

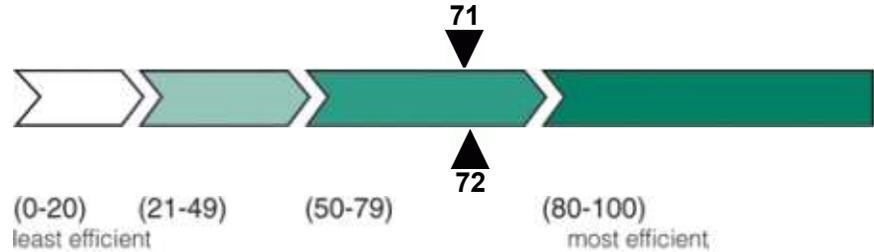
## Energy Efficiency Evaluation Report

File number: 222DD00458

**Property Owner:**

Theresa Ko  
816 Wardlaw Avenue  
Kelowna, British Columbia  
V1Y 5B9

**EnerGuide Rating**



**House type:** Single detached

**Heating system:** Electricity baseboard/hydronic/plenum

**No. of storeys:** One

**Domestic hot water:** Electricity

**No. of RO windows:** 20  
RO = rough opening

**Air leakage rate @ 50 Pa:** 4.06 ACH  
ACH = number of air changes per hour

**Air conditioner:** Yes

**Equivalent Leakage Area:** 1636 cm<sup>2</sup>

The results of your pre-retrofit energy evaluation show that your house rates 71 points on the EnerGuide scale. If you implement all of the recommendations in this report, you could reduce your energy consumption by up to 2% and increase your home's energy efficiency rating to 72 points. The average energy efficiency rating for a house of this age in British Columbia is 62 whereas the highest rating achieved by the most energy-efficient houses in this category is 85.

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 72 points, you will reduce its GHG emissions by 0.5 tonnes per year!

**You have up to 18 months from the date of this report or until March 31, 2011, whichever comes first, to complete your renovations and qualify for an ecoENERGY Retrofit Homes grant.** 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.

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

**Service Organization:** Amerispec Inspection Services  
**Telephone:** 250-762-7325

**Certified Energy Advisor:**  
Rob Condon 250-808-3224

**Date of evaluation:** April 30, 2009  
**Date of report:** May 3, 2009



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 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 and to ensure that the retrofits you plan on implementing will meet grant eligibility requirements, read carefully the 'Recommended Energy-Saving Measures' section of this report and the Natural Resources Canada (NRCan) brochure entitled *Grant Table for ecoENERGY Retrofit – Homes* 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. 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: The grants listed below are for Federal Incentives only. The province of BC also offers complimentary grants and other incentives for reducing energy use. Please refer to the LiveSmart website at: <http://www.livesmartbc.ca> to determine the incentives for retrofits listed below. Call 1 800 O-Canada (1-800-622-6232) for more information.

For 2009 the Home Renovation tax credit is also in effect. The credit will only be available for the 2009 tax year and applies to eligible expenditures of more than \$1,000, but not more than \$10,000, resulting in a maximum credit of \$1,350 (\$9,000 x 15%). Please visit <http://www.cra-arc.gc.ca/> for more information.

### **VERY IMPORTANT REMINDERS -**

- 1. The eligible incentives are payable once per homeowner, per property.**
- 2. Two assessments at \$157.50 each are required to qualify, one before and one after your retrofits. The province of BC reimburses the homeowner for the first assessment.**
- 3. We apply for all incentives on your behalf, two cheques will be mailed, one Federal, one Provincial.**
- 4. You do not have to do all of the recommendations to qualify for an incentive, only the ones you would like to.**

<b>Retrofits</b>	<b>Federal Incentive</b>	<b>Potential for Energy Savings *</b>	<b>Potential Rating Improvement</b>
<b>These upgrades qualify for a federal grant up to a maximum total incentive value of \$5,000:</b>			

\* One (1) star = lowest savings / five (5) stars = highest savings

### **WINDOWS AND DOORS**

Replace 20 window(s) / skylight(s) with models that are ENERGY STAR® qualified for climate zone A.

