and insect infestation problems can occur if the carpet becomes damp.

114. Install doors that are fully insulated, not hollow, on all entrances to cold storage rooms and un-insulated basements and garages.

Attached Garages

115. Building a new home? If possible, design it so that the garage is on the north side to help shield your house against winter wind.

116. If you have a room over your garage, make sure that the garage ceiling is properly insulated.

117. Any doors leading from the garage into the house should be fully insulated and weather-stripped.

118. Make sure that your garage door fits tightly to the outside frame and to the ground. To check the seal, turn on the garages inside light, then close the door at night and inspect it from the outside. If you can see light around the edges, you've got leaks.

119. Keep the garage door tightly closed as much as possible to retain warmer air against the garage-side wall of the house. It will act as a buffer against the colder outdoor air beyond.

120. Keep the door between the garage and the house closed and properly weather-stripped to prevent exhaust fumes entering the home from vehicles that are exhausting inside the garage. If you have an attached garage, install a carbon monoxide detector inside the main living space of your house.

Caulking and Weather-stripping

121. When cold air leaks into your house, some rooms – particularly those that face the wind – become drafty, uncomfortable and difficult to heat. These drafts or air leaks account for between 25 and 40% of heat loss in older homes. That means hundreds of dollars a year on the average heating bill for wasted energy.

122. What is the difference between caulking and weather-stripping? Caulking is used to seal gaps and leaks in fixed joints such as around window frames where they meet the wall of the house or where electrical wires or exterior taps go through exterior walls. Weather-stripping is used where a joint is moving or flexible, such as where a moving window sash meets the sill.

123. There is an easy way to detect air leaks: make your own draft detector using incense sticks, which create a white smoke when lit. Hold two or three together to create more smoke and make it easier to detect leaks. On a windy day, hold your draft detector near window and doorframes, electrical outlets, baseboards and other potential leak locations. Strong drafts will blow the smoke away from the leak and cause the tips of the incense sticks to glow. Small drafts will gently blow the smoke or draw it toward the location of the leak. All leaks should be sealed.

124. A blower door test, which is part of the EnerGuide for Houses evaluation service, is the most thorough and complete way to identify all of your homes air leaks. Visit the website at www.oee.nrcan.gc.ca/housemaisons/english/e31.cfm to read about a blower door test.

125. The outside doors of your house must fit snugly to prevent drafts and heat loss. Use weather-stripping around all exterior doorframes. Felt and foam weather-stripping are inexpensive, but rubber is more effective and durable.

126. Caulking comes in many types and consistencies from a flexible gel to spray foam. Check the labels to make sure that you have got the right material for your job. NRCan's fact sheets Air Leakage Control and Improving Window Energy Efficiency explain this in more detail.

127. Make sure that all surfaces to be caulked are clean and dry.

128. Caulking is applied best in warm weather, when the material is flexible and can fully penetrate holes and cracks.

129. Seal all cracks, holes and gaps outside and inside your house. This includes around windows; wire and pipe entrances through exterior walls; around bathroom, dryer and kitchen vents; baseboards; interior and exterior light fixtures; electrical outlets and plumbing holes in interior walls. Pay special attention to areas under sinks and behind bathtubs, plumbing and wiring penetrations into the attic and attic hatches.

130. Common leakage areas that are often missed are the joints between the basement foundation and the main floor, called the rim joist.

131. Spider webs are a good indicator that there is air leakage. Spiders build their webs in the path of airflow to catch insects.

132. Wherever possible, caulk exterior cracks and holes from the outside as well as the inside to ensure that the wall structure is protected from wind, rain, snow, insects and dust.

133. Exterior caulking is made from materials that are different from interior caulking, and sometimes the fumes are unpleasant or even dangerous. Do not use exterior caulking for work inside a home.

134. Some caulking can be painted and some cannot. As well, some are mold-resistant for use in damp or wet areas. When buying caulk, be sure to tell the salesperson how you intend to use the product.

135. When sealing around ventilation and combustion air ducts, be careful not to block air circulation by overfilling with caulking. Never insulate or seal draft hoods, wind caps and exhaust vents on natural gas appliances.

136. Be sure to use compounds around chimneys and exhaust fans that have been approved for the specific use you are intending.

137. Some types of recessed lighting fixtures can present a fire hazard if sealed. If you are not certain what kind you have, ask a professional. Unsealed fixtures can be replaced with airtight ceiling or wall-mounted fixtures.

138. Seal ductwork joints with a water-based duct mastic sealant or approved foil duct tape. Do not use the commonly available fabric based duct tape.

139. You can reduce heat lost through your electrical outlets, light switches and lighting fixture receptacles by installing foam gaskets behind these outlets and switches. Switch off the electric power before doing any of this work.

140. Consider replacing leaky outlets with airtight electrical outlets, available from any good hardware store.

141. Seal unused electrical wall outlets with plastic security caps to reduce heat loss.

Windows

Long winters and hot, humid summers mean that a lot of heat moves through windows in many Canadian homes. In recent years the quality of new windows has improved dramatically thanks to advances in technology and design. Modern windows are more energy efficient and help to reduce condensation buildup and improve the quality and quantity of light that enters your house.

142. In the winter, leave your curtains open to allow the sun's rays to heat rooms during the day. It is also important to allow warm air to move around the windows inside the house.This will stop moisture from building up and freezing on your windows. At night, close your curtains to help reduce the amount of heat that escapes through the windows. Close your drapes on summer days to help keep the inside of your home cool.

143. Heat shrink film kits can help cut the amount of energy lost through your windows. These kits include the sheets of clear plastic that stretch across the inside of your window frames and the double-sided tape that holds them in place. When heated with a hair dryer, the plastic shrinks and makes an airtight seal around windows.

144. Clear plastic film with spline and channel kits include a sheet of heavy-duty plastic film, a plastic channel that attaches semi permanently to the window surround and a plastic spline that pushes into the channel to hold the film in place. These are a removable and reusable version of heat shrink film kits that should last for several years.

