

# RENOVATION UPGRADE REPORT

# ENERGUIDE

Your EnerGuide\* rating and this report are based on data collected and, where necessary, presumed, from your home evaluation. Rating calculations are made using standard operating conditions.



**Rating: 83** gigajoules per year (GJ/year)

Heated floor area: 288.4 m<sup>2</sup> (3104.1 ft<sup>2</sup>)

Rated energy intensity: 0.29 GJ/m<sup>2</sup>/year

Evaluated by: AmeriSpec Inspection Services

File number: 229HD01686

Data collected: April 30, 2018

Year built: 2004

[NRCan.gc.ca/myenerguide](http://NRCan.gc.ca/myenerguide)

## HOUSE CHARACTERISTICS

For building envelope and mechanical system details, please refer to the *Homeowner Information Sheet*.

**House type:** two storeys, single detached

**Number of windows:** 23

**Number of doors:** 3

**Airtightness:** 2.6995 air changes per hour at 50 pascals

**Main energy source:** electricity

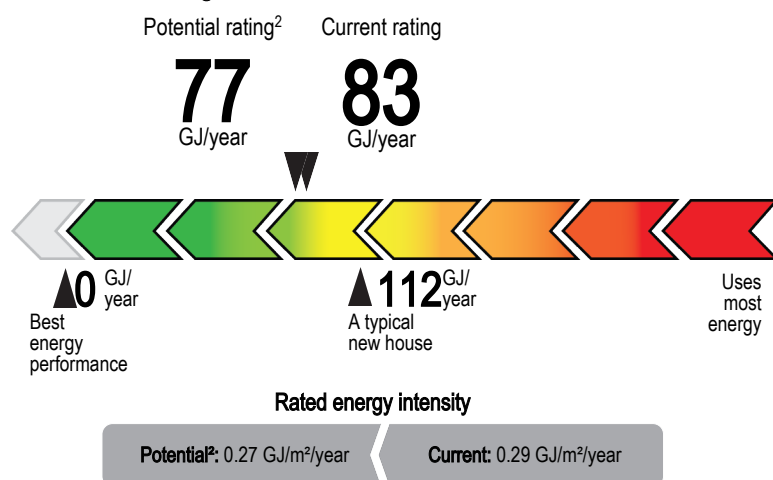
**Heating system:** electric baseboard

**Cooling system:** mini-split air-source heat pump

**Hot water system:** propane condensing tankless

## HOW YOUR HOUSE COMPARES

### EnerGuide Rating<sup>1</sup>



### COMPARATOR

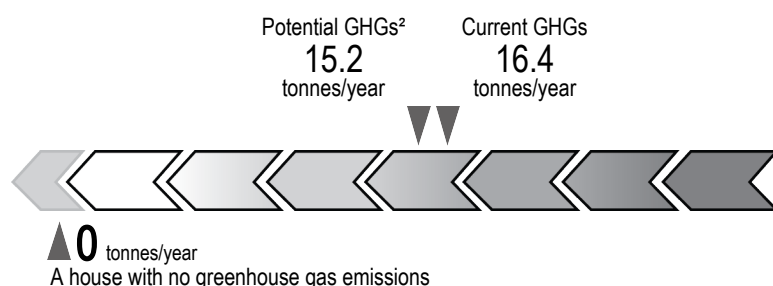
112 GJ/year

A typical new house: this house if built to building code energy requirements.

### NOTES:

1. The rating is expressed in gigajoules per year. One gigajoule is roughly equal to the energy contained in 30 L of gas in a car's gas tank.
2. Potential figures show where the house would rate if all recommended upgrades were implemented.
3. Refer to the *Homeowner Information Sheet* glossary for calculation details.

