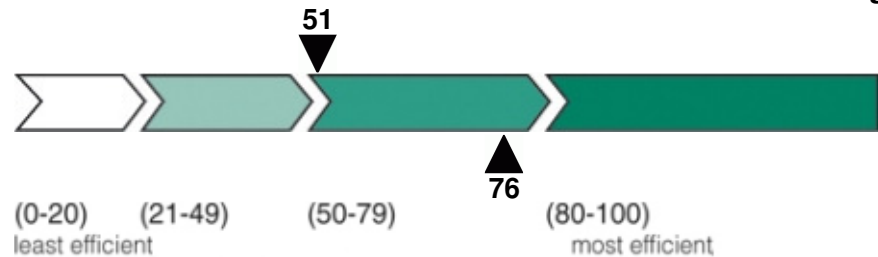


Energy Efficiency Evaluation Report
File number: 4E08D00001

Property Owner:

John Smith
123 Main St.
Niagara, Ontario
L1L 0L0

EnerGuide Rating



House type: Single detached

No. of storeys: One

No. of RO windows: 11
RO = rough opening

Air conditioner: Yes

Heating system: Natural gas
Furnace

Domestic hot water: Natural gas

Air leakage rate @ 50 Pa: 8.48 ACH
ACH = number of air changes per hour

Equivalent Leakage Area: 1224 cm²

The results of your pre-retrofit energy evaluation show that your house rates 51 points on the EnerGuide scale. If you implement all of the recommendations in this report, you could reduce your energy consumption by up to 50% and increase your home's energy efficiency rating to 76 points. The average energy efficiency rating for a house of this age in Ontario is 61; whereas the highest rating achieved by the most energy-efficient houses in this category is 83.

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 76 points, you will reduce its GHG emissions by 5.3 tonnes per year!

Remember that you have up to 18 months from the date of this report to complete your renovations and qualify for an ecoENERGY Retrofit - Homes grant. So the sooner you start your renovations, the earlier you will see the energy savings. And let's not forget how reduced energy consumption helps protect the environment.

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

Service Organization: GreenSaver-CAN
Telephone: 289-820-6440

Date of evaluation: August 14, 2009
Date of report: August 15, 2009







Certified Energy Advisor: Nick Ehlert



1. YOUR HOME ENERGY ACTION CHECKLIST

This is your checklist of recommended retrofits to improve the energy efficiency of your home. Included are the federal grant amounts that you could receive as well as information on the potential for energy savings and EnerGuide rating improvement. For more information, read the 'Recommended Energy-Saving Measures' section of this report and the NRCan brochure entitled *Retrofit Your Home and Qualify for a Grant!* found in your ecoENERGY homeowner kit. 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.

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

Retrofits	Federal Incentive	Potential for Energy Savings *	Potential Rating Improvement
These upgrades qualify for a federal grant up to a maximum total incentive value of \$5,000:			
* One (1) star = lowest savings / five (5) stars = highest savings			
HEATING SYSTEM			11.1 points
Replace your heating system with an ENERGY STAR® qualified gas furnace that has a 94.0% annual fuel utilization efficiency (AFUE) or higher and a brushless DC motor.	\$650		
BASEMENT/CRAWL SPACE INSULATION			13.0 points
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).	\$625		
Seal all of your basement header area and increase all of its insulation value by a minimum of RSI 3.5 (R-20).	\$125		
ATTIC/ROOF INSULATION			3.9 points
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).	\$750		
WINDOWS AND DOORS			1.6 points
Replace 7 window(s) / skylight(s) with models that are ENERGY STAR® qualified for climate zone B.	\$280		
AIR SEALING			0.8 points
Improve the air tightness of your house by 14 percent to achieve an air change rate per hour of 7.27 at a pressure of 50 Pa.	\$190		
COOLING SYSTEM (A/C)			0 points
Replace your central air conditioning system with an ENERGY STAR® qualified system that has a seasonal energy efficiency ratio (SEER) of 14.5 or higher.	\$250		

Natural Resources Canada (NRCan) reserves the right to update the grant amounts, as required.

