EnerGuide for Houses
Energy Efficiency Evaluation Report

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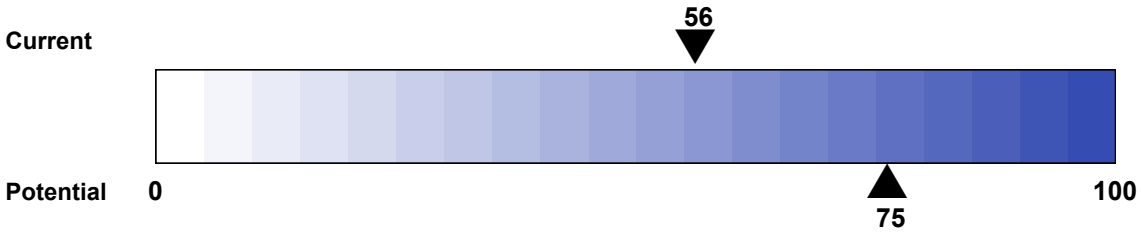
2084 Springer Ave
Burnaby, BC
V5B 3M5
File Number: 2280A00478

Type of House: Row house, middle unit
Year Built: 1977
Date of Evaluation: Dec. 2, 2005

Your House's Energy Efficiency Rating

The energy efficiency of your house has been assessed by a qualified energy advisor using Natural Resources Canada's EnerGuide for Houses procedures. **Based on this evaluation your house has an energy efficiency rating of 56, which could be improved up to 75 by undertaking the improvements recommended in this report.**

Energy Efficiency Rating



A 0 on the scale represents an uncomfortable house that has major air leakage, no insulation and extremely high energy consumption. At the other end of the scale, 100 represents a house that is very well insulated, airtight, yet well ventilated, and that requires no purchased energy.

House Characteristics	Typical Rating
Older house not upgraded	0 to 50
Upgraded older house	51 to 65
Energy-efficient upgraded older house or typical new house	66 to 74
Energy-efficient new house	75 to 79
Highly energy-efficient new house	80 to 90
House requiring little or no purchased energy	91 to 100

The EnerGuide for Houses scale accommodates the millions of houses across Canada — from older homes in need of renovation to newer, more energy-efficient houses. For older homes a rating of 68 is not a bad achievement. Although the scale ranges from 0 to 100, new houses typically rate at 68 or above simply because of improvements in building standards and practices over the years. The house rating categories vary somewhat across the country as a result of differences in local codes. The Canadian figures noted above may not reflect your area as well as others. Certain factors like the size of a home's windows and their orientation, can also affect the rating. Meeting 80 on the scale is a real achievement! Relatively few homes meet 80 on the scale, and those that do represent the most energy-efficient homes on the market.

By reducing the amount of energy you use at home you reduce the production of greenhouse gases such as CO2. Small improvements by all of us will help Canada's efforts to combat climate change and protect the environment. Together we can do it. By improving your home's energy efficiency to the potential rating noted above, you will reduce your home's production of greenhouse gas emissions by 4.3 tonnes per year.

Estimated Annual Energy Consumption

The energy advisor has estimated your house's annual energy consumption based on the house's general characteristics, its energy-using equipment and the following standard conditions: 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 water consumption values; average electric consumption values; and, average weather data.

These conditions standardize the rating so you can compare your house's rating to similar size houses built in similar regions. However, the conditions may not entirely reflect your household. Your house's actual energy consumption and your future savings may be significantly influenced by the number of occupants, their day-to-day habits and their overall lifestyle.

This house, as currently rated, has an estimated annual energy consumption of 187 GJ*. As indicated in Table 1, the energy advisor has determined that by undertaking the upgrades suggested in the recommended improvements section, your energy consumption would be estimated to change to 103 GJ.

* One gigajoule (GJ) is the amount of energy that would be consumed by ten 100-Watt light bulbs lit continuously for 12 days.

Table 1. Estimated Annual Energy Consumption

	Electricity kWh	Natural Gas cu. m	Oil L	Propane L	Wood cords	Total GJ
Current estimate	9 215	4 122				187
After improvements	9 017	1 896				103
Savings	198	2 226				84

Table Notes: kWh=kilowatt-hour; cu. m=cubic metre; L=Litres; GJ=gigajoule ;

