

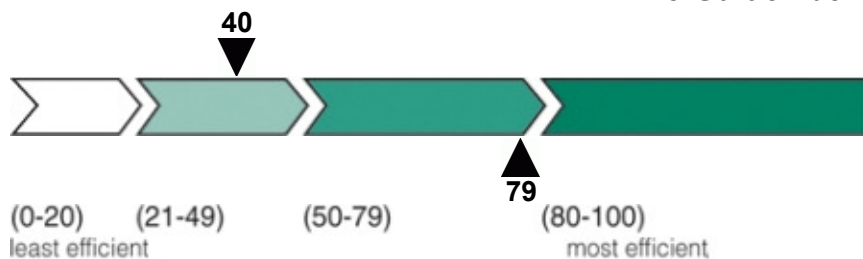
Energy Efficiency Evaluation Report

File number: 7D03D00082

Property Owner:

Dave Koehn
11406 205 St
Maple Ridge, British Columbia
V2X 1S4

EnerGuide Rating



House type: Single detached

Heating system: Oil
Furnace

No. of storeys: Two

Domestic hot water: Electricity

No. of RO windows: 44
RO = rough opening

Air leakage rate @ 50 Pa: 9.66 ACH
ACH = number of air changes per hour

Air conditioner: No

Equivalent Leakage Area: 2431 cm²

The results of your pre-retrofit energy evaluation show that your house rates 40 points on the EnerGuide scale. If you implement all of the recommendations in this report, you could reduce your energy consumption by up to 70% and increase your home's energy efficiency rating to 79 points. The average energy efficiency rating for a house of this age in British Columbia is 47, whereas the highest rating achieved by the most energy-efficient houses in this category is 80.

The sooner you start your renovations, the sooner you will benefit from the energy savings. And let's not forget how reduced energy consumption helps protect the environment.

Did you know that when you reduce the amount of energy used in your home, you also reduce the production of greenhouse gases (GHG) such as carbon dioxide? By improving your home's energy efficiency rating to 79 points, you will reduce its GHG emissions by 11.7 tonnes per year!

The ecoENERGY Retrofit - Homes program stopped accepting bookings for pre-retrofit evaluations as of March 31, 2010. If there is a complimentary grant program offered by a province, territory, municipality, utility or other organization, your file will be transferred to them in accordance with your consent.

Note: If you notice any discrepancies with the above description of your home, contact your service organization immediately.

Service Organization: The House Whisperers
Telephone: 1.800.706.3013

Certified Energy Advisor: Garry Lowney

Date of evaluation: April 14, 2008

Date of report: October 3, 2014






Certified Energy Advisor Signature

1. YOUR HOME ENERGY ACTION CHECKLIST

This is your checklist of recommended retrofits to improve the energy efficiency of your home. Included is information on the potential for energy savings and EnerGuide rating improvement. **For more information on implementing the recommended retrofits, read carefully the 'Recommended Energy-Saving Measures' section of this report. Any reference in this report regarding the eligibility for, or availability of, grants under the ecoENERGY Retrofit - Homes program should be disregarded.**

Before undertaking upgrades or renovations, find out about the appropriate products and installation techniques, and ensure that all renovations meet local building codes and by-laws. NRCan does not endorse the services of any contractor, nor any specific product, and accepts no liability in the selection of materials, products, contractors or performance of workmanship.

Note: Some provinces, territories, municipalities and utilities offer complimentary grants and other incentives for reducing energy use. For information on other energy-saving programs, visit ecoaction.gc.ca and follow the links to ecoENERGY Retrofit's "Grants and Rebates" Web page for consumers or call 1 800 O-Canada (1-800-622-6232).

Retrofits	Potential for Energy Savings *	Potential Rating Improvement
* One (1) star = lowest savings / five (5) stars = highest savings		
HEATING SYSTEM Replace your heating equipment with an ENERGY STAR® qualified oil furnace that has an 85.0% annual fuel utilization efficiency (AFUE) or higher and a brushless DC motor. Install an ENERGY STAR® qualified air-source heat pump that has a seasonal energy efficiency ratio (SEER) of 14.5 or higher, a minimum heating seasonal performance factor (HSPF) of 7.1 for Region V and a minimum capacity of 12,000 Btu/hour.		31.4 points
WALL INSULATION Increase your exterior wall insulation by an amount greater than RSI 1.59 (R-9).		12.0 points
BASEMENT/CRAWL SPACE INSULATION Increase the insulation value of the basement walls by a minimum of RSI 1.8 (R-10) to a maximum of RSI 4.1 (R-23). Increase the insulation value of the basement walls by a minimum of RSI 4.2 (R-24).		4.9 points
AIR SEALING Improve the air tightness of your house by 17 percent to achieve an air change rate per hour of 8.01 at a pressure of 50 Pa.		1.8 points
ATTIC/ROOF INSULATION Increase the insulation value of your attic from the current level, which is evaluated at RSI 2.1 (R-11.9), to achieve a total minimum insulation value of RSI 8.8 (R-50).		1.0 points
WATER CONSERVATION Replace 1 toilet(s) with low-flush or dual flush toilet(s) that meet(s) the minimum requirements.	—	0 points