2. THE ENERGUAGE RATING SYSTEM

The EnerGuide rating system is a standardized method of evaluation that lets homeowners compare their

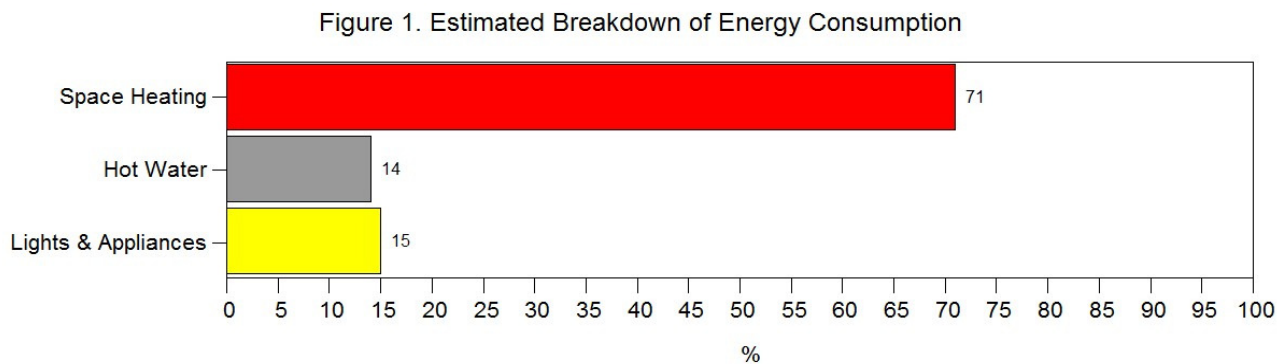
house's energy efficiency rating to similar sized houses in similar regions. The EnerGuide rating considers the house's estimated annual energy consumption based on an in-depth evaluation of the house's characteristics such as location, size, equipment and systems, insulation levels, air tightness, etc. 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, 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 52 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 71 percent by performing all of the recommended upgrades.

Figure 2. Estimated Percentage of Potential Energy Savings

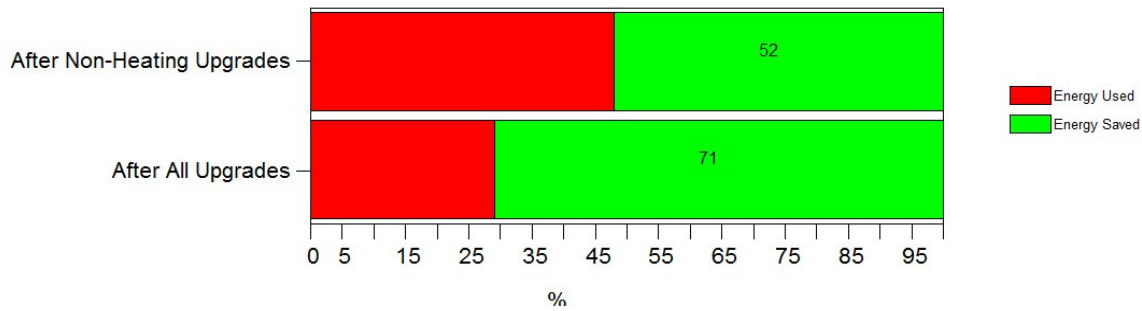
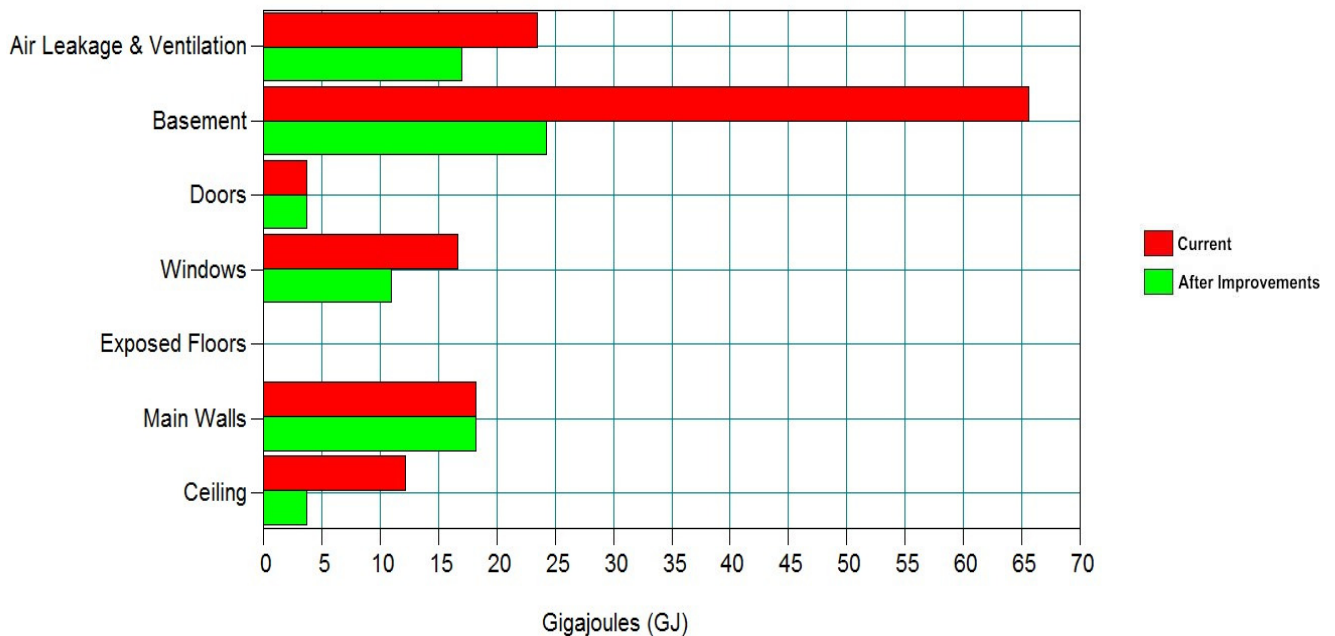