145. Make sure that your home is not losing heat around the outside of your window where they join the exterior wall. Caulk the edges of the frames, but be careful not to plug drain holes on the bottom sills or in bottom tracks of sliding doors.

146. It is worth considering using a new kind of clear removable caulking on operable windows for the winter months. It simply peels off without harming paintwork when you want to open the windows again in spring.

147. Check weather-stripping on the movable parts of your window and replace any that has become damaged or worn.

148. Heat is lost through even the smallest cracks in a window, so be sure to repair all broken windowpanes.

149. Replace double or triple pane windows that have become foggy between panes. These windows have lost their capacity to insulate.

150. Check your window locks to make sure they are secure and keep warmth in.

151. If you have single pane windows, add storm windows to cut heat loss by as much as 50%. Better still, replace single pane windows with energy efficient double paned windows filled with inert argon gas, warm edge spacers and have a low-emissive (low-E0 coating).

152. If you have central air conditioning and keep some windows closed year round, leave storm window on these as well. The air space between the two windows provides extra insulation and helps keep the house at the temperature you want.

153. If you are installing new energy-efficient windows in a renovation, be sure to ask that they be "sprayed in foam" for extra energy efficiency.

154. An industry led program called Window Wise provides guaranteed, quality assured, highly energy efficient window installation. For more information on this program and local Window Wise contacts, visit the Web sit at www.sawdac.com.

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155. If you are shopping for new windows, you will find that many are gas filled for added energy efficiency. Argon and krypton are two of the most common and effective gases. What's most important is the size of the airspace between the panes of glass in these windows.

    - Argon filled windows need about 13mm (1/2 in.) between windowpanes. The panes in krypton filled windows must be about 10mm (3/8 in.) apart.

    - Regardless of gas or design, energy savings stop at 20mm (3/4 in.). When windowpanes are separated by more than this amount, their insulation value starts to drop.

    - Also, look for warm edge spacers as a part of the manufactured window. These low conductivity components are another valuable factor in an energy efficient window.

156. Your windows can do more than let heat in to your home – they can also keep the heat from escaping. Low emissive (low-E) windows have a special coating that saves energy. This coating helps cut heat loss by reflecting warmth back into your home. The insulation of the space around the windows should also be appropriate.

Doors

157. Can you feel air blowing in along the edges of your exterior doors? Try attaching brush or PVC weather stripping. It is easy to install and will help cut energy losses.

158. Does your home have a sliding glass door? Make sure to keep its track clean. A dirty track can ruin the door's seal and create gaps through which heat will pass.

159. If you don't use your patio door in the winter, cover the inside with heat shrink plastic (see tips 144 and 145). Removable sealants are also available. These materials are applied like caulking but can be easily stripped off in the spring.

160. A lot of heat is lost through mail slots in doors. Spring loaded flaps and nylon seals will help keep these slots closed tightly.

161. Heat can also be lost through keyholes in older doors. Keyholes can be sealed with covers.

162. Plastic and rubber weather-stripping should bend easily and spring back into shape. Replace weather-stripping whenever it shows signs of wear.

163. Your home's exterior doors should be insulated not hollow. To check if a door provides good insulation, place your hand against it form the inside. If it feels cooler than the inside walls, it might be time to install a door that is better insulated.

164. A door sock is a long, snake like tube of material stuffed with sand or birdseed. If fits snugly against the bottom of an exterior door to stop drafts by sealing gaps that are too big to close with weather-stripping. When not in use, simply hang the sock on the doorknob.

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WATER USE

We live in a country that is rich in fresh water, so it is understandable that Canadians tend to take this resource for granted. Water is as close as kitchens, bathrooms and laundry rooms in most Canadian homes. As soon as we turn on the tap, there it is, flowing freely. But it is not free, especially hot water. In fact, 15% of a typical energy bill goes to heating water. While you can't do without water, there are ways you can use less and save money. Also, leaks can be costly. A leak of only one drop per second wastes about 9000 litres of water per year, or the equivalent of 16 baths every month. Most leaks are easy to find and fix at very little cost.

Showers

165. Energy-efficient showerheads conserve energy without changing water pressure. Low flow showerheads use up to 60% less water than standard fixtures. Flow restrictors, on the other hand reduce water use from 19 to 11 litres per minute and can save up to 15% on your hot water bill.

166. Consider a low flow showerhead with a shut off button. The advantage of the shut off button is that it allows you to be very water efficient – you can interrupt the flow while you lather up or shampoo and then resume at the same flow rate and temperature.

167. In the bathroom, a flow rate of 2 litres per minute should significantly reduce water consumption, but also let you enjoy your shower.

168. Take quick showers instead of baths; you will use up to 50% less hot water. A five-minute shower uses less than 38 litres if water compared with 57 to 95 litres for a bath.

Toilets

169. Installing a water saver flush kit in your toilet will save thousands of litres of water per year. You can also replace large volume toilets with units that use only six litres per flush – you will reduce water usage by 70% or more.

170. Using the toilet as a wastebasket or flushing it unnecessarily wastes a lot of water.

171. A toilet that continues to run after flushing, if the leak is large enough, can waste up to 200 000 litres of water in a single year! To find out if your toilet is leaking, put two or three drops of food colouring in the tank at the back of the toilet. Wait a few minutes. If the colour shows up in the bowl, there is a leak.

172. If your toilet leaks, make sure that the flush valve or flapper valve is sitting properly in the valve seat. Also, check that the flush valve lift wires are not bent or misaligned and that the valve seat is not corroded. All of these can be fixed easily and inexpensively. If, however, the leak is around the base of the toilet where it sits on the floor, call a professional.

173. Install a water saving device inside the tank at the back of the toilet. The most common water retention device available is the toilet dam. When installed properly it will save about 5 litres per flush.

174. A plastic bag or bottle filled with water and suspended inside the toilet tank could be a water displacement device that is easy to find and install. However, don't use a brick! It can disintegrate inside the toilet tank, leading to excessive leakage at the flapper valve and may even be heavy enough to crack the tank.