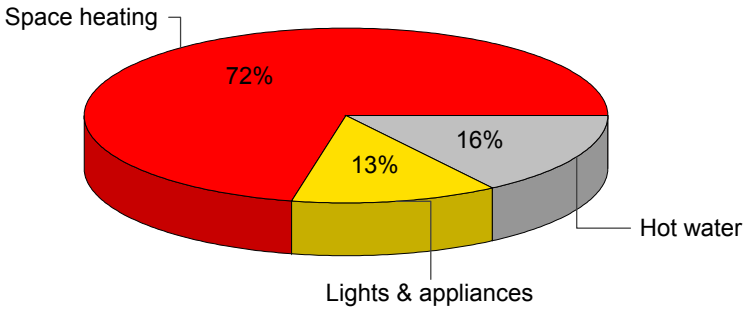
Energy Consumption by End Use

Houses lose heat to the outdoors during the heating season through ventilation (e.g. exhaust fans in bathrooms and kitchen) and the transfer of heat through the basement, walls, roof, windows and doors. As a house ages in Canada's severe climate, and homeowners themselves make changes such as drilling holes in walls for new pipes and machinery, tiny cracks will open up over time in the building envelope. Just like anything else you value, houses need to be maintained with care and repaired whenever problems appear. A well-maintained house will pay you back with greater energy-efficiency and comfort.

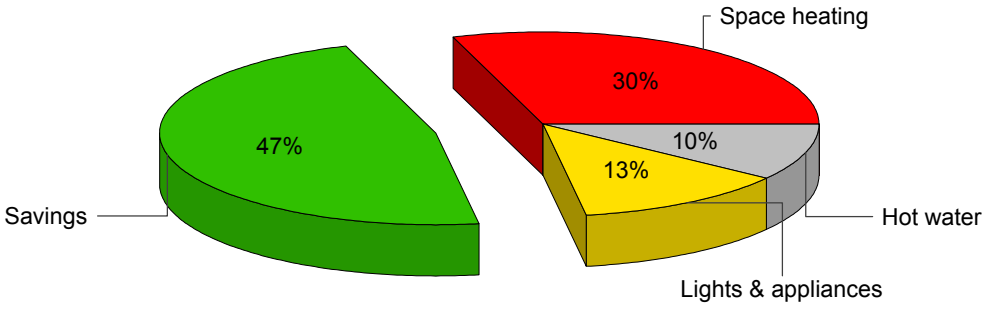
Figure 1 breaks down your house's estimated energy consumption by end use — space heating, domestic hot water heating and lights and appliances. It also indicates the potential to reduce your house's energy consumption by up to 47 percent by implementing the improvements recommended later in this report.

