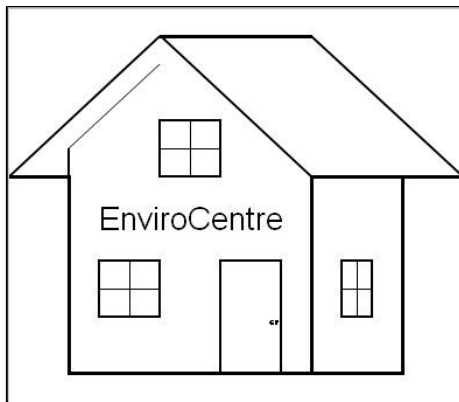
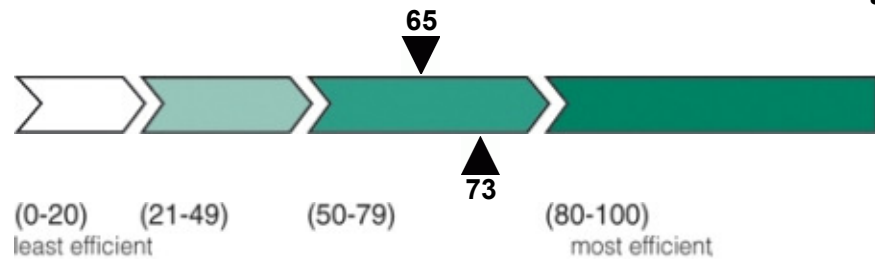


Energy Efficiency Evaluation Report

Property Owner:

Leacock Dr
Ottawa, Ontario

EnerGuide Rating



House type: Row house, end unit

No. of storeys: Two

No. of RO for windows: 8
RO = rough openings

Air conditioner: No

Heating system: Natural gas Furnace

Domestic hot water: Natural gas

Air leakage rate @ 50 Pa: 5.61 ACH
ACH = number of air changes per hour

Equivalent Leakage Area: 1354 cm²

Congratulations. By obtaining an energy evaluation of your house using the EnerGuide Rating System (ERS), you have taken the first step in smart home renovations. Natural Resources Canada (NRCan) administers ERS, which is used in many provinces and territories as the basis for local or regional programs.

The results of your pre-retrofit energy evaluation show that your house rates 65 points on the EnerGuide scale. If you implement all the recommendations in this report, you could reduce your energy consumption by up to 24% and increase your home's energy efficiency rating to 73 points. The average energy efficiency rating for a house of this age in Ontario is 61, while the highest rating achieved by the most energy-efficient houses in this category is 83.

By improving your home's energy efficiency rating to 73 points, you will reduce its greenhouse gas emissions by 2.0 tonnes per year.

This document is a roadmap to help you save energy. Please read it carefully, and call the number below if you have questions or if you find any discrepancies with the description of your property.

EnerGuide is an official wordmark of NRCan and is used with permission.

Service Organization: EnviroCentre
Telephone: 613-656-1011

Certified Energy Advisor:

EnviroCentre Authorized Signature

HOT2000v10.51

1. YOUR HOME ENERGY ACTION CHECKLIST

Energy-efficient upgrades are a great investment that can reduce energy bills while making living spaces more comfortable, increasing property values and contributing to a healthier environment. The sooner you start your retrofits, the sooner you can benefit from the energy savings and other advantages. Visit <http://oee.nrcan.gc.ca/homes> for more information on energy-efficient homes from NRCan.

This is your checklist of recommended retrofits to improve the energy efficiency of your home.

Retrofits	Potential for Energy Savings *	Potential Rating Improvement
* One (1) star = lowest savings / five (5) stars = highest savings		
HEATING SYSTEM 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 (when installing a CONDENSING furnace for the FIRST time).	★★★	3.8 points
DOMESTIC HOT WATER SYSTEM (DHW) Replace your domestic hot water heater with an ENERGY STAR® qualified Instantaneous (condensing) gas-fired water heater that has an energy factor (EF) of 0.90 or higher.	★★	1.6 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).	★★	2.3 points
AIR SEALING Improve the air tightness of your house by 10 percent to achieve an air change rate per hour of 5.05 at a pressure of 50 Pa.	★	1.0 points

Recommendations: 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. For more information on implementing the recommended retrofits, carefully read Section 5, *Recommended Energy-Saving Measures*. You can find information on how to download or order publications referenced throughout this document in Section 7, *Information Resources*.