175. Monitor the performance of the devices periodically. If you discover that it becomes necessary to double flush the toilet, something needs to be adjusted or replaced. Remember: double flushing defeats the purpose of your water conservation efforts and is costing you money.

176. If you decide that it is time for a toilet replacement in your home or business, you are well on your way to significant water savings that you can bank on over the life of the toilet. Replacing an 18 litre per flush toilet with and ultra-low volume (ULV) 6 litre flush. model represents a 66% savings in water flushed and will cut indoor water use by about 30%.

177. Remember the ULV toilet not only uses less water, it produces less wastewater. If your municipality applies a sewer surcharge on your water bill, the investment in the better toilet could translate into a 50% reduction in your combined water/sewer bill. If your home uses a private well and septic system, you can significantly reduce the load on your tile drain field while extending its useful life.

178. If you run the tap while shaving, money is going down the drain along with your whiskers. Partially fill the basin with hot water – you will save a lot of hot water.

In The Kitchen

179. Rinsing dishes under the tap also wastes a lot of water. Rinse your dishes in a large bowl of water, or partially fill one side of a double sink. Here's another approach: slowly pour a bowl of water over dishes after putting them in the drainer.

180. If you wash your dishes by hand, you use more water and energy than if you use an automatic dishwasher.

181. Fix leaking faucets as soon as possible. A hot water faucet that leaks one drip per second will waste 9000 litres per year. That's enough water for 160 full cycles on an automatic dishwasher.

182. Keep a bottle of drinking water in the refrigerator rather than letting your tap run to get cold water when you want a drink. (Rinse the bottle every few days.)

Outdoor Water Consumption

183. If you use water provided by your municipality, the water is usually pumped from a source and treated with chemicals before you use it. Then it is treated again before it is put back into the environment. All this movement and treatment of water takes energy, and producing this energy contributes to greenhouse gas emissions. So, the less water used, the fewer emissions produced.

184. More than 50% of the water applied to lawns and gardens is lost due to evaporation or to run off because of over watering. Find out how much water your lawn really needs. As a general rule, most lawns and gardens require little more than 2 to 3 cm (1 in.) of water per week.

185. To reduce losses due to evaporation, water early in the morning (after the dew has dried).

186. Ideally, sprinklers should be suited to the size and shape of the lawn. That way, you avoid watering driveways and sidewalks. Sprinklers that lay water down in a flat pattern work better than oscillating sprinklers which lose as much as 50% of what they disperse through evaporation.

187. Installing timers on outdoor taps can be a wise investment.

188. The water you use to water your lawn does not have to come out of a tap. A cistern, which captures and stores rainwater, can be used as a source of irrigation water. A rain barrel can adequately fulfill this function.

189. The most significant savings come from a reduction in lawn area and switching from exotic plant forms to native species that require less water. In general, lawn areas should not exceed what is useful for play and social activities and should be limited to the spaces where the family spends its time.

190. When washing a car, fill a bucket with water and use a sponge. This can save about 300 litres of water.

191. Consider a low maintenance landscape – one that requires little more water than nature provides. Often called xeriscaping, the principles of low maintenance landscape are as follows:

    - A reduced amount of lawn

    - Proper plan selection that makes use of native grasses, shrubs and trees

    - The use of rain barrels / roof drainage

    - Mulching to reduce evaporative losses around shrubs and trees

    - A proper irrigation system

    - Planned maintenance

Hot Water Heaters

192. Examining your water heater – if its surface is hot or even warm, some of the energy used to heat the water is being wasted. Wrap the heater in an insulation blanket. Be sure to check you user's manual and labels on the tank first.

193. Some new water heaters have insulation and are highly energy efficient. Adding a blanket may not make much difference.

194. Shopping for a new water heater? Look for a high efficiency unit. Some new models heat water only when you need it rather than storing hot water in a tank.

195. When installing a new hot water tank or designing a new home make sure that you place the unit as close as possible to the kitchen, laundry and bathrooms. Heat is lost in long pipe runs. For instance, reducing a hot water pipe from 10 to 3 meters will save enough energy in one month to heat water for 10 showers. Similarly, thin pipes are more energy efficient than thicker pipes; larger amounts of hot water are trapped in thicker pipes, and more heat is lost.

196. To help reduce heat loss, always insulate hot water pipes, especially where they run through unheated areas such as basements and crawl spaces. Insulate the first three meters on cold water pipes and the first two meters on hot water pipes running to and from tanks. This can save you about 2% on your heating bill and can reduce pipe sweating problems in the summer. Do not place any pipe wrap insulation within 15cm of exhaust vents at the top of water heaters, and never insulate plastic pipes.

197. Many water heating tank manufacturers pre set the temperature of the tank to 60ºC (140ºF). You can lower the thermostat to as low as 55ºC (130ºF) to save energy. Do not set it any lower, as this would risk the growth of disease carrying bacteria such as legionella.
    If you are concerned about the possibility of scalding at 55ºC, a plumber can install a tempering valve that reduces the delivered water temperature, while maintaining a safe temperature in your tank. Tempering valves can also be installed on individual taps where the risk is greatest to children, the

infirm or elderly. A professional installer will be able to provide you with specific details about the best way to do this in your home.

Note: Some older dishwashers need to have the water at 60ºC (140ºF) in order to work properly. If your dishwasher does not have an element to boost the temperature, you may have to set the thermostat at 60ºC. Temperatures higher than this can shorten the life of glass lined water heaters.

198. Turn down your water heater thermostat to a minimum setting when you plan to be away for extended periods of time.

199. Twice a year, or monthly if you live in an area that has heavy mineral deposits in the water, empty a bucket of water from your hot water heater. The drain cock is usually found at the bottom of the unit. Be careful: the water in the tank is especially hot. If you can, drain the tank when the water is cold.

200. Never store anything on top of natural gas water heaters. Make sure that combustion air openings at the bottom of these tanks – and openings below the draft diverters at the flue ducts on top – are always kept unblocked.