When replacing ANY of the equipment listed in this report, the new equipment should have an

efficiency rating higher than that of the original equipment.

2. THE ENERGUIDE RATING SYSTEM

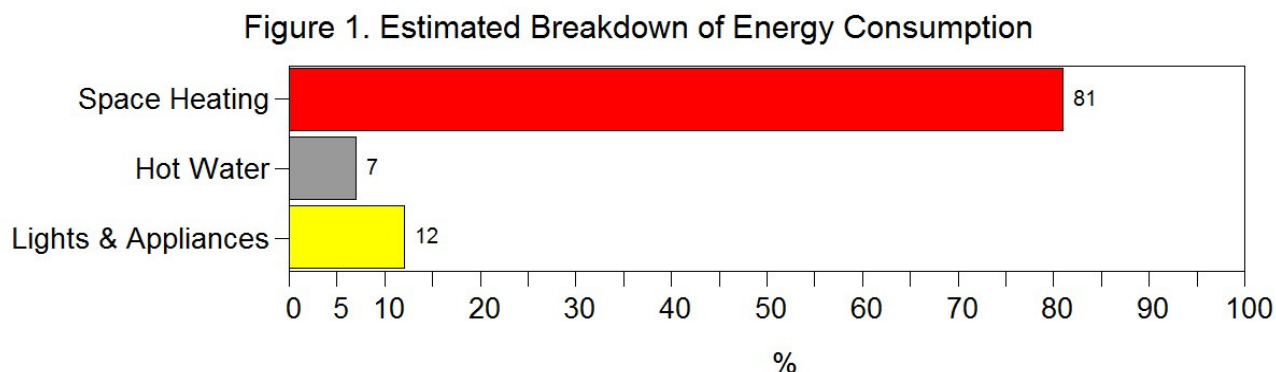
The EnerGuide rating system is a standardized method of evaluation that lets homeowners compare their house's energy efficiency rating to similar sized houses in similar regions. The EnerGuide rating considers the house's estimated annual energy consumption based on an in-depth evaluation of the house's characteristics such as location, size, equipment and systems, insulation levels, air tightness, etc. In addition, standardized conditions are used when calculating the rating in order to compare the efficiency of one house to another. These conditions include: a complete air change approximately every three hours; four occupants; a fixed thermostat setting of 21°C on main floors and 19°C in the basement; average hot water consumption of 225 litres per day; average national electricity consumption of 24 kWh per day; and regional weather data that is averaged over the last 30 years.

Figures 1 through 3 show the results of your energy evaluation based on the standardized conditions. The results may not entirely reflect your household since your actual energy consumption and future savings are influenced by the number of occupants, their day-to-day habits and lifestyles.

3. ENERGY CONSUMPTION

Houses lose heat to the outdoors during the heating season primarily through air leakage and conduction, such as the transfer of heat through the basement and exterior walls, upper floor ceilings, windows and doors (the 'building envelope'). Canada's demanding climate and modifications made to the house, such as drilling holes in walls for new wiring, pipes and lights, all play a part in reducing the efficiency of the building envelope over time. Houses need to be regularly maintained and upgraded to ensure greater energy efficiency, comfort and savings.

Figure 1 breaks down your house's estimated annual energy consumption for space heating, hot water and lights and appliances.



4. SPACE HEATING ANALYSIS

Figure 2 shows the estimated percentage of energy used for the space heating of your home.

- The right side of the top bar shows the percentage of energy you could save if you were to implement all of the upgrades recommended in this report, excluding changes to the space heating equipment. You could save up to 42 percent by performing all of the recommended non-space heating system upgrades.
- The right side of the bottom bar shows the percentage of energy you could save if you were to implement all of the upgrades recommended in this report, including any space heating system upgrades. You could save up to 87 percent by performing all of the recommended upgrades.