### Rated greenhouse gas (GHG) emissions<sup>3</sup>

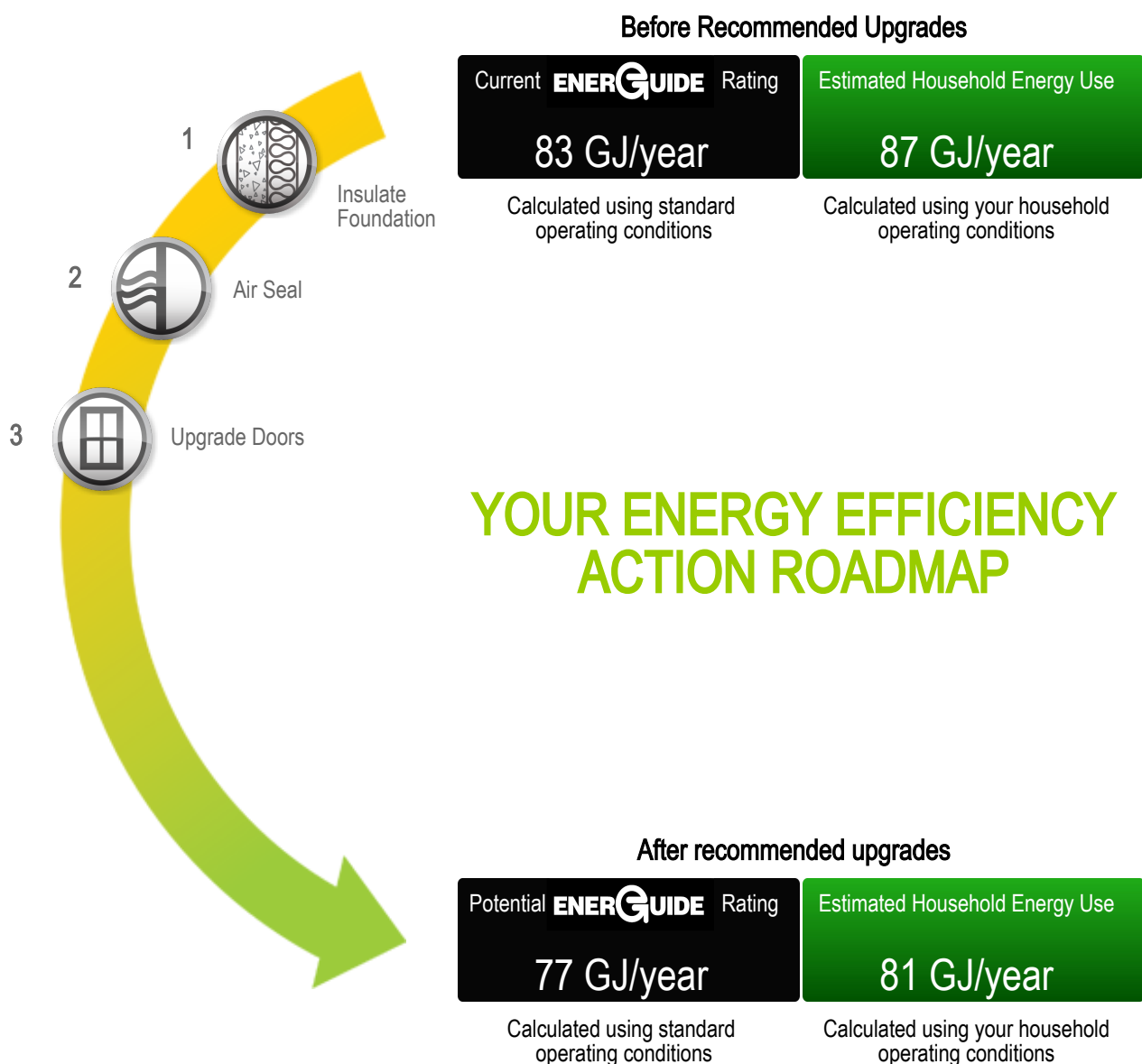


\*EnerGuide is an official mark of Natural Resources Canada

## ENERGY EFFICIENCY ACTION ROADMAP

### The route to making your home more energy efficient

In developing your prioritized list of recommended upgrades, your energy advisor has used the house-as-a-system concept (described later in this report) and has considered potential renovation plans, the financial considerations of each upgrade, and the extent that each upgrade contributes to energy savings. This is your customized roadmap for improving your home's energy performance and is based on your household operating conditions, if provided. If you have questions or concerns about these recommendations, please contact your energy advisor or your service organization.