201. For additional energy saving tips, read the user's manual for your home's hot water heater.

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MAJOR APPLIANCES

When you are shopping for new major appliances, remember that these items really have two price tags: the purchase price and the operating price. Although some energy efficient appliances may cost more to buy, they will save you money on your monthly utility bill. Over the life of a good appliance, which might be 10 to 15 years, the savings will more than cover the higher purchase price.

202. Is it time to say goodbye to your old refrigerator / freezer, stove, washing machine or dryer? Appliance recycling programs are available in many Canadian communities and through provincial utilities. Old appliances are collected for proper disposal. CFC's are the gases that cool refrigerators and freezers. If not recovered properly, CFC's escape and damage the atmosphere's o-zone layer. Contact your city or municipality to find out how to dispose of your old appliances safely.

Refrigerators

203. Accounting for up to 11% of your household's total energy use, your refrigerator can have a major impact on your energy bill.

204. Fortunately, refrigerators are much better energy performers than older models because they have to meet tougher Government of Canada regulations. Superior refrigerator design, more efficient compressors and better insulation and door seals have contributed to improved energy efficiency.

205. Make sure that your refrigerator is kept away from all sources of heat, including direct sunlight, furnace vents, radiators and appliances such as the oven, cooking range and dishwasher.

206. Refrigerator motors and compressors generate heat, so allow enough space for continuous airflow around your refrigerator. If heat can't escape, the refrigerator's cooling system will work harder and use more energy.

207. Many Canadians keep a second refrigerator in the basement or garage to hold extra food and drinks. Why not just buy a larger and more energy efficient refrigerator instead? That way you will save on energy and maintenance costs by running one unit rather than two. If you must keep a second refrigerator, you can save up to 20% on its energy cost by topping up the unit's coolant.

208. If you must keep a spare refrigerator or freezer in your garage make sure that it is well ventilated in summer. A hot garage will make your refrigerator use much more energy. (Note: a space that is too cold may affect the viscosity of the oil in the unit and wear it down.)

209. Keep spare refrigerator and freezers plugged in only if absolutely necessary.

210. A full refrigerator is a fine thing, but be sure to allow adequate air circulation inside.

211. Keep your refrigerator's temperature between 1.0ºC and 3.3ºC (35 –38ºF). The freezer compartment should be kept at –18ºC (0ºF) for maximum efficiency and food safety.

212. Think about what you need before you open your refrigerator. You will reduce the number of times you open the refrigerator door and the amount of time the door remains open.

213. Allow hot and warm foods to cool and cover them well before putting them in your refrigerator. You will use less energy and reduce condensation.

214. Frozen foods should be allowed to defrost in the refrigerator; the cool air from the packages will help maintain coolness.

215. Make sure that your refrigerator's rubber door seals are clean and tight. They should hold a slip of paper snugly. If paper slips out easily, replace the door seals. Hear is another way to check the seals: when it is dark, place a flashlight inside the refrigerator and close the door. If you can see light around the door, the seals need to be replaced. Use the flashlight to check on freezers and ovens as well.

216. When dust and pet hair build up on your refrigerator condenser coils, the motor works harder and uses more electricity. Clean the coils regularly to make sure that air can circulate freely.

217. For manual defrost units, maintaining an accumulation of ice that 0.6 cm thick will contribute to cooling and permit your refrigerator's freezer to run efficiently. Too much ice, however, reduces the cooling power by acting as unwanted insulation. Defrost your freezer compartment regularly.

218. Manual defrost refrigerators are generally more energy efficient than frost free models, requiring fewer cooling and heating parts. However, to make the most of the energy savings, manual defrost refrigerators must be properly maintained according to manufacturers' instructions.

219. Read your refrigerator's user's manual to make sure that you are taking full advantage of the energy saving features of your unit.

220. Consumers have never before enjoyed such a range of choice in refrigerators. But the choices can be confusing. Refer to the EnerGuide label and the EnerGuide Appliance Directory (available on line at www.oee.nrcan.gc.ca/appliances) to compare the energy consumption of all types and sized of new refrigerators. The EnerGuide label shows energy consumption in kilowatt hours (kWh) per year. The lower the number, the more energy efficient the appliance.

221. If you are shopping for a new refrigerator, look for the ENERGY STAR symbol, which identifies the most energy efficient models. An ENERGY STAR qualified model uses, on average, at least 36% less energy than models made 10 years ago.

222. Today there are ENERGY STAR performance levels for all types and sizes of residential refrigerators and refrigerator-freezers.

    If your refrigerator is at least 10 years old, it uses as much electricity as two ENERGY STAR qualified refrigerators.

    ENERGY STAR qualified refrigerators in 2004 use at least 15% less electricity than those that meet Canada's minimum energy-performance standards.

    A new ENERGY STAR qualified refrigerator uses less than 1/3 the electricity of a refrigerator built in 1984. That will save you more than $100.00 per year.

223. The humming sound coming from your refrigerator is the compressor. If you refrigerator is new, you may have noticed that the compressor seems to run longer than the one in your old refrigerator, which stopped and started more often. Today, more efficient compressors run more efficiently when running at their steady state, meaning that there are fewer temperature swings, which tend to increase energy usage in older models.

Longer running cycles maintain a more stable inside temperature and lower your operating costs.

Freezers

224. As with your refrigerator, test the seals of your freezer door by closing it on a sheet of paper. Replace the seals if the paper slides out easily (see tip 216).

225. Fully defrost and clean the inside of your freezer at least once a year.

226. Vacuum dust from the back and underside of your freezer regularly.

227. Don't place warm food or pots in the freezer.

228. Place the freezer away from all sources of heat. Also, make sure that your freezer is at least 5-7cm (2 to 3 in.) from the wall so that air can move freely around the unit.