Figure 2. Estimated Percentage of Potential Energy Savings

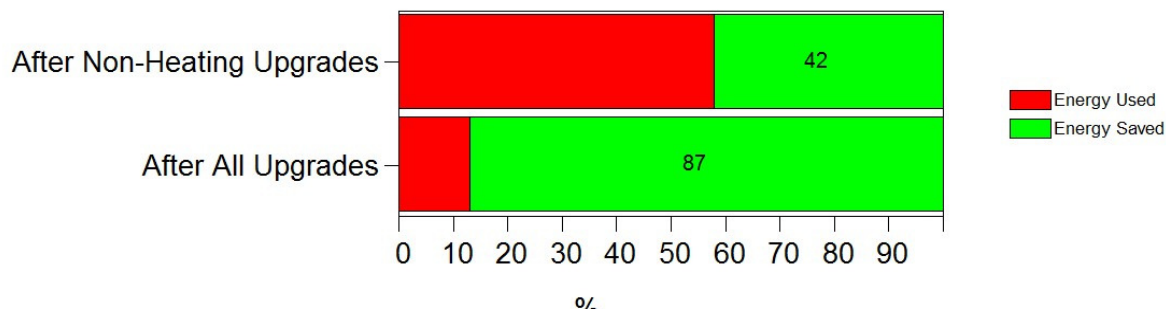
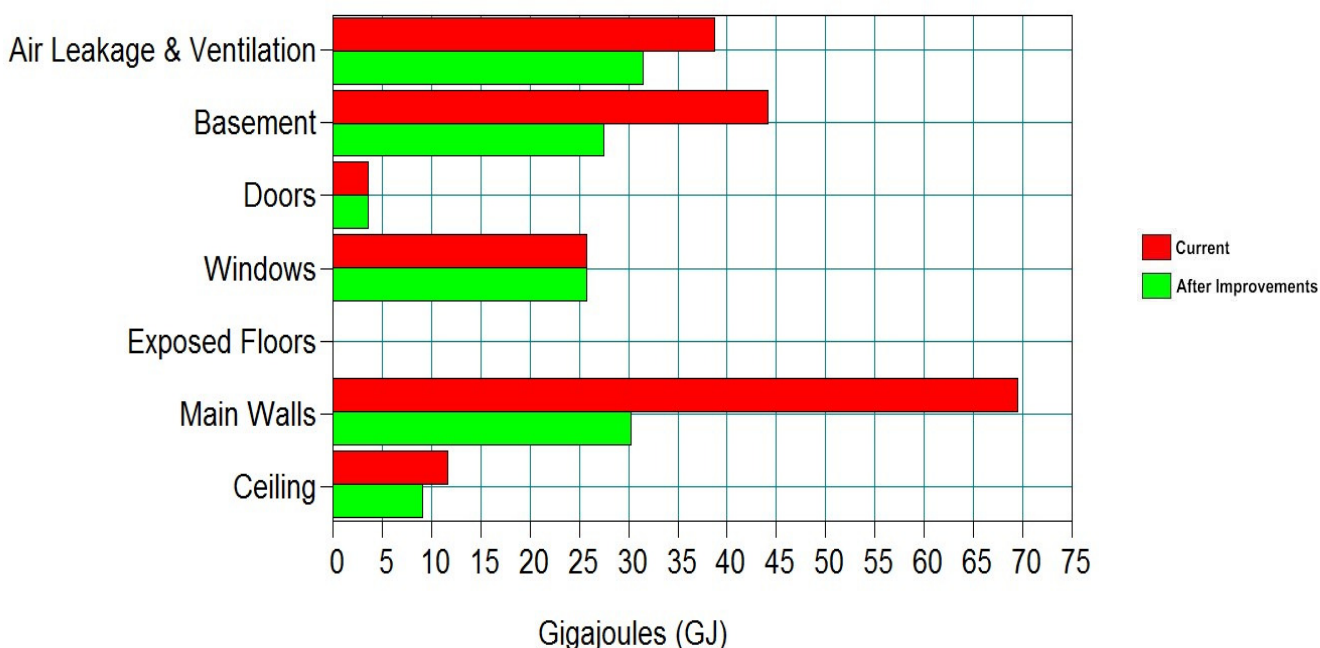


Figure 3 shows where the energy used for space heating is lost from your home. This energy is measured in gigajoules (GJ), where 1 GJ is equivalent to 278 kilowatt-hours (kWh) or 948,000 Btu.

The red bars show the areas where you are losing energy now. The longer the bar, the more energy you are losing. The green bars show the estimated energy loss after you complete your renovations. The larger the difference between the red and the green bars, the greater the potential for energy savings and comfort improvements.