Figure 3 shows where the energy used for space heating is lost from your home. This energy is measured in gigajoules (GJ), where 1 GJ is equivalent to 278 kilowatt-hours (kWh) or 948,000 Btu.

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



5. RECOMMENDED ENERGY-SAVING MEASURES

Foundations - General

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 weeping tiles and 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.

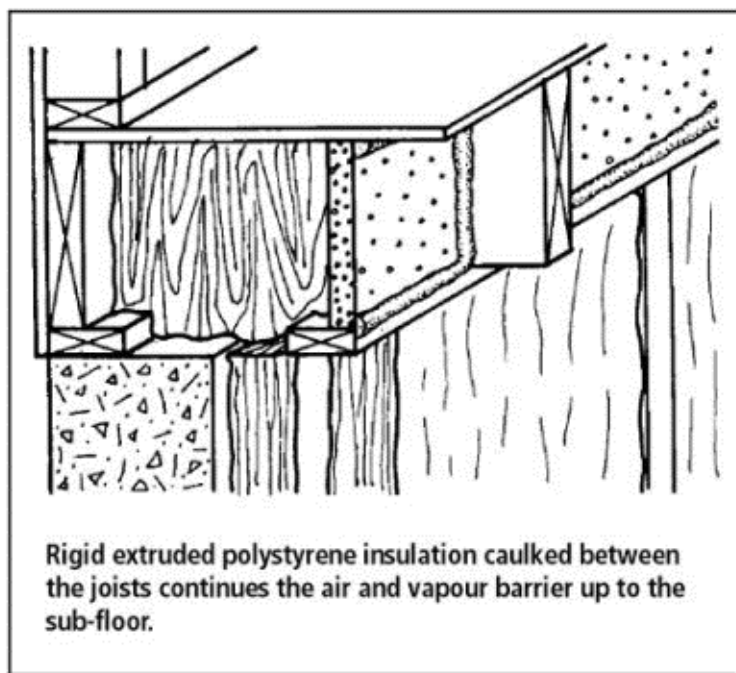
The type and condition of your foundation will determine if you can insulate from the outside or from the inside. Exterior insulation is the preferred but more costly method. Foundations of rubble, brick, stone and concrete block are best insulated from the exterior. However, you may wish to have an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

The basement header area, which is the area where the first floor joists sit on the foundation wall, is highly susceptible to air leakage and heat loss. Except for foundations where the joists are embedded in the foundation wall or that exhibit signs of moisture, the basement header area should be sealed and insulated.

First, seal all of the joints along the header joist, the floor above, the bottom plate, the foundation wall, as well as any openings and penetrations, using latex acrylic caulking or silicone. For large joints and openings, use urethane foam sealant. Then fill the space between the joists with batt insulation, ensuring that there is no air space behind the insulation and that any water pipes are on the warm side of the insulation. Next, install a piece of low-permeability, rigid, foam board insulation, such as extruded polystyrene, polyurethane or polyisocyanurate, which has been cut to fit tightly between the joists. Seal the edges of the rigid insulation with a compatible, non-hardening sealant. If the basement walls below are insulated and have a polyethylene air and vapour barrier, this barrier should be sealed to the rigid insulation.



Another very effective method to seal and insulate the basement header is to have a contractor apply spray foam insulation to the entire area.

Note that if a foam product (spray foam or foam board) is used, building codes may require that it be covered with a fire-resistant material, such as drywall. Check with your local building authorities.