Figure 1. Energy Consumption Estimates by End Use

Current Estimate



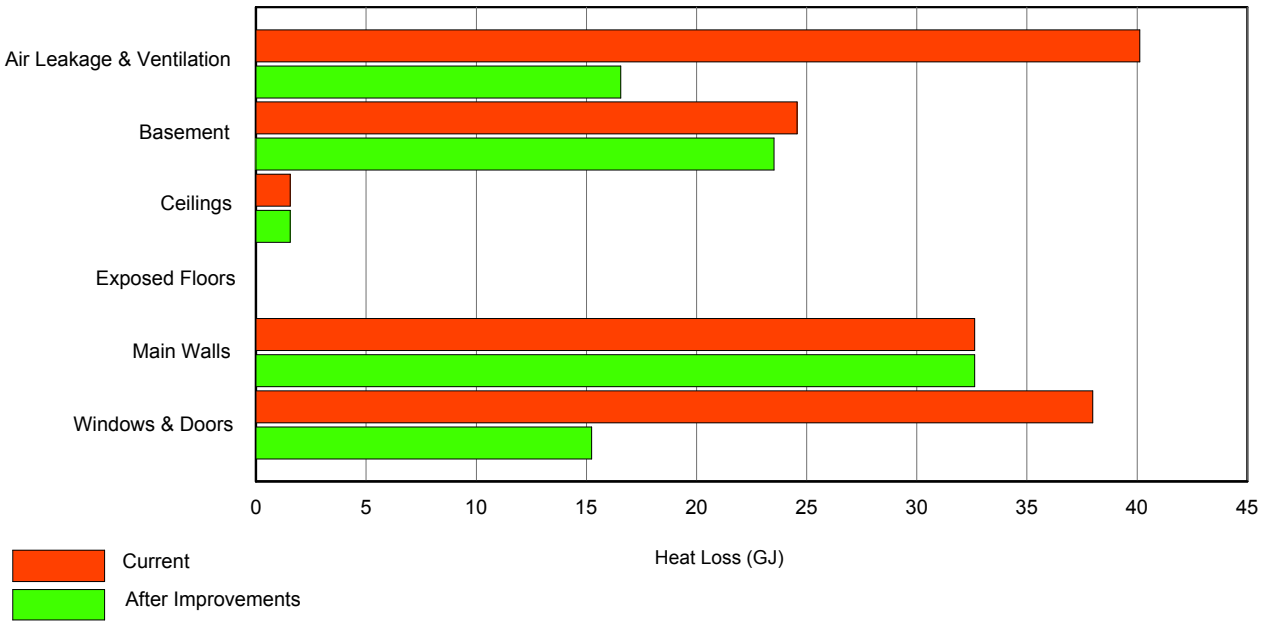
After Improvements



Estimated Heat Loss

Figure 2 shows how the "energy for space heating" segment shown in Figure 1 actually gets used in the heating of your home. A long bar indicates where you are losing more energy; a short bar indicates areas you aren't losing as much energy. Your energy advisor has taken into account both your future renovation intentions and the potential for savings identified in the graph below, in making their recommendations in this report.

Figure 2. Estimated Heat Loss



Recommended Improvements

In assessing the energy efficiency of your house, the energy advisor has identified opportunities to improve its energy performance. Each box below contains recommendations for a specific improvement.

These recommended improvements will require you to invest money in your house. Before undertaking any work, you should request quotations in writing from professional contractors and get your agreement in writing. Canada Mortgage and Housing Corporation (CMHC) has a very useful fact sheet on this subject called "Hiring a Contractor", that also includes a draft contract, available online at http://www.cmhc-schl.gc.ca/en/burema/gesein/abhose/abhose_ce30.cfm. The CMHC web site is a useful renovation resource. It has a number of helpful renovation planning fact sheets available online at no cost. They also have a number of excellent in-depth publications for sale.

House as a System: Your energy advisor has recommended an approach to improving your house's energy performance based on the principle of a "house as a system." This principle recognizes that a change made to one component of a house can affect other components and that the comfort, health and safety of occupants, as well as the long-term integrity of the structure, must be primary considerations in housing construction or renovation.

Heating System

The existing furnace installed in the home at the time of the assessment was a conventional gas-fired, forced air furnace. We recommend that all furnace work be done by a contractor who is a member of the Heating, Refrigeration, Air conditioning Institute of Canada. HRAIC requires its members to take additional courses, beyond what is required for a standard heating contractor license.
We recommend considering the installation of one of the following options when the existing furnace requires replacement:
1. Installing a mid efficiency induced draft fan furnace (approximately 80% efficiency) would provided a relative savings of approximately $276/year based on the modeling. This upgrade will increase your EnerGuide rating by approximately 5 points.
2. Installing a high-efficiency condensing furnace (approximately 90% efficiency) will add approximately 7 points to your EnerGuide rating and would provided a relative savings of approximately $424/year based on the modeling.

Additional savings available for upgrading to High Efficiency Furnaces:
A $100 direct grant is available if you install an ENERGY STAR®-qualified high-efficiency furnace or boiler (including oil-fired furnaces that have an annual fuel utilization efficiency of at least 85 %)
For the period from February 16, 2005 to April 1, 2007, qualifying energy efficient residential furnaces, boilers and heat pumps are exempt from provincial sales tax if purchased or leased for residential purposes. To qualify, the gas furnace, boiler or heat pump must be listed as "ENERGY STAR ® Qualified" by the Office of Energy Efficiency, Natural Resources Canada.
To find out if a furnace is ENERGY STAR rated go to:
www.oee.nrcan.gc.ca/energystar/english/consumers/heating.cfm

Basement

In order to reduce heat loss from the home, the client may consider doing the following:
1. Client may consider adding insulation to the uninsulated portion of the concrete foundation wall and pony wall in the basement. By adding insulation with an effective R-value of 12, your EnerGuide rating will increase by approximately 1 point resulting in an annual savings in utilities of approximately $118/year.
2. The addition of insulation to the uninsulated portion of the Basement Floor Headers was modeled. By adding insulation with an effective R-value of 12, your EnerGuide rating will increase by approximately 1 point and result in an approximate fuel cost savings of $38/year.
Please refer to "Keeping the Heat In" for further information. A qualified contractor should be consulted to determine applicable insulation options and associated costs.

Doors

Replacing the wood exterior doors with metal clad, polyurethane insulated core doors will result in an annual savings of $26 and an increase in your EnerGuide rating by less than 1 point.