\$800



0.7 points

Replace 2 exterior door(s) with a model that is ENERGY STAR® qualified for climate zone A.

\$80

### **WATER CONSERVATION**

Replace 4 toilet(s) with low-flush or dual flush toilet(s) that meet(s) the minimum requirements.

\$260

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0 points

**Natural Resources Canada (NRCan) reserves the right to revise the grant amounts and eligibility requirements. Visit [ecoaction.gc.ca/homes](http://ecoaction.gc.ca/homes) for the most up-to-date information. All grants are paid at the rate in effect at the time of the post-retrofit evaluation. Payment of the grants is subject to the availability of funds.**

## 2. THE ENERGUIDE RATING SYSTEM

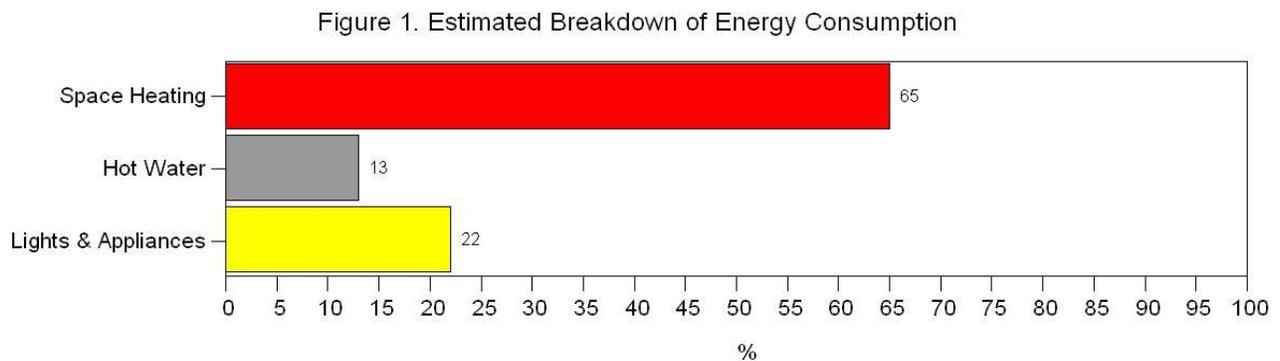
The EnerGuide rating system is a standardized method of evaluation that lets homeowners compare their house's energy efficiency rating to similar sized houses in similar regions. The EnerGuide rating considers the house's estimated annual energy consumption based on an in-depth evaluation of the house's 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 4 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 4 percent by performing all of the recommended upgrades.