#### **i** Operating conditions

Your EnerGuide Rating was calculated using standard operating conditions, including average climate patterns, a standard set of occupants (a family of two adults and one child), standard thermostat settings for heating and cooling, and standard use rates for such things as lighting, appliances and hot water. This allows for the comparison of houses where the house itself is rated independent of occupant behaviour.

Your Estimated Household Energy Use was calculated using your household operating conditions, the information that you provided to your energy advisor about your home's actual number of occupants and their energy use patterns. This provides an annual energy use estimate that is customized to your particular household.

## RECOMMENDED UPGRADES AND RESULTS

RECOMMENDED ENERGY EFFICIENCY UPGRADES	RATING REDUCTIONS <sup>A</sup> (GJ/year)	ESTIMATED HOUSEHOLD SAVINGS <sup>A</sup> (GJ/year)
<b>Total reductions for all recommended upgrades</b>	<b>6</b>	<b>6</b>
<b>1. Insulate Foundation</b> <ul style="list-style-type: none"> <li>Foundation - 1: Increase 14% of the insulation value of your basement walls from the interior by RSI 2.31/R13.1.</li> </ul>	<b>5</b>	<b>5</b>
<b>2. Air Seal</b> <ul style="list-style-type: none"> <li>Improve the airtightness of your home by 10% to achieve an air changes per hour rate of 2.43 at 50 pascals.</li> </ul>	<b>1<sup>B</sup></b>	<b>2<sup>B</sup></b>
<b>3. Upgrade Doors</b> <ul style="list-style-type: none"> <li>Replace 2 door(s) with ENERGY STAR certified models for zone 2.</li> </ul>	<b>0</b>	<b>1</b>

### TABLE NOTES:

- A.** The individual rating reductions and estimated household savings are calculated with upgrade measures undertaken in isolation. Combinations of upgrades may produce slightly different results.
- B.** Because of the very house-specific results associated with air sealing, there is a broader error range for the estimated impact of this upgrade.

## RECOMMENDED UPGRADE DETAILS

### Your energy advisor's comments

Your energy advisor has provided additional comments, elaborating on your specific recommended upgrades. These are provided at the end of each upgrade section. The energy advisor and service organization are responsible for the accuracy of these comments and should be contacted if clarification is needed. The Government of Canada does not endorse or make any representation of warranty as to the accuracy or applicability of the energy advisor's comments with respect to your particular home.

## 1. Insulate Foundation

Before work begins, speak to your energy advisor, an insulation contractor or a construction expert to understand the details of your renovation. You can do this work yourself or hire a reputable insulation contractor. Only perform this work yourself if you have carefully researched all of the necessary technical, health and safety considerations for exterior excavations, such as following safe trenching practices. Assess the status of your basement for persistent water leaks, cracks and flooding. Repair these issues before beginning any insulation job.

Foundations can be insulated from the interior, exterior or a combination of both depending on accessibility and the complexity of the building. Always look for opportunities to improve air sealing before or during basement wall insulation upgrades. Consider any electrical or plumbing upgrades before insulating your basement walls.

Insulating one or more elements of your home's foundation improves comfort and can reduce your energy bills. Improvements to your home's insulation can allow for subsequent smaller sizing of new heating and cooling systems when undertaking those upgrades. Your home's foundation accounts for 35 percent of your annual heat loss.



### Recommendation:

Foundation - 1: Increase 14% of the insulation value of your basement walls from the interior by RSI 2.31/R13.1.