229. The ideal temperature for freezers is 18ºC (0ºF), for each degree below this temperature; the freezer will use almost 2% more energy. At 20ºC (-4ºF), for example, the freezer will be using 4% more energy than it needs, and that will cost you money. Install a freezer thermometer inside the freezer to gauge temperature.

230. If you are shopping for a new freezer consider an energy efficient model. Freezers made in 2002 use less than half the electricity consumed by those made 10 years earlier.
Chest freezers are generally more energy efficient than upright models. That's because lifting the door on a chest unit releases less of the freezer's cold air. Open the door on an upright freezer, however, and the cold air flows down and out.

Check the EnerGuide label for the lowest kWh consumption per year.

Cooking Stoves

Smart cooks not only save energy by cooking more efficiently, they also spend less time in the kitchen. Here's some helpful advice for chefs in your home.

231. Match your pot to the size of the cooking element. The base of the pots should just cover an electric cooking ring. If the pot is too large for the element, more energy will required heating the pot. If the pot is too small, energy is wasted.

232. Make sure that the bottoms of your pots and pans are smooth and flat. Food will cook faster and you will use less energy when the pots make full contact with the cooking element.

233. Make sure that lids fit tightly on pots and, when possible, keep lids on when cooking. This traps heat in the pots and lets you lower the temperature of the cooking element. Not only will you save up to 20% less energy, your food will also cook more quickly and evenly.

234. Use minimum heat. Once water is boiling, for instance, turn the heat down to the lowest setting that will maintain boiling. A higher setting will not cook you food any faster.

235. Turn off the heat 2 or 3 minutes before the end of the proper cooking time. The element will stay hot, food will continue to cook – and you will save money.

236. Keep drip pans under the cooking elements clean. Don't line the drip pans with aluminum foil – this may reflect heat away from the pots and damage the element.

237. When cooking with gas, make sure that the flame heats only the bottom of the pots. It's not only dangerous for the flame to reach the side of the pot; it's also a waste of energy.

238. Read your user's manual to make sure that you are using your appliance properly.

Ovens

239. Preheated ovens are required mostly when baking bread and pastry; for other foods, preheating is not always necessary. Remember: every 10 minutes of preheating uses 0.06 kWh. That adds up to a lot of energy over time.

240. Make sure that the oven door seal is tight (see tip 216).

241. No peaking! Every time you open the oven door, at least 20% of the heat is lost. Check food through the oven door window instead.

242. Turn off the oven 10 minutes before your baking is done. The heat in the oven will finish cooking the food.

243. If possible, use your cook top, toaster oven or microwave oven to reheat foods. These appliances use less energy than standard ovens.

244. Over time, food drippings and spills may build up in your oven. Self-cleaning ovens remove these buildups by baking them off at very high temperatures. To use less energy, run the self-cleaning cycle when the oven is still hot, right after you have finished cooking.

245. You will spend a little more to buy a self-cleaning oven, but you will also save money over the life of the appliance. That is because self-cleaning ovens are usually better insulated than standard ovens. As a result, every time you cook you lose less heat, use less energy – and save money. Check the EnerGuide label.

Convection ovens contain fans that keep heat moving throughout the cooking space. Not only do these ovens cook more evenly, they also cook faster. That way you use less energy and have more time to enjoy the results!

Dishwashers

246. Regularly clean the filter at the bottom of your dishwasher to keep the machine running efficiently.

247. Run your dishwasher only when full, and use the setting that offers the best wash in the least amount of time. Check your dishwasher's manual for the settings that work best for you.

248. When you use your dishwasher's drying cycle, an electric element heats the interior of the unit and evaporates all water. To save energy, select the dishwasher's no-heat drying cycle (also called air drying).

249. Some people rinse their dishes in the sink before putting them in the dishwasher. Don't bother – you will save more water and energy by scraping all excess food off plates and cutlery. Your dishwasher will do the rest.

250. Today's dishwashers are about 95% more energy efficient than those built in the early 1970's so replacing your old dishwasher may save you a lot of money and water over the life of the appliance. Most new dishwashers offer energy saving features, such as short, light or economy cycles. These cycles clean your dishes in one detergent wash followed by two or three rinses. You are also given the option of heat or no heat drying.

251. When shopping for a new dishwasher, consult the EnerGuide label. It shows you how much electricity the dishwasher uses each year, based on 268 normal wash cycles per year. Lower EnerGuide ratings mean that the unit uses water more efficiently because at least 80% of the rating takes into account the energy used by a storage water heater to heat the water used by the appliance.

252. Dishwashers that meet ENERGY STAR performance levels are at least 25% more energy efficient than comparable dishwashers. ENERGY STAR qualified dishwashers save energy and water by using improved washing technology and better rinsing systems. Some of these models feature built in electric water heaters that can save you up to 10% on energy costs.

253. How dirty are your dishes? Some new dishwashers can tell. They can figure out exactly how much water will be require to clean your dishes efficiently, so there is no wasted energy and no wasted water. Such appliances have sensors that scan the amount of food left on dishes and set the water usage accordingly.

Clothes Washers

254. Studies show that clothes rinsed in cold water come out just as clean as those rinsed in warm water. Rinse in cold water and you will save money on your water-heating bill. To save even more, wash in warm rather than hot water – you will use 50% less energy and your clothes will come out better rinsed and less wrinkled.

255. If you have a load of clothes that are extra dirty, use your washing machine's pre-soak cycle instead of washing your clothes twice.
256. Clothes washers are most energy efficient when they are fully loaded. That is why it is important to buy a machine that matches your family's needs.

257. If your machine has a water-level selector, make sure that you choose the correct setting for each load.

258. Whenever possible, place your washing machine close to your hot water heater to reduce heat loss in the connecting pipes. Wrap any exposed pipes with insulation, especially where they are close to cold concrete walls.

259. The drums in front loading washers only look smaller than those in top loaders. That's because traditional top-loading washers need agitators – the large posts set in the middle of the drum. Both types of machines wash about the same amount of clothes; however, front loading washers use about 40% less water per load and 50% less energy than top-loading washers.