Figure 3. Breakdown of Heat Loss through Building Envelope



Your Home's Estimated Design Heating and Cooling Loads

If you were to implement ALL of the building envelope retrofits recommended in the section of this report entitled 'Your Home Energy Action Checklist', it is estimated that your home's design heat loss would be 45839 Btu/hour (13434 Watts) and its design cooling load would be 22771 Btu/hour (1.9 tons). If you are considering replacing your space heating and/or cooling system, it is recommended that you provide this information to your heating/cooling contractor to help ensure a properly-sized system. However, this is only an estimate based on the data that was collected on your home at the time of the pre-retrofit evaluation. The design heat loss and cooling load can vary depending on different factors, such as the retrofits that you implement and other changes you may make to your home. Prior to having a new heating/cooling system installed, it is recommended that your heating/cooling contractor perform a heat loss/heat gain calculation on your home to determine the capacity and distribution flows for the new equipment. The contractor should hold current certification for Heat Loss/Heat Gain Calculations from the Heating, Refrigeration and Air Conditioning

Important Information Concerning Vermiculite Insulation

Older vermiculite insulation installed in homes may contain amphibole asbestos, which can cause health risks if disturbed and inhaled. If the insulation is contained in the walls or attic spaces and is not disturbed or exposed to the home or interior environment, it poses very little risk. Vermiculite insulation was not detected during the energy evaluation of your home. However, if you find vermiculite insulation during renovations, avoid disturbing it in any way. If you suspect it might be in your home and you plan to undertake renovations (including insulation or air sealing work) that may cause the vermiculite insulation to be disturbed, contact professionals who are qualified to handle asbestos before you proceed with the renovations. For a listing of qualified professionals, look in the Yellow Pages™ under 'Asbestos Abatement & Removal'. For information on vermiculite insulation that contains amphibole asbestos, refer to the Health Canada fact sheet *It's Your Health - Vermiculite Insulation Containing Amphibole Asbestos*. Visit <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/insulation-isolant-eng.php> or call Health Canada at 1-800-443-0395 to order a copy.

5. RECOMMENDED ENERGY-SAVING MEASURES

Main Walls - General

I recommend insulating the exterior walls to a level of R12 or better. Retrofitting walls can help save energy, since walls can account for 10 to 30 percent of heat loss in a house. Depending on the house, and its characteristics, exterior walls can be insulated by filling the wall space (the wall cavity) with blown-in insulation, by adding insulation from the interior or exterior, or a combination of any of these methods.

Before you begin, first check the walls from the interior and exterior for evidence of moisture damage: stains, mould, rotten wood, flaking brick and peeling paint. Also, make sure that damage to the walls is not being caused by problems with the roof and that all flashings are secure. All these problems must be fixed before proceeding. Seal gaps and cracks in the exterior wall-finish, and around window and door frames to prevent water from penetrating into the walls. Do not seal, however, any drainage holes at the bottom of brick-veneer walls or window frames, as these holes are necessary to minimize the impact of water penetration on the wall assembly. Consider additional upgrades related to the walls before retrofitting them, such as electrical wiring, and the installation of air- and vapour-barriers.

Wall insulation upgrades are eligible for an ecoENERGY Retrofit - Homes grant. The grant amount differs, based on the insulation values installed, and the wall surface-area covered. A minimum of 20% of the total exterior wall surface must be insulated to qualify for a grant. Taking photos of the walls while the insulation is being installed then showing them to your energy advisor, during the post-retrofit evaluation, is recommended to ensure that you will get full credit for your newly-installed insulation.

For more information on insulating walls, as well as insulation materials, their properties and installation methods, consult NRCan's *Keeping the Heat In* and Canada Mortgage and Housing Corporation's *About Your House* and *Renovating for Energy Savings* fact sheets.

Recommendation:

I recommend that you insulate your main walls.

Foundations - General

Consider insulating the uninsulated concrete foundation walls with R24 and any empty joist headers with R20. Foundation heat loss can account for 20 to 35 percent of a home's heat loss. A well-insulated foundation can improve home comfort, air quality, structural integrity, and energy efficiency.

Before insulating, first check for moisture in your foundation walls. Tell-tale signs are: staining or mould growth; blistering, peeling paint; efflorescence, a whitish deposit on the surface; spalling or surface deterioration; condensation on walls and metal objects; and a musty smell.

Repair water leaks through the floor and walls, caused by cracks, holes and construction joints. You should also control humidity levels and there should be appropriate damp-proofing or waterproofing on the foundation walls to prevent moisture from wicking through the foundation wall.