House as a System: A building is made up of components that work together to form an integrated system. The performance of one component depends on its relationship with other components in the same system. Your ventilation and heating components, construction materials, their assembly and the behaviour of occupants all interact – a change to one affects all others. Changing one component without considering how it affects other components can actually waste energy and money.

EnerGuide and ENERGY STAR®: Many types of residential heating and cooling equipment and major appliances carry an EnerGuide label to help you compare the energy consumption of different models (<http://oee.nrcan.gc.ca/energuide>). The ENERGY STAR symbol goes one step further and identifies specific models that meet or exceed premium levels of energy efficiency (<http://oee.nrcan.gc.ca/energystar>). ENERGY STAR is a registered trademark of the United States Environmental Protection Agency and is used with permission.

Products and services: As the homeowner, you are solely responsible for choosing the products and services for your renovations. 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. 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, that you obtain all necessary permits, and that you pay applicable taxes for goods and services. In addition, NRCan offers a Web page at <http://oee.nrcan.gc.ca/homes/health> with important health and safety considerations.

Regional benefit programs: Although the Government of Canada does not offer financial incentives for energy upgrades, a number of provinces, territories, municipalities and energy utilities offer grants, rebates and other benefits for implementing retrofits and reducing energy use. NRCan maintains formal agreements with a number of these organizations to transfer your ERS data with your consent. Personal information in this document is protected under Canada's *Privacy Act*, and will be maintained in a secure personal information bank (NRCan/P-PU-090). For contact information on energy-saving programs across Canada, visit <http://oee.nrcan.gc.ca/homes/programs> or call 1 800 O-Canada (1-800-622-6232). It is your responsibility, to verify and comply with the terms, conditions and eligibility criteria of these programs. Please note that the renovations recommended in this report are not necessarily eligible for benefits in your province or territory.

Good luck with your energy efficiency upgrades, and don't forget to call the number on the first page once you have completed your work if you would like to obtain a new ERS label showing the improved energy performance.

2. THE ENERGUIDE RATING SYSTEM (ERS)

ERS is a standardized method of evaluating residential energy efficiency lets homeowners compare the energy efficiency rating of their house to similar-sized houses in their region. Since 1998, over one million Canadians have obtained an evaluation for their properties.

The rating considers the estimated annual energy consumption of the property based on an in-depth evaluation of 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 kilowatt hours (kWh) per day; and regional weather data that is averaged over 30 years.

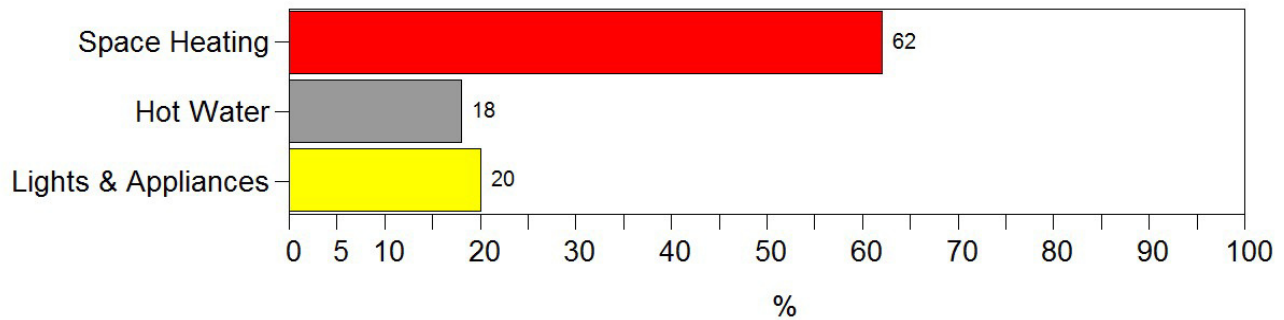
Figures 1 through 3 show the results of your energy evaluation based on the standardized conditions. The results may not entirely reflect your household since your actual energy consumption and future savings are influenced by the number of occupants, their day-to-day habits and lifestyles. However, the results provide an excellent guide to the best improvements for your specific home. Using standardized testing and evaluation conditions ensures that all homes are assessed under identical conditions so that the results can be used to compare other homes, independent of occupancy type. Similar to fuel consumption ratings for vehicles, your energy consumption will vary depending on your personal usage patterns, but the energy rating remains a valuable and informative decision-making tool.