Caution:

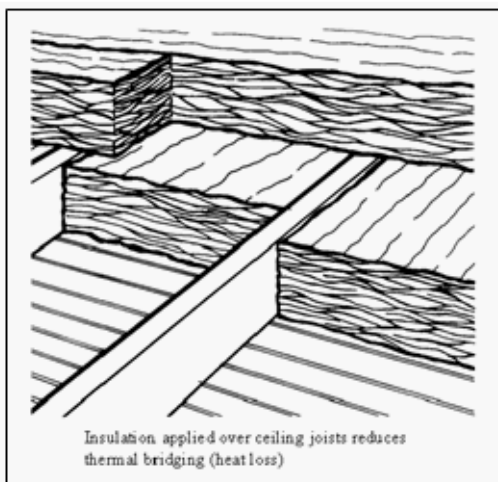
It is not recommended to insulate between joists that are embedded in a stone, brick, or concrete foundation wall. Air circulation may be necessary in this area to prevent moisture buildup and the deterioration of the joist ends. In these cases, it is best to simply seal the joints along the foundation, joists and floor.

Grant Eligibility: The insulation and air sealing of the basement header is eligible

for an ecoENERGY Retrofit – Homes grant. Note that you must seal and insulate the entire basement header and increase the insulation value by a minimum of RSI 3.5 (R-20) to qualify. For more information, refer to the brochure entitled *Grant Table for ecoENERGY Retrofit - Homes*.

Recommendation: Seal and insulate your basement header as noted in the section of this report entitled 'Your Home Energy Action Checklist'.

Attic Insulation



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.

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. Note that you must insulate a minimum of 20 percent of the total ceiling area and reach a total minimum insulation value in order to qualify. For more information, refer to the brochure entitled *Grant Table for ecoENERGY Retrofit - Homes*. **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'.

Windows

You may be considering replacing some or all of your windows for various reasons, such as to improve aesthetics, reduce maintenance, increase house resale value, improve comfort, energy efficiency or safety, or to replace broken or inoperable windows. Remember that the selection of new windows for your home will affect energy efficiency and comfort levels for years to come. Technical breakthroughs such as low-E coatings, triple glazing, inert gas fills, and better edge spacers and frames have improved window technology in recent years, offering improvements in solar control, thermal comfort and energy efficiency.

ENERGY STAR® qualified windows, which are rated for four climate zones, are among the most energy efficient in the marketplace. They will help keep your home comfortable year-round and reduce noise from the outside. Depending on the amount of humidity in your home, there may be less condensation on your windows during cold weather.

For information on ENERGY STAR qualified windows, doors and skylights, go to www.energystar.gc.ca.

Grant Eligibility: The replacement of windows with models that are ENERGY STAR qualified is eligible for an ecoENERGY Retrofit - Homes grant. Grants for windows are based on the number of rough openings (RO) in which windows were replaced between the pre- and post-retrofit evaluations. The first page of this report indicates how many ROs are in your home. You must choose models that are ENERGY STAR qualified for your climate zone. Keep proof of the ENERGY STAR qualification of the windows for your climate zone and show it to the energy advisor during the post-retrofit evaluation of your home. For more information, refer to the brochure entitled *Grant Table for ecoENERGY Retrofit - Homes*.

Recommendation

Replace selected windows with ENERGY STAR qualified windows. When replacing your windows, make sure that the models you select match your climate zone. Refer to the section of this report entitled 'Your Home Energy Action Checklist' to determine your climate zone and the number of windows recommended for replacement.

Draftproofing

Closed cell foam rubber weatherstrip around the attic hatch ledge

Foam gasket behind cover plates and plug unused electrical receptacles

Install bathroom and kitchen exhaust fans connected to rigid, insulated (where exposed) ducts leading to individual, premium, weatherstripped external vent caps

Install new vinyl coated weatherstripping and threshold bumper on exterior door(s)

Poly foam seal basement header and around all service penetrations (plumbing stack, water, hydro, air conditioning)

Furnace

Provide furnace with external combustion air intake pipe

Extend basement forced air ducts to perimeter floor with matching return duct(s) near center

Estimated furnace output for upgraded house is 31,000 BTU/hr.

If this is a first time installation of a condensing furnace, and it has a 94 % AFUE or higher and a brushless DC motor, the federal grant is \$790

6. ENERGY-SAVING TIPS

Although these actions are not 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.
- 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 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.

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.

Vermiculite and Renovation

Older vermiculite insulation installed in homes may contain amphibole asbestos. If the insulation is in the walls or attic spaces and is not disturbed, it poses very little risk to the health of the occupants. However, if vermiculite is found during a renovation, or if you suspect it might be in your home and you plan to renovate (including insulation or air sealing work), contact professionals who are qualified to handle asbestos before you proceed with the renovation. 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 hc-sc.gc.ca/iyh-vsv/prod/insulation-isolant_e.html or call Health Canada at 1 800 443-0395 to order a copy.

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!

Remember, you have up to 18 months to complete your retrofits and qualify for an ecoENERGY Retrofit - Homes grant.