- ⦿ Before insulating basement walls from the interior, a moisture barrier is usually applied to the inside face of the walls, up to the grade level. However, plastic foam board insulation or closed-cell spray foam may act as a moisture barrier and negate the necessity of a separate sheet moisture barrier. Discuss your options with a professional.
- ⦿ The three most common interior basement insulation approaches to achieve the recommended thermal resistance (RSI/R) value are:
  - i. Add batt insulation, which requires building stud walls on the interior side of the basement walls to create cavities for the batts;
  - ii. Add rigid board insulation directly to the basement walls; or
  - iii. Add spray-on closed cell foam directly to the foundation wall with or without strapping or studs.
- ⦿ When insulating from the interior with batt insulation, upgrade the existing frame wall after removing existing wall features (i.e. trim, baseboards, vapour barrier etc.), or add a new frame wall that will accommodate electrical outlets, window and door frame extensions, and the upgraded level of insulation.
- ⦿ Unlike batt insulation, foamed plastic rigid-board or spray-on closed cell foam insulation can be applied directly to the foundation walls. If you use the framed-wall method, it is recommended to build the wall out from the foundation wall so that insulation can be installed both behind the framed wall and within the framed wall cavities.
- ⦿ With the assistance of local code officials, assess the need for and the type of any air and vapour barriers, as well as the need for fire resistant coverings, such as drywall.



Consult *Keeping the Heat In* to learn more and take action.

[nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/housing/Chapter6\\_e.pdf](http://nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/housing/Chapter6_e.pdf)



### Your energy advisor's comments

Insulate uninsulated basement walls to a minimum of R-12.

## 2. Air Seal

Air sealing is one of the most cost-effective energy-saving measures you can undertake. It is typically performed before other upgrades to ensure optimal benefit from all the work being done to your home. Air sealing can improve your comfort by reducing drafts and heat loss, minimizing potential moisture damage to your home and reducing the transfer of both dust and noise from outdoors, all the while helping to lower your heating bills. Your home's air leakage accounts for 11 percent of your annual heat loss.



### Recommendation:

Improve the airtightness of your home by 10% to achieve an air changes per hour rate of 2.43 at 50 pascals.

- ⦿ To achieve the full benefits of air-sealing, speak to your energy advisor or a reputable air sealing company before you begin. The blower door test performed during your home energy evaluation along with comments from your energy advisor will help you identify some air leakage sites in your home and can provide a starting point for improving the airtightness of your home.

- ⦿ You may be able to perform some or all of the work yourself, but you should have an air sealing or ventilation professional ensure all ventilation, and health and safety concerns are addressed before you begin.
- ⦿ When you have completed your air sealing upgrades, have an energy advisor or air sealing company perform a second blower door test. This will evaluate your efforts and alert you to any potential ventilation issues in your home.
- ⦿ Common and accessible air leakage locations such as electrical outlets and ceiling fixtures, wire and pipe penetrations, window and door frames, attic hatches, ducts, and baseboards can be sealed with caulk, foam sealant, appropriate types of tape or gaskets.
- ⦿ Typically more difficult to seal air leakage sites, such as those found at foundation headers (rim joist), wall to ceiling junctions and chimney penetrations, may require more aggressive air sealing techniques with barrier materials such as polystyrene plastic foam board insulation, spray foam and non-flammable products (e.g. sheet metal).



Consult *Keeping the Heat In* to learn more and take action.  
[nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/housing/Chapter4\\_e.pdf](http://nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/housing/Chapter4_e.pdf)



### Your energy advisor's comments

Leaks observed during the blower door test of your home are listed. This list will help guide your air-sealing work:

- Electrical Panel
- Attic Hatch
- Exterior Doors
- Windows
- Electrical boxes on exterior walls
- Around bathroom fans
- Propane stove flues
- Recessed lighting in sloped ceilings

## 3. Upgrade Doors

Upgrading your doors improves your comfort by creating more consistent temperatures within the rooms that have upgraded doors. This upgrade also reduces your heating and cooling bills (if applicable), and may provide reductions in outdoor noise. Replacing your doors can also reduce or eliminate condensation on the inside of glazing within the door and frames. Of your home's total annual heat loss, your doors account for 2 percent.