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 building envelope, including the basement and exterior walls, upper floor ceilings, windows and doors. 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 regularly maintenance and upgrades help 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.

Figure 1. Estimated Breakdown of Energy Consumption



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 13% 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 28% by performing all of the recommended upgrades.

Figure 2. Estimated Percentage of Potential Energy Savings

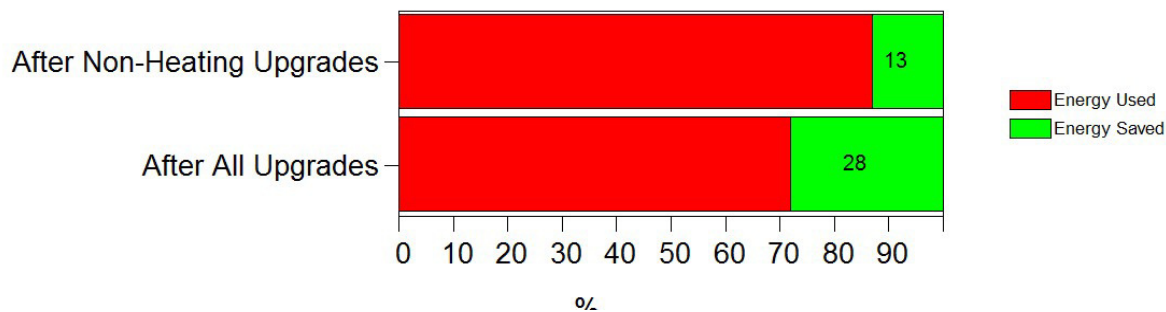
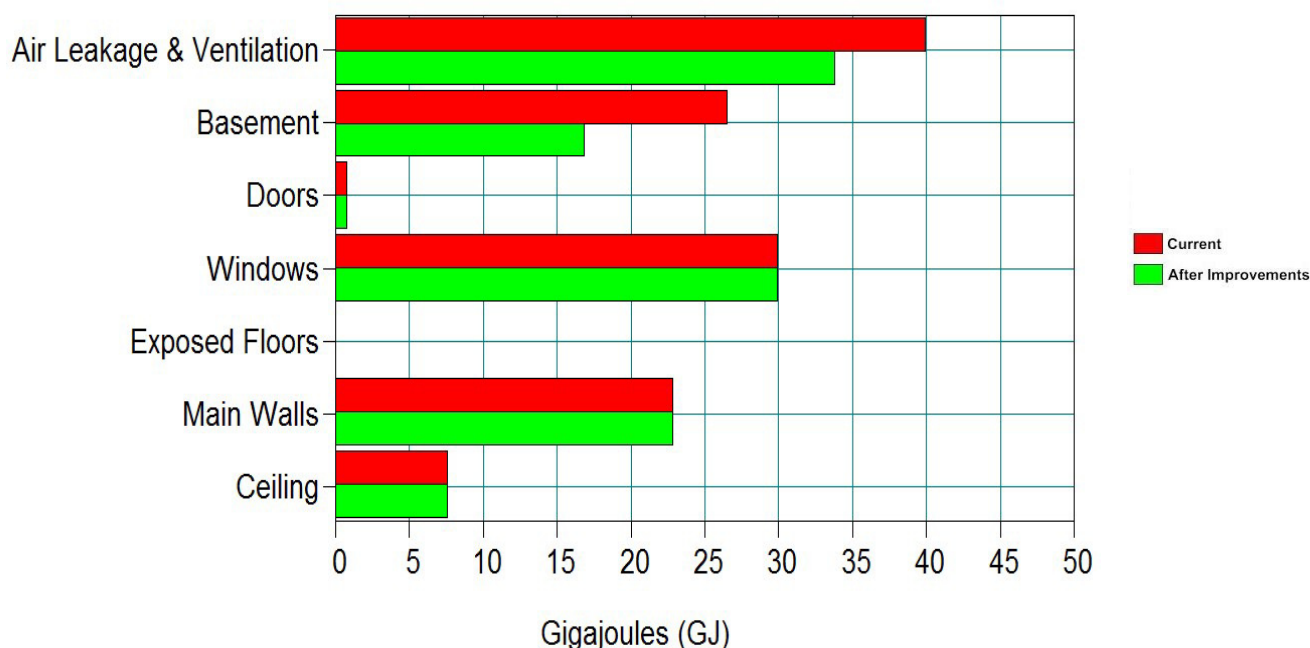