Figure 2. Estimated Percentage of Potential Energy Savings

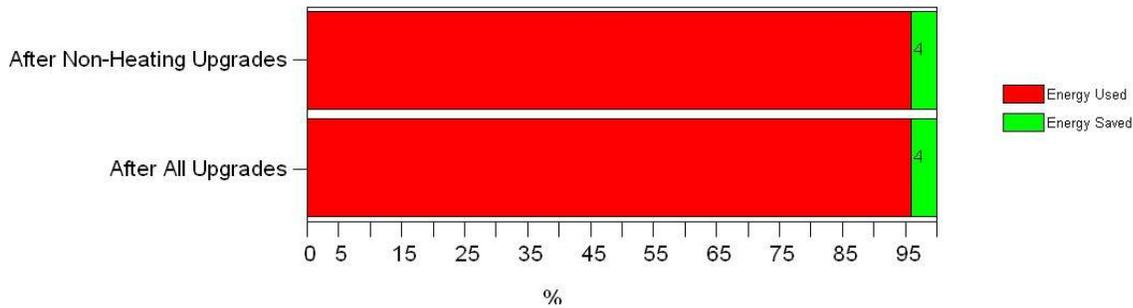
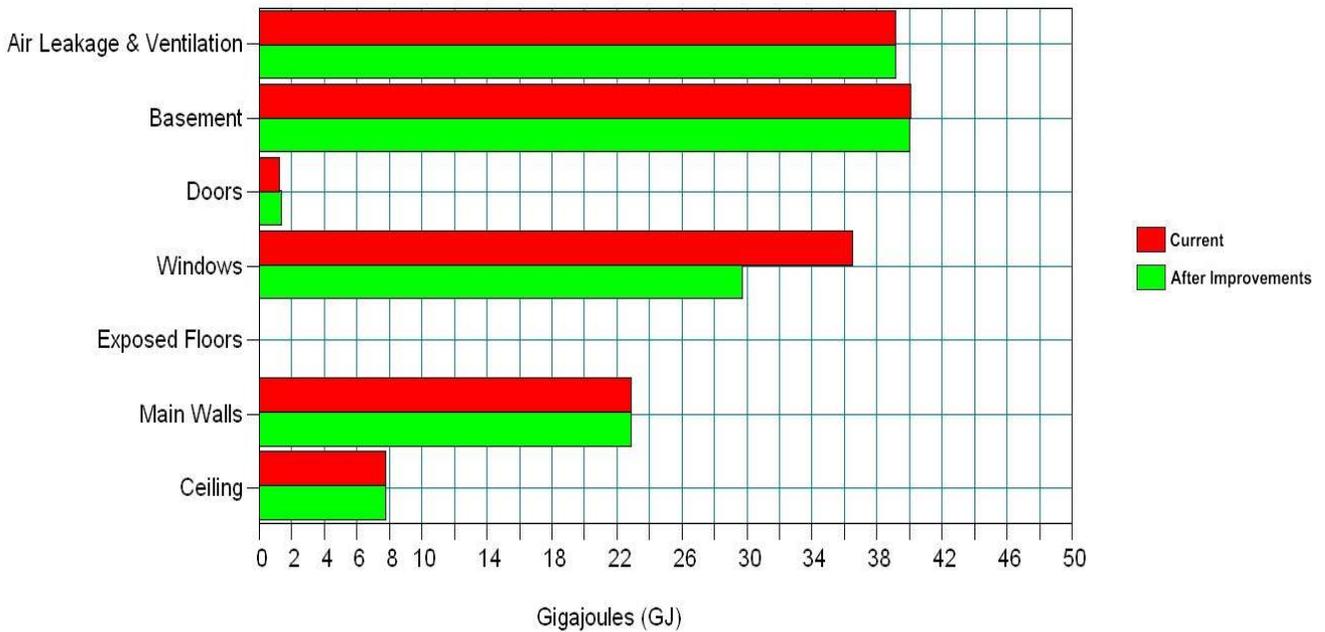


Figure 3 shows where the energy used for space heating is lost from your home. This energy is measured in gigajoules (GJ), where 1 GJ is equivalent to 278 kilowatt-hours (kWh) or 948,000 Btu.

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 50540 Btu/hour (14812 Watts) and its design cooling load would be 19284 Btu/hour (1.6 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 Institute of Canada (HRAI). For a list of certified contractors, visit [www.hrai.ca](http://www.hrai.ca) and click on "Homeowners and Building Owners" and "SkillTech Academy Canadian Certification Listing", 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**

### **Doors**

Old and ill-fitting exterior doors can contribute significantly to heat loss and drafts. Heat escapes through the door, the frame and other materials. Air leaks through the door-window seals and between the door and frame and also the doorframe and the rough opening.

Energy-efficient exterior doors reduce heat loss, save energy and improve comfort. Metal and fiberglass insulated doors, for example, are far more efficient than hollow or solid wooden doors. High-quality, durable weatherstripping and door hardware are also crucial to ensure energy-efficient doors, as well as the proper installation of the door and the air sealing around the doorframe.

For information on energy-efficient doors, consult NRCan's publication entitled *Consumer's Guide to Buying Energy-Efficient Windows and Doors*. For information on ENERGY STAR® qualified windows, doors and skylights, go to [www.energystar.gc.ca](http://www.energystar.gc.ca).

**Grant Eligibility:** The replacement of exterior doors with models that are ENERGY STAR qualified is eligible for an ecoENERGY Retrofit - Homes grant. However, you must choose models that are ENERGY STAR qualified for your climate zone. Proof of ENERGY STAR qualification is also required. For more information, refer to the brochure entitled *Grant Table for ecoENERGY Retrofit - Homes*.