**Recommendation:**  
Replace 2 door(s) with ENERGY STAR certified models for zone 2.

- ⦿ Before work begins, speak to your energy advisor, a door contractor or a construction expert to understand the details of your renovation. Replacing doors is best done by a trained professional, but you may choose to do this work yourself. However, only perform this work yourself if you have carefully researched all of the necessary technical, health and safety considerations.
- ⦿ Install the recommended ENERGY STAR certified units matched to your climate zone in order to maximize all the benefits of new doors.
- ⦿ For optimum savings and energy efficiency, consider highly insulated units. If there is any glazing in the doors, consider units with low-E coatings, inert gas fills, triple glazing, internal-shading devices and insulated spacers.
- ⦿ Additional savings can be achieved for new units with durable weatherstripping and appropriate hardware to ensure an airtight, energy-efficient fit.
- ⦿ Once renovations are finished, have an energy advisor perform a post-retrofit blower door test to ensure your home's airtightness has been maintained or improved. If not installed correctly, new units can lose heat through air leakage and allow for rain penetration.



Consult Natural Resources Canada's *ENERGY STAR Qualified Windows, Doors and Skylights* at [nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/energystar/Energy%20Star-WDS\\_e\(2\).pdf](http://nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/energystar/Energy%20Star-WDS_e(2).pdf) to learn more and take action.



Search Natural Resource Canada's Doors Database at [oee.nrcan.gc.ca/pml-imp/index.cfm?language\\_langue=en&action=app.search-recherche&appliance=DOORS](http://oee.nrcan.gc.ca/pml-imp/index.cfm?language_langue=en&action=app.search-recherche&appliance=DOORS) for ENERGY STAR certified doors.