Figure 3 shows where the energy used for space heating is lost from your home. This energy is measured in gigajoules (GJ), which is a Metric term that represents energy use. One GJ is equivalent to 278 kWh of electricity, 26.1 cubic metres of natural gas, 25.8 litres of heating oil or 948,000 Btu. A gigajoule of natural gas can heat enough water for 50 ten-minute showers, a gigajoule of propane can cook 2500 hamburgers, and a gigajoule of electricity can keep a 60-watt bulb continuously lit for six months.

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

Design loads are used to size the heating and cooling equipment for your home. The smaller the design loads, the smaller the equipment capacity required to heat and cool your house. 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 load would be 44742 Btu/hour (13113 Watts) and its design cooling load would be 29787 Btu/hour (2.5 tons). 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, your contractor should 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 Institute of Canada (HRAI). For a list of certified contractors, visit <http://hrai.ca> and click on "SkillTech" and "Certified Installers and Designers", or call 1-800-267-2231.

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

Domestic Hot Water Systems (DHW)

After space heating, water heating is the second largest user of energy in most Canadian homes, accounting for some 20 percent of total annual energy consumption. Part of this energy consumption is wasted through

standby heat loss and wasted hot water. Standby heat loss is usually heat lost through tank walls and water piping. For fuel-fired tank water heaters, it also includes heat loss up the chimney.

The efficiency of fuel-fired DHW equipment is expressed as the energy factor (EF) or thermal efficiency. The higher the number, the more efficient the water heater. The efficiency of electric DHW equipment is expressed in Watts of standby loss, where the lower the number, the more efficient the water heater.

If you are replacing your DHW equipment, look for an energy-efficient model and make sure it's not oversized for your needs. Use manufacturers' sizing charts available from your contractor or retailer. For tank water heaters, look for models that have an external cold-water inlet at the bottom of the tank and integral heat traps. Also look for high overall insulation values.

Water- and Energy-Saving Tips:

- Fix dripping taps.
- Install low-flow showerheads, with ratings of less than 9.5 litres per minute.
- Install faucet aerators.
- Wash laundry with cold water.
- Insulate metallic, hot and cold water pipes with pipe insulation. Water will arrive at the faucets closer to the desired temperature, either warmer or cooler. This reduces tap-running time and reduces water wastage. Insulating cold-water pipes also reduces condensation on the pipes that can cause water stains on surrounding areas.
- For plastic water piping, insulate with approved compatible insulation products.

Note: For fuel-fired water heaters, maintain a 15-centimetre (six-inch) clearance between the pipe insulation and the vent pipe.

For more information on domestic hot water heaters, consult NRCan's publications entitled, *Heating with Gas*; *Heating with Electricity*; and *Heating with Oil*.