Hot Water

When the time comes to replace the existing gas-fired, continuous pilot water heater with a seasonal efficiency rating of approximately 55% if properly tuned/maintained you could consider the following:
1. Installing an instantaneous water heating system with a seasonal efficiency rating of approximately 83% if properly tuned/maintained. This upgrade will result in approximately $81/year in heating costs and will increase your EnerGuide rating by approximately 1 point.
2. Installing a condensing water heating system with a seasonal efficiency rating of approximately 86% if properly tuned/maintained would result in a fuel cost savings of $95/year and will increase your EnerGuide rating by approximately 2 points.
We recommend that all work be done by a contractor who is a member of the Heating, Refrigeration, Air conditioning Institute of Canada. HRAIC requires its members to take additional courses, beyond what is required for a standard heating contractor license.

Windows

A significant source of heat loss in homes is through windows and skylights. Replacing windows however would reduce your fuel bills by very little in relation to the large investment that would be required and would typically only be feasible if the windows being replaced were single pane with no storm windows. Replacing windows may be cost effective for other reasons such as sound proofing, increasing property value, existing windows are deteriorated/rotted, convenience of operation issues, to name a few. If a decision to buy and install new windows in the future is made, we recommend installing Energy Star windows (e.g. windows with double or triple panes, hard or soft Low-E coatings, argon filled, low-conductivity spacers, vinyl or fiberglass framed or metal with thermal breaks). There is very little cost difference between energy efficient and non-energy efficient windows. Please refer to the booklet "Improving Window Energy Efficiency" which can be downloaded from the following website (http://oee.nrcan.gc.ca/publications) and "Keeping the Heat In" for additional information. A qualified contractor should be consulted to determine applicable window options and associated costs.
Upgrade Models:
1. An energy efficiency upgrade which included the installation of new vinyl frame, double pane low e (emissivity) argon windows to replace all windows was modelled. This upgrade would result in an approximate fuel cost savings of $296/year and an increase of approximately 5 points on your EnerGuide Rating could be realized.
2. If new vinyl frame, double pane windows were installed to replace all windows a fuel cost savings of $237/year and approximately 4 points could be realized.

Air sealing including ventilation effects

A significant cause of heat loss in homes is due to air leakage through unintentional openings in the building envelope. Based on the results of the blower door test, a natural air change rate of 11.71 ac/h @ 50 Pa (air changes per hour at 50 pascals) and 0.723 ac/h under normal pressures (during the month of November) existed in the home at the time of the evaluation.

The blower door test provides information regarding the air tightness of the home. The ac/h indicates the number of times in one hour that all of the air in the home is exchanged with fresh exterior air. If, during the month of November the air change rate is less than 0.3 ac/h, mechanical ventilation would be required in the home to reduce the potential for poor indoor air quality, stale air, high humidity levels, condensation on windows, etc. An air change rate over 0.5 is usually an indication that the house is drafty with a large amount of unnecessary energy loss. Natural Resources Canada suggests 0.30 ac/h is a good rate to achieve.

The blower door test also gives us an Equivalent Air Leakage Area (ELA). The ELA represents the total sum of all air leakage areas in the home in square inches. The ELA in your home at the time of the evaluation was 327 square inches. This represents a hole of 327 square inches in the building

envelope. Based on the results of the blower door test, air sealing to a reasonable level could reduce heat loss from the home and fuel consumption. Typical areas in the home that can allow significant air leakage include:

- ineffective or poor weather-stripping around exterior doors & windows
- electrical receptacles; outlets, switches
- attic hatches that are not insulated and weather stripped
- holes in walls provided for plumbing and mechanicals
- other openings in the exterior walls such as cat doors, mail slots,
- area around the main electrical panel
- stove fan duct
- fireplace/wall joints and joints between mantels and fireplace inserts
- lack of ineffective wood fireplace flue damper
- areas where the wood framing in the home (bottom plates) contact the foundation

Based on the energy efficiency modeling, a reduction in air leakage from 11.71 ac/h@50 to 5 ac/h@50 could provide a cost savings of approximately $323/year and an increase in your EnerGuide rating of approximately 5 points. A qualified air sealing contractor should be consulted to determine specific air sealing options and associated costs. Please refer to "Keeping the Heat In," "Air Leakage Control," and "Moisture Problems" for additional information.

Suggestions and Observations

Insulation
Protect and cover all foam insulation with a minimum of ½" drywall on the interior to reduce flame spread and smoke generation in the case of a fire. To reduce skin and eye irritation and inhaling fibers and dust when working with all insulation materials, wear loose-fitting clothes with long sleeves and tight cuffs, work gloves, a hard hat and proper footwear. Use a half-mask respirator with a particulate filter and goggles while handling insulation and wash clothing separately after use.