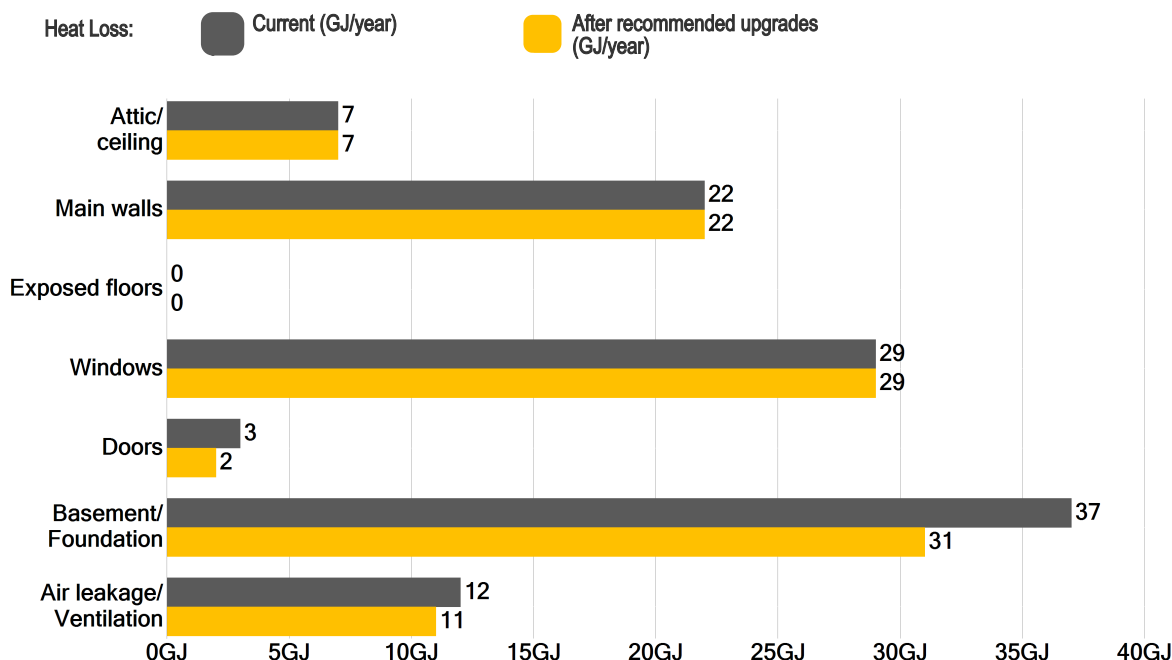
### Your energy advisor's comments

Replace doors with EnergyStar rated doors for climate zone 2.

### ADDITIONAL COMMENTS

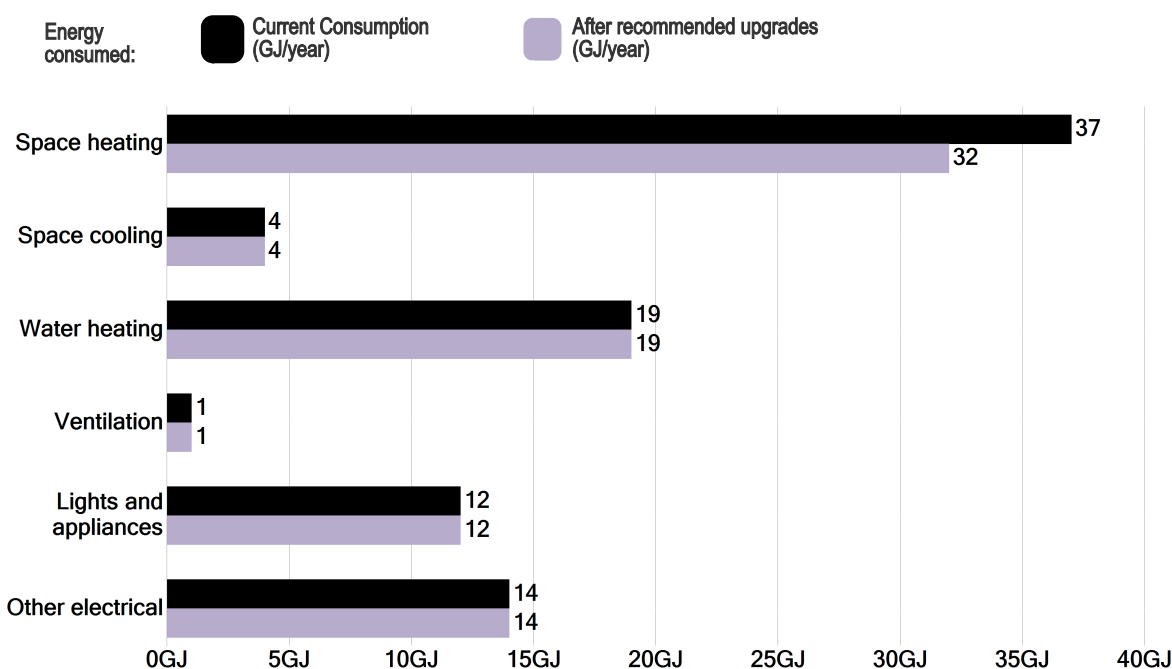
## BEFORE AND AFTER: HEAT LOSS THROUGH THE BUILDING ENVELOPE

This bar chart shows where heat is lost from your home, calculated using your household operating conditions. The dark bars show the areas where you are losing heat now. The longer the bar, the more heat you are losing. The light bars show the estimated heat loss if you were to complete all your recommended upgrades as outlined.



## BEFORE AND AFTER: ESTIMATED ENERGY USE

The bar chart below shows the potential for improving the energy performance of your home, calculated using your household operating conditions. The grey bars show your current estimated consumption. The longer the bar, the more energy you are using. The blue bars show your home's estimated energy consumption if you were to complete all your recommended upgrades as outlined.