EnviroCentre's experienced advisors offer up-to-date information on energy-saving renovations. .

Air Sealing

Reducing air leakage is usually the most cost-effective, energy-saving measure a homeowner can undertake; the leakier the home, the greater the savings! It is not unusual for air leakage to account for up to 35 percent 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. Air sealing can also reduce air conditioning loads and energy costs.

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 sq. in.).

Your house has a natural air change rate of **0.32 ACH** at normal pressures (estimated air leakage during the critical month of October). This is **moderate**.

If the natural ACH is low (less than 0.2 ACH), extra ventilation may be required to reduce the potential for conditions such as stale air, high humidity levels, and condensation on windows. If below 0.15, installation of a Heat Recovery Ventilator (HRV) is strongly recommended.

A natural ACH over 0.4 is usually an indication that the house is drafty and has a large amount of uncontrolled air leakage and unnecessary energy loss. Natural Resources Canada suggests levels of between 0.25 and 0.30 ac/h (natural plus mechanical) as a good rate to ensure good indoor air quality is maintained in the home.

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. 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, high quality weatherstripping is a cost-effective way to reduce air leakage. Check weatherstripping annually and replace worn materials before the cold weather sets in.

Interior-grade caulking is used on the interior to seal small cracks and penetrations on the inside surface of your walls, ceilings and floors. Exterior-grade caulking is 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 but must be protected from the elements and flame sources.

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:

Air seal your home to achieve the air leakage rate indicated at the beginning of this report in the section entitled *Your Home Energy Action Checklist*.

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.

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.

EnviroCentre has helped over 15,000 households in Eastern Ontario.

Foundations - Interior Insulation

Before insulating foundation walls from the interior, a moisture barrier is usually applied to the inside face of the walls, up to the grade level. However, the use of foam board, especially in basements and crawlspaces, may act as a moisture barrier and negate the utility of a separate sheet moisture barrier.

The most common methods of insulating foundations from the interior are to install a wood-frame wall and batt insulation or to apply rigid-board insulation directly to the foundation walls, or both. Wood-frame walls allow for wiring and plumbing to be installed and then hidden, plus it provides solid backing for finishing materials. If you use the framed-wall method, it is recommended to build the wall out from the foundation wall by 64 mm (2 1/2 in.) so that a horizontal layer of batt insulation can be installed behind the framed wall.

A hybrid system of water-resistant foam board (type IV or V extruded polystyrene, polyurethane or polyisocyanurate) with RSI values of 0.035/mm to 0.045/mm (R-5 to R-6/inch) glued directly to the foundation wall, and then the installation of a wood frame wall with additional insulation in the stud space is also popular. **To achieve R10, I recommend installing 2 inches of foam board, covered with drywall (no framing necessary). for higher R-values, use a hybrid approach: For example, install R10 extruded polystyrene on the wall and cover with an R14 rock wool filled stud wall as described above to get a total of R24.**

A very effective, but more expensive, insulation-treatment is spray-on, closed-cell polyurethane foam applied by a contractor. It has excellent insulating qualities of RSI 0.042/mm (R-6/inch) and is very effective in retarding moisture that may penetrate through the foundation wall and would normally evaporate into the room. In addition, it will not support mould growth. Finally, an air- and vapour-barrier may be required on the warm side of the insulation, depending on the type of insulation products used, followed by an interior finish. If a foam product is used, building codes may require that it be covered with a fire-resistant material, such as drywall.

Recommendation: I have modeled your upgrade using a roll on batt insulation that has a moisture barrier against the concrete and R12 blanket fibreglass insulation, There is a vapour barrier on the visible side of the insulation. This can be left exposed or you can finish with a framed wall.