### **Recommendation:**

Replace selected exterior doors with ENERGY STAR qualified models that match your climate zone. Refer to the section of this report entitled 'Your Home Energy Action Checklist' for information on your climate zone and the number of doors recommended for replacement.

### **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 purchasing energy-efficient windows, refer to NRCan's publication entitled *Consumer's*

*Guide to Buying Energy-Efficient Windows and Doors.* For information on ENERGY STAR qualified windows, doors and skylights, go to [www.energystar.gc.ca](http://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.

### **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. 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 [www.hrai.ca](http://www.hrai.ca) and click on "Homeowners and Building Owners" and "SkillTech Academy Canadian Certification Listing" or call 1-800-267-2231.

### **Combustion spillage**

The result of the exhaust devices depressurization test, which consists of turning on all exhaust equipment (exhaust fans, clothes dryer, central vacuum system, etc.), indicates that the use of this equipment may cause combustion products to be drawn into your home from your combustion appliance(s). **We strongly recommend that you install a carbon monoxide (CO) detector in your home, as well as a smoke detector on each floor**, if not already present. To find an expert in your area, please contact the service organization identified in this report.

## **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.

- Use a timer for your car's block heater. Set the timer so that it turns on two hours before you start your vehicle.
- 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](http://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](http://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](http://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](http://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!

***Remember, you have up to 18 months from the date of this report or until March 31, 2011, whichever comes first, to complete your retrofits and have a post-retrofit evaluation performed on your building to qualify for an ecoENERGY Retrofit - Homes grant.***

### **Audit Findings**

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The existing insulation level of your walls is: R12

The existing insulation level of your attic is : R50

The current heat loss for you home is: 52935Btu/Hr

The heat loss calculation for your home after all upgrades have taken place is: 50539 Btu/Hr

#### INFORMATION ABOUT YOUR ABOVE HEAT LOSS CALCULATIONS:

The correct furnace size should have an output capacity equal to the heat loss or marginally larger than this value. A furnace that is grossly over sized will operate less efficiently and tend to make the home less comfortable. This is a total heat loss calculation for the home and should there be more than one furnace, the total capacity must be equal to or greater than this value. It is still necessary to have your heating contractor complete a heat loss calculation on your home. It is the responsibility of the installing contractor to ensure that the furnace being installed is the correct capacity. We include our calculated capacity value to give you some guidance when selecting a furnace but this is not meant to supersede the calculation of the installing contractor and absolve them of their responsibilities

#### Compare your homes blower door result to the ones below:

- <10.35 ACH@50pa - loose home
- 7 ACH@50pa - un-improved home
- 4.55 ACH@50pa - average home
- 4 ACH@50pa - improved home
- 3.57 ACH@50pa - new home
- 1.5 ACH@50pa - tight house



#### Advisor Comments

Thank you for choosing AmeriSpec Inspection Services. The grants detailed on page 2 of this report are those Federal Grants available through the ecoENERGY program. We will also be applying for Provincial rebates on your behalf through the Live Smart BC Energy Incentive Program. The eligibility requirements for the Live Smart Program are outlined in your grant table. Further resources are available online at [www.livesmartbc.ca](http://www.livesmartbc.ca).

After taking inventory of your home and preparing the computer model, and considering the costs of upgrades I have determined that the upgrades listed above would be the most effective in increasing the energy efficiency of your home and providing you with the best return in regards to recovering costs and receiving rebates.

#### Should you perform all of the recommended upgrades in this report:

- Your house score would increase by **2 points**.
- The total Federal grant could be approximately **\$1140.00**.
- The Provincial Incentives available to you could be approximately **\$880.00**.

Please note that the grants paid are those in place at the time of the homeowner's second assessment. Any and all relevant documentation is most helpful in correctly applying for applicable grants. The grants are subject to approval by Natural Resources Canada. To book the post retrofit assessment, please call our office at 250-762-7325 or toll free 1-877-318-7325.