    Front-loading machines also use less detergent.

260. Clothes washers that meet ENERGY STAR performance levels save more energy and water than other machines. For example, ENERGY STAR labeled washers feature high efficiency motors that spin clothes faster to remove more water. That means that less time and energy are needed to dry the clothes.

    ENERGY STAR qualified clothes washers:

    - Use less than 400 kWh of electricity per year

    - Use about 40% less water per load but perform just as well

    - Include front and top loading models

- Feature a sensing technology that measures the weight of the load and automatically sets the water level

261. The EnerGuide energy rating is based on 392 normal wash cycles per year and includes the amount of energy used to heat the water.

Clothes Dryers

262. Don't put dripping wet clothes into your dryer; your machine will have to work harder and use more energy. Wring the clothes out or spin them in the washer first.

263. If possible, sort your clothes by thickness. Dry the thin, quick-drying items in one load and thicker items, such as towels, in another.

264. Try to start your second load of drying as soon as the first is finished. That way the dryer will still be warm, and you will save energy.

265. Don't leave clothes in the dryer too long. Over drying not only uses more electricity, it sets wrinkles in your clothes and causes shrinkage. Clothes should dry in 40-60 minutes.

266. To save money and reduce clothes shrinkage, you can also use your dryer's cool down cycle (usually the permanent press setting). No heat is supplied in the last few minutes, but drying continues as cool air is blown through tumbling clothes.

267. Allow slightly damp clothes to finish drying by hanging them in your laundry room or on your clothesline. (Don't do too much drying indoors during the winter, as this may cause a buildup of moisture and cause condensation problems).

268. When installing your dryer, read the owner's manual and follow the instructions carefully.

269. Always vent your dryer to the outside of the house. Some people believe that venting into the house saves heat, but it also leads to a buildup of moisture, odors and lint. For safety reasons – and by law – natural gas dryers must never be vented inside the home.

270. Make sure that your dryer ducting is the right size and length. Generally, metal ducting is more energy efficient than ribbed plastic coil types, especially when long runs are needed.

271. Make sure that your dryer's exterior exhaust duct opening – and the area around it – is clear of all debris. Lint often builds up on the movable shutters and keeps the hood from closing properly. Small animals have been known to nest in duct opening, which offer warmth in the winter.

272. Once a year, disconnect and clean the dryer moisture exhaust duct. It should be free of lint, dust and pet hair. The duct should also be completely round, not kinked, to ensure that dryer exhaust travels easily to the outside.

273. Empty the lint screen after every load. Once a year, wash the lint screen with a toothbrush and remove film left by fabric softeners and dryer sheets. Your dryer will work better and use less energy.

274. Make sure that you replace your dryer's exhaust hood if it becomes broken or rusted open.

275. Don't forget about your outdoor clothesline – think of the energy savings and the fresh air smell!

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276. Many dryers now come with sensors that automatically shut off the dryer when your clothes are dry. This saves energy and reduces the wear and tear on your clothes.

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SMALL APPLIANCES

Together, small appliances use a great deal of energy. Think about it: they are used in the kitchen – one of the busiest rooms in your home – from early morning until late at night. And there is often more than one of these appliances on at the same time.

To save money throughout the year, use small appliances wisely and make sure that they are clean and well maintained.

Toaster Ovens

277. Heating up a few leftovers? A toaster oven uses much less energy than a regular oven and is perfect for heating small quantities of food.

278. Don't overfill your toaster oven. Make sure that air can move freely around inside and outside the appliance.

Microwave Oven

279. Microwaves save energy by reducing cooking times. In fact, you can save up to 50% on your cooking energy costs by using a microwave oven instead of a regular oven, especially for small quantities of food.

280. Remember, microwaves cook food from the outside edge toward the center of the dish, so if you are cooking more than one item, place larger and thicker items on the outside.

Electric Kettles

281. Use an electric kettle to heat water. It is more energy efficient than using a cook top element or even a microwave.

282. When buying a new electric kettle, choose one that has an automatic shut off button and a heat resistant handle.

283. It takes more energy to heat a dirty kettle. Regularly clean your electric kettle by combining boiling water and vinegar to remove mineral deposits.

284. Don't overfill the kettle for just one drink. Heat only the amount of water you need.

285. Because of long winter nights, Canadians rely heavily on electrical lighting. Controlling your use of lighting is one of the easiest and cheapest ways to cut down on energy costs.

286. One of the best energy saving devices is the light switch. Turn off lights when a room is not occupied.

287. Many devices help save energy used in lighting. Look for automatic timers, motion sensors, dimmers and solar cells.

288. Try placing a lamp in the corner of a room; the light will be reflected of both walls and the ceiling to provide better overall illumination.

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289. Use task lighting, which focuses light where it is needed. A reading lamp, for example, lights only your book rather than the whole room.

290. If you always forget to turn off the lights, consider doorframe switches that turn lights on and off as doors are opened and closed. These are especially handy for closets.

291. Dirty bulbs reflect less light and can absorb 50% of the light; dust light bulbs regularly.

292. Swap your energy guzzling incandescent light bulbs for more efficient types. Compact fluorescent bulbs use up to 75% less electricity than incandescent. Compact fluorescents cost more but last up to 10 times longer so they quickly pay for themselves over time.

293. Choose the most efficient type of light for each application. Compact and tube fluorescent lights are the most energy efficient but are best used in areas where lights are left on for long periods.

294. Halogen lighting produces a more intense and focused light; its bulbs use up to 40% less energy than traditional bulbs. Halogen lighting is also excellent for gardens and pathways.

295. A 15-watt compact fluorescent bulb produces the same amount of light as a 60-watt incandescent bulb.

296. Do you find that your homes outside lights often get left on when they are not needed? Here's a money saving solution: install lights that have built in motion detectors. They can help you cut the energy use of your outside lights by as much as 50%. These lights switch on automatically when people move close to them and switch off after a few minutes when movement has stopped.