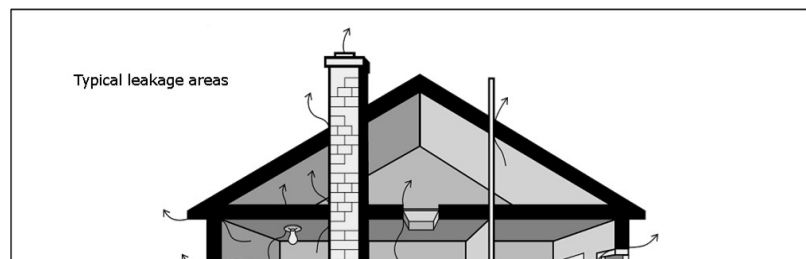
Insulate your foundation walls from the interior and increase their insulation value as noted in the section of this report entitled *Your Home Energy Action Checklist*, providing that there are no serious moisture or structural problems.

EnviroCentre helps reduce energy use while improving home comfort.

List of Air Leaks

The following is a list of areas where air leaks were observed in your house from top to bottom, along with some other common areas of air leakage. If your estimated rate of natural air leakage is low, airsealing should be approached with caution, as it may lead to poor indoor air quality. However, these leaks can still be sealed to improve comfort and energy savings, especially if you intend to install a Heat Recovery Ventilator (HRV). Major leaks are marked **.

- Bathroom Exhaust - This area had evidence of water around the vent, damaged drywall should be repaired when replacing the unit and seal gap between fan housing and drywall/plaster with foil tape or caulking
- Common (Party) Wall - seal in basement and on other floors, to



minimize the effect of your neighbour's house on your air leakage rate

- Leaky basement wall penetrations - electrical main, wire to exterior near back of the home, dryer vent, and the fresh air intake for the furnace- caulk to wall may require cement grout from the exterior, inspect caulking seasonally and upgrade as necessary
- Main electrical entry, caulk and seal from exterior.

Common Wall: Some air leaks in the test may not represent real drafts, but air coming from a neighbouring house. Our analysis assumes all drafts are bringing exterior air into the house, therefore the leakage rate and predicted energy savings may be exaggerated.

Heating System

If you are considering replacing your heating system, it is strongly recommended that you follow these important steps first:

- Complete all of the building envelope energy efficiency upgrades, such as air sealing and insulation, because this will likely result in the need for a smaller and less expensive heating system.
- Next, ensure that your heating contractor performs a heat loss calculation on your home to determine the capacity and distribution flows for the new equipment. A properly sized heating system will reduce on/off cycling, energy use, wear and tear on parts, and improve comfort. It is advisable to hire a contractor that is certified in heat loss and heat gain calculations by an industry-recognized organization, such as the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI), which is also recognized by your local jurisdiction. For a list of HRAI certified designers and installers, visit www.hrai.ca and under *Home & Building Owners*, click on *Find a Contractor*. Click on *3. Locate an HRAI Member Company contractor* and fill out the required information and then click on *Search The Database* or call 1-800-267-2231.

6. ENERGY-SAVING TIPS

These actions may help you save energy and money:

- 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. For more information, visit <http://energuide.gc.ca>.
- 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 entertainment system(s) and home office equipment into power bars that can be easily turned off when equipment is not in use. Refer to the fact sheet *Standby Power - When "Off" Means "On"* at <http://oee.nrcan.gc.ca/residential/business/manufacturers/standby-power-fact.cfm> for information on standby losses.

7. INFORMATION RESOURCES

Publications from Natural Resources Canada (NRCan)

Visit <http://oee.nrcan.gc.ca/homes/library> or call the order desk at 1-800-387-2000. Start with these publications:

- **Keeping the Heat In** – NRCan's Office of Energy Efficiency offers a booklet to educate you on basic principles of building science and to provide you with guidance in their home retrofit projects such as insulation and air sealing improvements. <http://oee.nrcan.gc.ca/homes/keeping>
- **Planning Energy Efficiency Renovations For Your Home** - This pamphlet from explains what you should consider when planning energy efficiency renovations, choosing products, doing the work yourself and hiring a contractor. <http://oee.nrcan.gc.ca/homes/planning>
- **Air Conditioning Your Home** – <http://oee.nrcan.gc.ca/equipment/airconditioning>
- **Energy-Efficient Residential Windows, Doors and Skylights** – <http://oee.nrcan.gc.ca/equipment/windows-doors/18017>
- **Heat Recovery Ventilators** – <http://oee.nrcan.gc.ca/equipment/ventilators>
- **Heating and Cooling with a Heat Pump** – <http://oee.nrcan.gc.ca/equipment/heatpump>
- **Heating with Electricity** – <http://oee.nrcan.gc.ca/equipment/electricity>
- **Heating with Gas** – <http://oee.nrcan.gc.ca/equipment/gas>
- **Heating with Oil** – <http://oee.nrcan.gc.ca/equipment/oil>

Publications from the Canada Mortgage and Housing Corporation (CMHC)

Visit <http://cmhc-schl.gc.ca/en/corp/li> or call the order desk at 1-800-668-2642. Start with these publications:

- **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, which includes a draft contract. http://cmhc-schl.gc.ca/en/co/renoho/refash/refash_009.cfm
- **Fighting Mold – The Homeowner's Guide** – If you suspect mold growth in your home, CMHC recommends 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 this guide for information on proper mold identification and cleaning procedures. http://cmhc-schl.gc.ca/en/co/maho/yohoyohe/momo/momo_005.cfm
- **Measuring Humidity in Your Home** – CMHC recommends a relative humidity (RH) level of between 30 and 55% is 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. This CMHC fact sheet provides valuable advice. In addition, dehumidifiers can help reduce moisture levels especially in basements. http://cmhc-schl.gc.ca/en/co/maho/yohoyohe/momo/momo_002.cfm
- **About Your House** – http://cmhc-schl.gc.ca/en/co/co_001.cfm
- **Renovating for Energy Savings** – http://cmhc-schl.gc.ca/en/co/renoho/reensa/reensa_001.cfm

Publications from Health Canada

Visit <http://hc-sc.gc.ca/contact/pubs-eng.php> or call the order desk at 1-800-267-1245. Start with these publications:

- **Radon – A Guide for Canadian Homeowners** – 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. <http://cmhc-schl.gc.ca/odpub/pdf/61945.pdf>
- **Vermiculite Insulation Containing Amphibole Asbestos** – Some vermiculite insulation may contain amphibole asbestos fibres. These products can cause health risks if disturbed during maintenance, renovation or demolition. However, there is currently no evidence of risk to your health if the insulation is sealed behind wallboards and floorboards, isolated in an attic, or otherwise kept from exposure to the interior environment. <http://hc-sc.gc.ca/hl-vs/iyh-vsv/prod/insulation-isolant-eng.php>

GET STARTED TODAY!

Now that you have this roadmap to improve your home's energy efficiency, you can look forward to enjoying the added comfort of your improved home. Not only can you benefit from increased comfort, you can also save on your energy bills year after year. And don't forget how your retrofits can help the environment.

For more information on energy-efficient homes, including links to programs across the country, please visit <http://oee.nrcan.gc.ca/homes>.

Good luck with your upcoming retrofits.

A Note from your Energy Advisor

Thank you for engaging EnviroCentre to perform your energy assessment. If you have any questions concerning the recommendations in this report, please contact EnviroCentre at 613 656-0100 or visit our website, <http://envirocentre.ca>.

The information and recommendations provided by the EnviroCentre during your audit and in this report, including any estimated savings, are based on a visual inspection of your building or business, its equipment, and information available on your use of energy. This report is based on the Energy Advisor's best judgment given the information and time available. Please note that it outlines only potential savings and makes no guarantee about actual savings partly because the advisor has been unable to measure the actual consumption of your equipment or the actual use of space or water heaters, ventilation and/or air conditioning equipment, appliances, lights and other devices. Remember that the way you or your tenants occupy your building, or operate your business, can have a big impact on the actual consumption of energy. Finally, please note that this service is not a structural inspection and does not evaluate the structural and safety integrity of your building.