To prevent moisture problems, slope the ground away from the house exterior and direct eavestrough

downspouts away from the foundation. Maintain and seal sumps and sump pumps, and install sewer backup equipment, if required.

The type and condition of your foundation will determine if you can insulate from the outside or from the inside. Exterior insulation is the preferred but more costly method. Foundations of rubble, brick, stone and concrete block are best insulated from the exterior. However, you may wish to have an engineer verify your foundation's structural integrity before undertaking any work.

Poured-concrete foundations can be insulated from either the outside or inside, providing there are no serious water or structural problems. Preserved-wood foundations, made with sheathing and studs, are generally insulated by filling in the stud space. Slab-on-grade foundations are typically insulated on the exterior edge. Occasionally, they are insulated on top of the slab and under the floor finish. Basement- and crawl-space insulation upgrades are eligible for ecoENERGY Retrofit - Homes grants. The grant amounts vary depending on the insulation values added and the surface area insulated. Go to *Your Home Energy Action Checklist* in this report to see the recommended insulation value for your foundation and the eligible grant amount. Taking photos of the foundation during installation and showing them to the energy advisor during the post-retrofit evaluation is recommended, to ensure that you receive full credit for your installed insulation. For more information about insulating foundations, as well as insulation materials, their properties and their installation methods, consult NRCan's publication entitled *Keeping the Heat In* and Canada Mortgage and Housing Corporation's *About Your House* and *Renovating for Energy Savings* fact sheets.

Air Sealing

Reducing air leakage is usually the most cost-effective measure a homeowner can undertake; the leakier the home, the greater the savings! It is not unusual for air leakage to account for 35% of the heat loss in a home. In addition to reducing heat loss, air sealing improves comfort, protects the building structure and other materials from moisture damage, and reduces the amount of dust and noise that enters from the outdoors.

A blower door test was performed on your home to measure the amount of air leakage, and to identify the main air leakage locations. The blower door test results are shown on the first page of this report and are explained below.

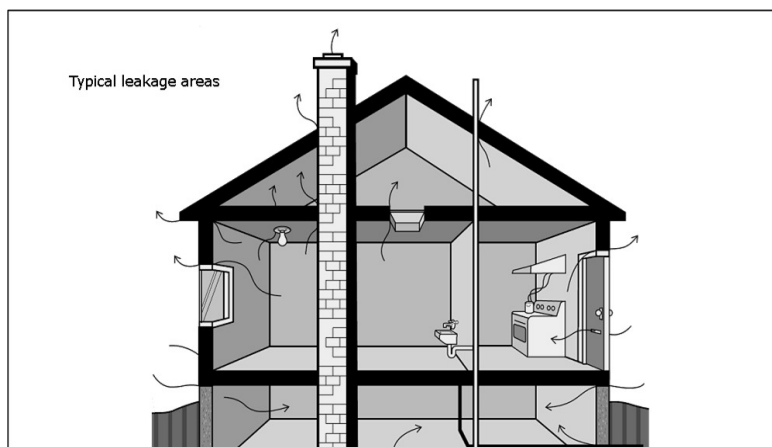
The **Air Leakage Rate at 50 Pascals (ACH)** is the number of complete air changes per hour that occurs in your house when a pressure difference between the inside and outside of the home is set at 50 Pascals (Pa). A 50-Pa pressure difference simulates wind blowing at 56 kilometers per hour on your home. The higher the ACH, the leakier the house.

The **Equivalent Leakage Area (ELA)** represents the total air leakage area. It's like taking all of the air leakage areas (e.g., cracks, holes, etc.) in the home and putting them together to create one large hole in the building envelope. The larger the ELA, the leakier the house. An energy-efficient house might have an ELA as low as 258 cm² (40 square inches) while a leaky house may have an ELA of more than 3226 cm² (500 square inches) Leakage in your home at the time of my evaluation was 376 square inches in total, the majority coming from the unfinished basement, seal joist headers and use vapor barriers when insulating.

Air Sealing Locations in Your Home

Listed below are the most common air leakage areas in a house. Leaks observed during the blower door test are noted. This list will help guide your air-sealing work:

- electrical outlets
- electrical ceiling fixtures
- electrical box and wire penetration
- exterior pipe penetration
- baseboard trims and mouldings
- window frames
- door frames
- fireplace
- chimney
- attic hatch
- basement header (rim joists)
- other _____



Air Sealing Options

Air sealing can be a do-it-yourself option. Another option is to hire a qualified, professional, air sealer who can locate and seal leaks in your home and likely do a more thorough job. This may be an important consideration if you want to air seal your house to meet a specific air leakage goal, and be eligible for a grant. Professional whole-house air sealing costs vary, depending on the size and complexity of the work.