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HOME OFFICES

Personal computers make it easy for Canadians to bring their work home and turn extra rooms into home offices. These workspaces contain many electrical devices, including monitors, fax machines, printers and scanners. And because people are working from home, energy use increases throughout the house during the day.
Here are some handy tips for saving energy and money in your home office.

297. Turn off your home office equipment when not in use. A computer that runs 24 hours a day, for instance, uses between $75 and $120 worth of electricity each year – more power than an energy efficient refrigerator. In standby mode, your PC's energy use can be reduced to $15.00.

298. If your computer must be left on, turn off the monitor: this device alone uses more than half the system's energy.

299. Fluorescent desk lamps consume about a quarter of the energy of an incandescent unit, give off the same amount of light and last about 10 times longer.

300. Battery chargers, such as those for laptops, cell phones and digital cameras, draw power whenever they are plugged in and are very inefficient. Pull the plug and save.

301. Don't toss it in the garbage. Computers contain lead and heavy metals that are dangerous to the environment. There are many agencies that are glad to receive donated computers. Your municipality may have a "take back" program that identifies companies or organizations that take back old computers.

302. Screen savers save computer screens, not energy. Start-ups and shut downs do not use any extra energy, nor are they hard on your computer components. In fact, shutting computers down when you are finished using them actually reduces system wear – and saves energy.

303. Look for the ENERGY STAR symbol, which identifies the most energy-efficient home office equipment. The ENERGY STAR symbol means that the computer was shipped from the manufacturer with the energy management features in the operating system switched on. To maintain energy savings, leave them on or adjust them to your workflow.

    Buy a monitor that is the right size for your needs. In general, the larger the monitor, the more energy it consumes.

    If you are buying a laser printer, look for one that has an energy-saver feature mode that automatically steps down the unit to standby mode and reduces electricity use by more than 65%.

    ENERGY STAR labeled scanners do not cost more than other models; however, they do offer energy saving features that set scanners to sleep mode when idle. These features may also save you money by prolonging the life of the scanner's light sources. (ENERGY STAR qualified scanners automatically power down to 12 watts or less after a period of inactivity.)

    ENERGY STAR labeled fax machines have power management features that cut energy costs by as much as 50%. (ENERGY STAR qualified fax machines automatically enter a low power mode of 15 to 45 watts or less after a period of inactivity.)

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VEHICLES

You've checked your home inside and out to improve energy efficiency. If you are looking for more savings, head for the garage or driveway – your car or light truck may not be a gas guzzler like those of the 1950's and 1960's, but it still accounts for a major part of your annual energy costs.
There are many ways you can save energy and money and help protect the environment while operating your car.

304. Use the Fuel Consumption Guide to help you choose the most fuel-efficient vehicle that meets your everyday needs. It will help you reduce your fuel consumption and fuel costs.

305. Ethanol-blended gasoline's can help reduce greenhouse gas emissions, which contribute to climate change. Check your owner's manual to see if your vehicle will run on low level ethanol blended gasoline, which is available at nearly 1000 gasoline stations across Canada.

306. The use of other alternative fuels such as natural gas and propane also help reduce greenhouse gas emissions.

307. Aggressive driving saves very little time and substantially increases fuel consumption and exhaust emissions.

308. On the highway, maintain a steady speed and avoid inadvertent speeding. You will use less fuel and save money.

309. If you are parked (except in traffic), don't let the engine idle – turn it off to protect the environment and cut your fuel costs. More than 10 seconds of idling uses more fuel than restarting the engine.

310. Remote car starters are handy on cold winter morning, but don't start your car too soon. In most cases, today's modern engines need to warm up for only 30 seconds, even on cold winter mornings. Besides, allowing your car to idle too long wastes gas and produces unnecessary exhaust emissions.

311. Plan your trips. Stay away from areas where you know the traffic is heavy. Combine errands to save fuel and time.

312. Don't use your vehicle's air conditioner unless it is absolutely necessary. Using your air conditioning in stop and go traffic can also mean using as much as 20% more fuel. To keep cool, consider using the ventilation system and options such as a sunroof and tinted glass.

313. One reason that many of today's cars are fuel-efficient is their shape. Sleek and streamlined, they slice through the air, use less fuel and save you money. Attaching a roof rack cuts those savings. If you must have a roof rack, choose one that can be removed when not in use.

314. Poor wheel alignment and brake drag also increase fuel consumption. Check for uneven tire wear and have your vehicle serviced regularly.

315. Drive at the posted speed limit. Increasing your highway cruising speed from 100 km/h to 120 km/h will increase fuel consumption by about 20%.

316. To optimize your vehicle's fuel efficiency, follow the manufacturer's recommendation when maintaining your vehicle. Change the oil and filter regularly. Oil breaks down over time and loses its ability to lubricate, cool and protect your engine. Clogged air filters make your engine work harder, use more gas and produce more emissions. Make sure that your mechanic checks your vehicle's emissions system during routine servicing.

317. Don't buy a bigger car than you need. Generally, the larger the car, the more fuel it will use. Options such as power windows and power seas add weight to cars, making engines work harder and burn more fuel.

318. Four wheel drive and all-wheel drive also increases fuel consumption by as much as 5 to 10% due to the increased weight and friction of the additional drive train components.

319. Whenever possible, walk, cycle, carpool or use public transportation.

320. Check your tire pressure at least once a month. Take your measurements when the tires are cold (i.e. 3 hours after use or after driving a distance of less than 2km). A vehicle driving on tires that are under inflated by only 6 psi (pounds per square inch), or 40 kPa, can use up to 3% more fuel. Under inflated tires are also unsafe and wear out faster.

321. Once a month, check fluid levels, including engine oil, engine coolant levels, transmission fluid and power steering fluid as instructed in the owner's manual. Also check around the car and under the engine for fluid leaks.

322. Engine oil is the lifeblood of your vehicle. Changing it regularly, according to the manufacturer's recommendations in your owner's manual, is the best way to keep your vehicle in top operating condition.