Heating Equipment
Have your furnace and other space- or water-heating equipment serviced annually. If you have a forced-air heating system, clean or replace your furnace filter every month, or as required.

Humidification
Health Canada recommends a relative humidity (RH) level of between 30 and 55. If you have a furnace with a humidifier, ensure that it is regularly cleaned and maintained, and that the humidistat is set at an appropriate humidity level.

Ventilation Systems
If you have a heat recovery ventilation system (HRV), Natural Resources Canada's publication "Operating and Maintaining your Heat Recovery Ventilator" (available online at oee.nrcan.gc.ca/publications, in the "Heating and Cooling" category), has a chapter on how to maintain it properly.

Hot Water Heating
Install low-flow showerheads and faucet aerators to reduce water consumption and costs.
Reduce your hot water heater thermostat setting from 60°C (140°F) to 55°C (130°F). It will save you money on your hot water heating bill, and helps prevent accidental scalding.

Energy-Efficient Lighting
When replacing lights, install energy-efficient lighting. Energy-efficient bulbs, such as compact fluorescents, last longer and reduce electricity consumption.

Energy-Efficient Appliances
When replacing appliances, look for those displaying the ENERGY STAR® mark, the international symbol for energy efficiency. For more information go to energystar.gc.ca. Or you can use the EnerGuide label to select the most energy-efficient model.

Energy-Efficient Home Electronics
When buying new home electronic products, consider that ENERGY STAR® labelled products use less than half as much energy in standby mode (i.e. when they are turned "off") without sacrificing features you want. For more information go to energystar.gc.ca.

Energy-Efficient Office Equipment
When upgrading your office equipment, consider that an ENERGY STAR® labelled computer in "sleep" mode consumes about 80% less electricity than it does in full-power mode. For more information go to energystar.gc.ca.

Burn it Smart
"Burn it smart", a program of the Government of Canada, provides information to help you use your wood heating system safely and efficiently while reducing the wood smoke emissions that can affect the environment and your health. For information go to www.burnitsmart.org.

Vermiculite and Renovation
Some older vermiculite insulation installed in homes may contain asbestos. If it is contained in walls or attic spaces and is not disturbed, it poses very little risk to occupant health. However, if vermiculite is detected in the course of a renovation, or if you suspect it might be in your home and you plan to remodel or renovate (including insulation or air sealing work), contact professionals who are trained and qualified to handle asbestos before proceeding. For a listing of qualified professionals, look in the Yellow Pages (TM) under "Asbestos Abatement and Removal".

Notice to Homeowner

Your house has been examined by a qualified energy advisor based on standard conditions. This report represents the energy advisor's best judgement given the information and time available.

The purpose of EnerGuide for Houses is to assess the energy efficiency of your house; it is not meant to replace a full house inspection. Natural Resources Canada makes no warranty, expressed or implied, with respect to the energy consumption figures, cost estimates or energy efficiency recommendations included in this assessment. Actual energy consumption and costs depend on a host of factors beyond the control of Natural Resources Canada.

EnerGuide for Houses promotes the use of energy-efficient equipment bearing the ENERGY STAR® symbol. EnerGuide for Houses promotes the use of trained personnel in the completion of energy upgrades by referring clients to established professional associations for contact lists. EnerGuide for Houses does not endorse the services of any contractor or any specific product.

Government of Canada
The Government of Canada subsidizes the EnerGuide for Houses service. This allows companies to provide the service to homeowners at a reduced rate. By signing below you acknowledge that you have read this page and that you authorize the information collected about your house during the EnerGuide for Houses service to be supplied to Natural Resources Canada for the purpose of statistical analysis. You may be contacted by a representative of Natural Resources Canada in the course of their performing any quality assurance assessments of the program.

Homeowner's Signature: _____ Date: _____

Energy Advisor: Doug Martin

Company: Amerispec Inspection Services

Telephone: 604-430-0343

Energy Advisor's Signature: _____ Date: _____

Energy Advisor's Comments

When you have carried out the recommended improvements, you can request a follow-up visit to re-evaluate your home and update your EnerGuide for Houses report and label. To book your follow-up evaluation call 604-430-0343. If you have followed a number of the recommendations, you could be eligible for a grant.
Be sure to book a follow-up evaluation with your energy advisor (Doug Martin) as soon as possible after your energy upgrades are complete, as your advisor must submit your grant application within 18 months of your home's initial evaluation.
Homeowners accept full responsibility for the work performed, including choice of materials and service provider for renovation work. They obtain all applicable permits and pay all applicable taxes for work performed. For three years after applying for a grant, homeowners must retain receipts for renovation work completed.