Air Sealing Materials

Weatherstripping reduces air leakage by sealing gaps around moveable parts of windows and doors. Correctly installed, good quality weatherstripping is a cost-effective way to reduce air leakage. Check weatherstripping annually and replace worn materials before the cold weather sets in.

Caulking is used on the interior to seal small cracks and penetrations on the inside surface of your walls, ceilings and floors. Caulking is also used on the exterior to keep out rain, snow, wind as well as insects and rodents. Urethane foam is very good for filling larger joints and cavities.

For information on air sealing your home, consult NRCan's publications entitled *Air-Leakage Control, Improving Window Energy Efficiency and Keeping the Heat In*, and Canada Mortgage and Housing Corporation's *About Your House, and Renovating for Energy Savings* fact sheets.

Recommendation:

I recommend air sealing your home to achieve the air-leakage rate indicated at the beginning of this report, in the section *Your Home Energy Action Checklist*. You must meet or exceed the goal indicated to be eligible for an ecoENERGY Retrofit grant for air sealing. The results of the air sealing work will be measured at the time of your post-retrofit evaluation.

Insulating Cathedral Ceilings

Insulating a cathedral ceiling usually requires the services of a contractor. The main difficulty with cathedral ceilings is the limited space for insulation and ventilation.

When insulating a cathedral ceiling, you must minimize moisture penetration from the house into the roof space, which can lead to moisture problems, reduce the effectiveness of the insulation and damage interior finishes and the roof structure. Therefore, it is critical to seal all air leaks into the ceiling, to keep the humidity level in the house at a reasonable level and to eliminate existing moisture problems.

Thermal bridging occurs when joists or rafters, which have a relatively low insulating value, conduct heat directly from the ceiling to the exterior of the house. Therefore, it is preferable to eliminate or reduce thermal bridging through the ceiling joists or rafters when you insulate cathedral ceilings. In addition to the heat loss, thermal bridging can cause staining or condensation on the ceiling finish along the joists.

Cathedral ceilings can be insulated using one of the following methods:

- insulating from the exterior
- insulating from the interior by removing the existing ceiling
- insulating from the interior by insulating over the existing ceiling
- insulating the roof space

Insulating from the Exterior

Insulating from the exterior is the preferred method for cathedral ceilings but is one of the most labour intensive. This method usually requires that you remove the roof surface to expose the roof space. Therefore, it is more cost effective to perform this work if your roof needs to be repaired or replaced.

Insulating from the Interior by Removing the Existing Ceiling

Insulating from the interior by removing the ceiling is also labour intensive because it involves: removing the existing ceiling finish, possibly removing the existing insulation and vapour barrier; installing insulation and an air and vapour barrier; and installing a new ceiling throughout the house. As well, it is difficult to correctly insulate and seal the top of the interior partitions with this method.

Insulating from the Interior by Insulating Over the Existing Ceiling

This method is somewhat less labour intensive because the existing ceiling can be left in place and insulation and a new air and vapour barrier is installed over the ceiling, followed by a new ceiling finish. As with the method explained above, it is difficult to correctly insulate and seal the top of the interior partitions with this method.

Insulating the Roof Space

To insulate the roof space, loose-fill insulation is blown in to fill the cavity between the ceiling and the roof. This method is performed by an insulation contractor.

This method of insulating can eliminate ventilation and is not recommended unless extra care is taken to reduce air leakage into the roof space and prevent potential moisture damage. Unfortunately, air leakage locations in a cathedral ceiling, such as penetrations for electrical wiring, plumbing stacks and the tops of partition walls, are not easily accessible for sealing. In addition, this insulation method may not reduce thermal bridging if the joists are not covered with insulation.

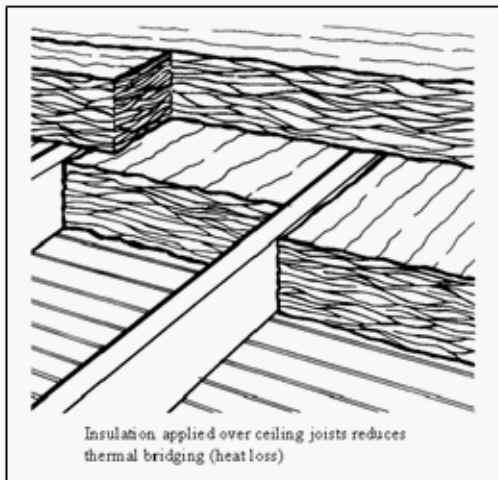
For more information, refer to NRCan's *Keeping the Heat In* and Canada Mortgage and Housing Corporation's *About Your House* and *Renovating for Energy Savings* fact sheets.