323. Reduce weight. If you add weight to the trunk or pickup bed of your vehicle in the winter months, don't forget to remove it when the snow melts. The extra weight just means wasted fuel and unnecessary emissions.

324. Plan your driving by looking ahead of traffic. Anticipate problems. Keep a "buffer zone" between your vehicle and the one ahead so you can avoid sudden braking and accelerating. Quick stops and rapid acceleration waste fuel.

325. Don't rest your foot on the brake pedal when you are driving. This strains the engine, uses more fuel, increases brake wear and decreases brake efficiency.

326. Use the proper grade of fuel. Using the proper grade of fuel recommended for your vehicle by the manufacturer will provide the best performance and lowest operating cost.

327. There are many things to consider when buying a new vehicle. Make fuel efficiency one of them. A more energy efficient vehicle will save you money every time you drive. Check the EnerGuide label on new vehicles. This label will tell you roughly how much fuel a vehicle uses in the city and on the highway. The label also provides information on the vehicle's annual fuel cost. Choose vehicle options that enhance fuel economy, such as tinted glass, cruise control, a block heater or aluminum wheels. Options that add weight and/or draw extra power from the engine, such as power seats and windows, heated seats, air conditioning, four-wheel drive and all-wheel drive, can increase fuel consumption.

    If you are buying a used vehicle, check the on-line Fuel Consumption Guide, which contains ratings for every light duty vehicle sold each year in Canada since 1995. See the web site at www.oee.nrcan.gc.ca/infosource.

328. Your vehicle's oil doesn't freeze when the temperature dips below 0ºC (32ºF), but it does become much thicker. So when you try to start a cold engine, it's as though the parts are moving through molasses instead of water. That means your engine has to work harder, so it uses more fuel. Using a block heater warms the oil and engine coolant and makes your vehicle easier to start – and that can improve

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winter fuel economy by as much as 10%. But don't leave your block heater on overnight; your savings will disappear in a bigger electricity bill. Use a timer to switch on the block heater 2 hours before you plan to drive.

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YARD MACHINERY

Lawn Mowers and Rototillers

329. Tune up for spring – clean spark plugs and adjust carburetors and chokes. Replace transmission oil to help your machine run smoothly and use less energy.

330. Electric lawn mowers should be serviced in the spring. Check your operator's manual for instructions on cleaning and lubrication. Remove grass clippings from under motor hoods; this small precaution will help keep motors running smoothly and efficiently.

331. Watch your engine speed. Don't run gas powered lawn mowers at full throttle unless the grass is long and thick.

332. Most gas-powered lawn machinery is air cooled, which means that it must be kept moving. Leaving your machine to idle is not only hard on the engine; it also wastes gasoline and can be a danger to children and pets.

333. Gas powered lawn machinery emits greenhouse gases that contribute to climate change; electric powered lawn machinery does not emit such gases.

Snow blowers

334. Each year, tune gas-powered snow blowers as you would lawn movers. Clean spark plugs, adjust carburetors and chokes, and replace transmission oil to help snow blowers run smoothly and use less energy.

335. Use snow blowers only for moderate to heavy snowfalls. Clear away light snowfalls with shovels; it's good exercise, saves gasoline and reduces exhaust emissions.

336. Protect your snow blower from rust by clearing all snow and ice from the machine after each use. Try using a broom; it's strong enough to scrape away snow without scratching paint. And be sure to keep the carburetor clear – ice buildup can increase your snow blower's gasoline use.

337. Generally, electric snow blowers work best in light snow. You risk burning out the electric motor if you use these machines in deep, heavy snow. Check your instruction manual for details and for information on proper maintenance.

338. Running snow blowers at full throttle wastes gas, creates more exhaust emissions and causes more noise. Save money by using only as much power as you need to clear away snow. Adjust snow blower throttles to the amount of snow – low throttle for light snowfalls and full throttle for blizzards and snow banks.

Don't forget that using a shovel when possible saves energy and money!

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RECREATIONAL

Pools

339. Use pump timers to regulate energy and the length of time your pool is heating.

340. Cover your pool with a thermal pool blanket to prevent heat from escaping and reduce water evaporation.

341. Use solar panels to heat your pool. They are very cost effective.

Boats

342. If you are near a lake, chances are that you own a boat of some kind. If you have a family that enjoys water skiing, you need a larger and more powerful motor. But you don't have to use this big one all the time. What do you use to go fishing early in the morning? Or to go on a little sightseeing trip? A smaller motor is more economical and will get you wherever you want to go – perhaps not as quickly, but you will have more time to relax.

Snowmobiles

343. Snowmobiles can be a great help in the winter. But if you want to relax and get back to nature, why not strap on a pair of cross-country skis or snowshoes? You will get some good exercise and see all the wildlife that goes into hiding whenever a snowmobile is near.

Hot Water Heater

344. When you are heading home from the cottage, be sure to turn off the hot water heater. It is a waste of energy to keep water hot that isn't needed, and it won't take long to heat up when you return.

345. Remember to turn off the water heater each time you leave for a day or more. What's the sense of paying to heat hot water if you are a hundred miles away?

346. Read the user's manual for instructions on the safest way to turn off your hot water heater.

Heating

347. Some heating units, particularly electrical ones, can be turned off at the unit; others have a thermostat that indicates, "warm". If the weather turns cool, the heater will come on. This is a waste in summer if the cottage is empty. Check to see if your unit can be turned off completely; if not, switch it off at the fuse box.

348. Before you head home after the weekend, turn the heat off, either at the unit or the thermostats. If your water system is operating, you will need some heat to keep the pipes from freezing, but you can still turn the heat way down. When you return, turn the thermostat up to the usual level. But don't set it higher because the building won't heat up any faster.

Closing Up In The Fall

350. If you don't use your cottage in the winter, there are a few points to check when you leave for the last time in the fall. Drain the water from all taps. Defrost and unplug the refrigerator; be sure it dries and leave the door slightly ajar. Turn off the main electric power switch as a double check that nothing has been left on.