If you would like to book a second visit for an official assessment after upgrading, you can do so through EnviroCentre. If your renovations involve additions or other major changes to the shape of your exposed walls, ceilings or foundation, note that there may be a surcharge for remeasuring the building and remodeling your software file.

This report is printed on 100% recycled paper.

The logo for EnviroCentre, featuring the word "enviro" in a bold, dark green font and "centre" in a lighter green font.



Your Energy Assessment Report

Inside Your Report

- Your Concerns
- Solutions For Your Home
- Detailed Energy Report

Assessment completed for:

Leacock Dr
Ottawa

Assessment completed by:

EnviroCentre

613-656-0100
info@envirocentre.ca

Advisor Comments:

It was great to meet you. We've identified some really useful upgrades that should help in addressing your energy and comfort concerns in the home.

As always, if you have any questions, please feel free to contact us.

Thanks!



We're listening!

As our client, we want to make sure we're addressing all of your concerns for your home. If we've missed any concerns in this report, please let us know right away.

You'll notice that on the following page we list all of the solutions and match them to the concerns listed here.

Your Concerns

Upgrading Furnace

You are considering upgrading your heat system. While it is an older systems still in good working order it may need to be replaced in the near future. When you or the next owners do upgrade, I would recommend installing high efficiency condensing unit that will help reduce costs for heating. When installed, new venting will be required that separates the hot water heater from the furnace venting. Contact a specialist in heating. There are more detailed recommendations in the accompanying report.

Hot Water Heater

The hot water is currently a rental unit, you can request an upgrade with your rental company at an increased cost and an upgrade will still require a change in venting to meet current code requirements. You may not see the long term benefits of purchasing a new hot water system at this time since you do have plans to sell in the next few years.

Basement Insulation

You have an opportunity to add insulation to the remainder of your basement walls, this will help with the comfort of your home as well as reduce heating bills. There is a twelve foot section of header space that is currently without insulation, I would recommend adding insulation here and increasing the level on the accessible header.

The room that is already finished has minimal insulation added to it, if renovations are planned I would recommend increasing the insulation levels in this area.

All air sealing should be completed before insulating – see the complete list of target areas in the detailed report.



Your Solutions

Estimated Totals

Installed Cost

\$7,800

This is the approximate cost of your upgrades, based on average pricing for this region and typical installation difficulty. It includes materials and labour, but will vary according to the particular situation and contractor.

Estimated Savings per Year*

\$400

Or in other words...

Savings on your total energy use	24%
Yearly reduction in carbon (kg CO ₂)	1,950
Equivalent car travel per year, in km	15,600
Equivalent trees, growing for one year	86

Energy Savings Calculator				Yearly Energy Use (GJ):	159.6
Leacock Dr, Ottawa					
	SAVINGS Energy (%)	Dollars (\$)*	UPGRADE COST	PAYBACK (Years)	
Ceiling					
Wall					
Foundation	6.3%	110	821	7.5	
Floor					
Windows and Doors					
Air Tightness	2.8%	44	0	0.0	
Heating and Cooling System**	10.5%	194	3500	18.1	
Domestic Hot Water	6.6%	109	3500	32.2	
Ventilation System					
All Upgrades	24.4%	\$426	\$7,821	18.4	

*Savings and paybacks are based on **EnerGuide for Houses** energy modeling and recent local fuel rates.

**If a heating upgrade involves changing the fuel source, dollar savings can be negative.



Our other services

EnviroCentre is a go-to source of practical services and programs that help you conserve energy, improve environmental health and act more sustainably.

Our wide range of services includes:

- Electricity audits
- Energy assessments on new and existing homes
- Certifications for R2000 and ENERGY Star®
- Commercial Assessments
- Infrared Thermography
- Multi-unit Residential Building Assessments

Thank you!

Thank you for choosing EnviroCentre to perform your Certified Energy Assessment. It has been our pleasure to serve you.

Should you need any further assistance, or require another one of our services, please do not hesitate to get in touch with us again.

You can reach us at 613-656-0100

Regards,