Grant Eligibility: The insulation of cathedral ceilings is eligible for an ecoENERGY Retrofit – Homes grant. You must increase the insulation value of the cathedral ceiling by a minimum of RSI 1.8 (R-10).

Recommendation:

Have a qualified contractor insulate your cathedral ceiling to the insulation level noted in the section of this report entitled 'Your Home Energy Action Checklist'.

Attic Insulation



Consider upgrading the attic to R50. In addition to reducing energy use, increasing the insulation level of your attic will keep your house warmer during the winter and cooler during the summer. Effective insulation and air sealing slow the movement of heat and air, and help prevent moisture accumulation in the attic.

When insulating attics, the importance of air sealing cannot be overstated. Before insulating, seal all openings and penetrations to stop interior air from entering the attic. Seal gaps around ceiling light fixtures, plumbing stacks, wiring, chimneys and the tops of interior walls. Install weatherstripping around the hatch or door, and use hooks with eye bolts or a latch to hold the hatch firmly against the weatherstripping.

Ensure that soffit venting is not blocked by the insulation.

Baffles may need to be installed against the underside of the roof along the soffits to ensure proper ventilation.

For more information on insulating attics, consult NRCan's publication entitled *Keeping the Heat In*, Chapters 1–4, and Canada Mortgage and Housing Corporation's *About Your House* and *Renovating for Energy Savings* fact sheets.

Grant Eligibility: Attic insulation upgrades are eligible for an ecoENERGY Retrofit – Homes grant. The grant amount differs according to the existing insulation value and the total insulation value achieved. Information on the eligibility requirements when insulating attics can be found in the brochure entitled *Retrofit Your Home and Qualify for a Grant!*

Recommendation:

Increase the insulation value of your attic to the insulation value noted in the section of this report entitled 'Your Home Energy Action Checklist'.

Air-Source Heat Pumps

Consider upgrading to a high efficient oil furnace , although there is no grant to change to an electric furnace that is a option also. I strongly recommend a air source heat pump in conjunction with the upgraded heating system that you chose. Air-source heat pumps, which include air-to-air and air-to-water heat pumps, extract heat in the air from outside and transfer it to a distribution system in the house during the heating season.

Different terminology is used for the efficiency ratings of heat pumps. For example, air-source heat pumps have seasonal heating and cooling ratings. The heating rating is the Heating Seasonal Performance Factor (HSPF), while the cooling rating is the Seasonal Energy Efficiency Ratio (SEER). However, in the manufacturers' catalogues you may still see Coefficient of Performance (COP) or Energy Efficiency Rating (EER) ratings. COP is used to rate cooling or heating efficiencies and EER only rates the cooling efficiency. The higher the rating, the more energy efficient is the heat pump. ENERGY STAR® qualified heat pumps are among the most energy efficient in the marketplace.

For more information on air-source heat pumps, refer to the NRCan publication entitled, *Heating and Cooling with a Heat Pump*.

Grant Eligibility: ENERGY STAR qualified air-to-air and air-to-water heat pumps are eligible for an ecoENERGY Retrofit - Homes grant for the heating system. These air-source heat pumps are also eligible for an additional ecoENERGY grant for the cooling system, providing the heat pump replaces an existing central air conditioner. For more information, refer to the NRCan publication entitled, *Retrofit Your Home and Qualify for a Grant!*

Recommendation:

I recommend that you install an ENERGY STAR® qualified air-source heat pump to heat and cool your home.

Heating System Upgrade

Consider replacing your existing furnace (see Energy Action Checklist above) with an Energy Star rated system that includes a DC variable speed energy efficient motor. Because of their improved efficiency a high efficient furnace on average will use, on average 35% less fuel than an old furnace. High efficient equipment offering sealed combustion is more efficient and less likely to become a health risk.

Energy Star air source heat pumps can maximize energy savings, improve comfort and both heat and cool your home. In some cases they can reduce heating costs by up to 60%. Air source heat pumps use less energy than furnaces, boilers or electric baseboards.

Refer to one of NRCan's 4 booklets Heating with Gas/Oil/Electricity/Heat Pumps on more detailed information on how to select a more energy efficient heating system. The publications are available online at <http://0ee.nrcan.gc.ca/publications>.

Toilet Fixtures

To meet the requirements for eligibility, new toilet fixtures must meet the certain performance criteria. They must have a water capacity of six litres or less and a flush performance of 350 grams or more. They must also meet the Los Angeles Supplementary Purchase Specification (SPS) for water savings sustainability. Information on the makes and models is available at <http://www.veritec.ca/index.php>.

6. ENERGY-SAVING TIPS

Although these actions may not be eligible for an incentive, they will help you save energy and money:

- Install and use a programmable electronic thermostat (set the heating temperature to 20°C while you are at home and 17°C at night and when you are away). For each degree of setback, you can save up to 2 percent on your heating bills.
- When replacing lighting, appliances, electronics and office equipment, look for ENERGY STAR® qualified products. ENERGY STAR® qualified products use less than half as much energy in standby mode (i.e. when they are turned "off"). For more information, go to <http://energystar.gc.ca>. You can also look for the EnerGuide label to help you select the most energy-efficient model.

- Replace your light bulbs with energy-efficient ones, such as compact fluorescents. They last longer and reduce electricity consumption.
- Insulate the first two metres of the hot and cold water pipes with insulating foam sleeves or pipe wrap insulation. By doing so you will save on your water heating costs and will reduce your water consumption. Besides saving energy, water will arrive at the faucets warmer or colder. Insulating cold water pipes will also avoid condensation from forming on the pipes. This prevents dripping on the ceiling finish or the basement floor. For a fuel-fired water heater, maintain a 15-centimetre (6-inch) clearance between the water piping insulation and the vent pipe.
- Install an ENERGY STAR® qualified kitchen or bathroom exhaust fan.
- Install a timer on your bathroom exhaust fan(s).
- Install low-flow showerheads (rated at less than 9.8 litres per minute [L/min]) and faucet aerators.
- Fix leaky faucets and outside hose bibs.
- Plug your home office equipment into a power bar that can be easily turned off when equipment is not in use. Refer to the fact sheet *Standby Power - When "Off" Means "On"* for information on standby losses.

7. INFORMATION RESOURCES

Home Energy Efficiency

Natural Resources Canada (NRCan) publishes a variety of publications that can help you improve the energy efficiency of your home. These publications are available online at oee.nrcan.gc.ca/publications or by calling the order desk at 1-800-387-2000.

Renovation Publications

Canada Mortgage and Housing Corporation (CMHC) publishes a large number of renovation planning fact sheets that are available at no cost. There are also some excellent in-depth publications for sale. Visit cmhc-schl.gc.ca or call 1-800-668-2642 to order your material of interest.

Hiring a Contractor

Before you have any work done, request quotations in writing from professional contractors and obtain a written contract. CMHC has a very useful fact sheet on this subject, *Hiring a Contractor*, which includes a draft contract. Visit cmhc-schl.gc.ca or call 1-800-668-2642 to order.

Mold

If you suspect mold growth in your home, it is recommended that the mold damaged area(s) be cleaned thoroughly or removed and properly disposed of. To control and reduce the potential for mold growth, maintain indoor humidity at appropriate levels, and remedy water infiltration and leakage issues. Refer to the CMHC fact sheet *About Your House: Fighting Mold - The Homeowner's Guide* for information on proper mold identification and cleaning procedures. Visit cmhc-schl.gc.ca or call 1-800-668-2642 to order.

Radon

Radon is a radioactive gas that is colourless, odourless and tasteless. Radon is formed by the breakdown of uranium, a natural radioactive material found in soil, rock and groundwater. When radon is released from the ground into the outdoor air, it gets diluted to low concentrations and is not a concern. However, in enclosed spaces, like houses, it can sometimes accumulate to high levels, which can be a risk to the health of you and your family. For more information, refer to the CMHC publication *Radon – A Guide for Canadian Homeowners* or visit the Health Canada web site at <http://www.hc-sc.gc.ca/ewh-semt/radiation/radon/index-eng.php>.

Humidity Control

A relative humidity (RH) level of between 30 and 55 percent is recommended in the home. If you have a humidifier or dehumidifier, ensure that it is regularly cleaned and maintained, and that the humidistat is set at an appropriate humidity level. You can use a hygrometer to measure relative humidity and the CMHC fact sheet *Measuring Humidity in Your Home* gives good advice. In addition, dehumidifiers can help reduce moisture levels especially in basements.

GET STARTED TODAY!

Now that you have the tools to improve your home's energy efficiency, you can look forward to enjoying the added comfort of your ecoENERGY improved home. Not only will you benefit from increased comfort, you will also save on your energy bills year after year. And let's not forget your reduction of greenhouse gases!