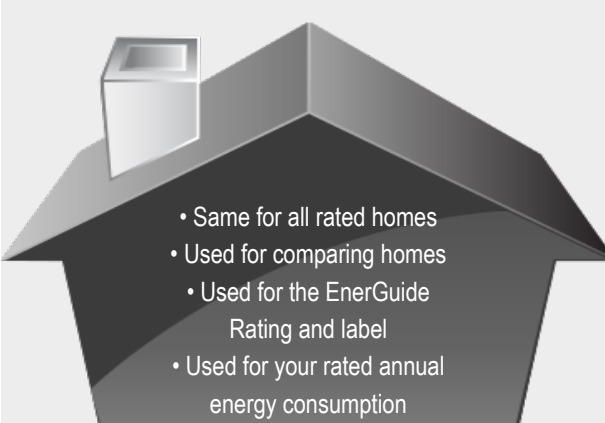
## OPERATING CONDITIONS

The EnerGuide Rating System uses two different sets of operational information: standard operating conditions and your household operating conditions. Your EnerGuide Rating was calculated using standard operating conditions, including a standard number of occupants and assumed energy use patterns, along with your home's characteristics and mechanical systems. The standard operating conditions ensure that the house is rated independent of the energy choices of the occupants living in it. This in turn enables a comparison of rated energy performance with other houses that receive EnerGuide Ratings.

Your Estimated Household Energy Use, as seen in YOUR ENERGY EFFICIENCY ACTION ROADMAP, was calculated using household operating conditions. This is the information that you provided to your energy advisor about your home's actual number of occupants and their energy use patterns. Your Estimated Household Energy Use thus provides an annual energy use estimate that is customized to your particular household.

The following tables show the values used for each set of conditions.


**Standard Operating Conditions**  
 For comparing your home to other homes



- Same for all rated homes
- Used for comparing homes
- Used for the EnerGuide Rating and label
- Used for your rated annual energy consumption

Number of occupants:	3
Appliance load:	6.3 kWh per day
Lighting load:	2.6 kWh per day
Other electric:	9.7 kWh per day
Daytime heating setpoint:	21°C
Nighttime heating setpoint:	18°C
Cooling setpoint:	25°C
Number of cooling months:	0
Hot water load:	190.83 L per day at 55°C

**Your Household Operating Conditions**  
 For understanding and taking action on your home



- Specific to your home
- Used for recommended upgrades
- Used for your estimated annual energy consumption
- Provided by you to your energy advisor

Number of occupants:	4
Appliance load:	7.8 kWh per day
Lighting load:	1.6 kWh per day
Other electric:	9.7 kWh per day
Daytime heating setpoint:	20°C
Nighttime heating setpoint:	18°C
Cooling setpoint:	25°C
Number of cooling months:	Full Season
Hot water load:	254.44 L per day at 55°C

### Utility bills

Your home's annual energy use, as reflected on your utility bills, is not likely to exactly match either your EnerGuide Rating or your Estimated Household Energy Use due to normal fluctuations in your household's energy use and changes in yearly weather patterns. In addition, there is a group of significant home energy uses, such as a pool or hot tub, which are not included in the calculations. These items are not common to most houses and are excluded from the calculations to enable better comparisons of the rated energy performance between homes. If your house has one or more of these refer to your *Homeowner Information Sheet* to learn more about the estimated energy use of these items.



## **i** House-as-a-system concept

Your house operates as a system. All the elements of a house, the building envelope, mechanical systems, indoor and outdoor environment and occupant activities, affect each other. Their interactions must be considered to ensure optimal performance and comfort. For example, reducing the air leakage of your home (air sealing) may require increasing ventilation to prevent moisture build-up and ensure proper indoor air quality. Reducing heat loss through the building envelope reduces your home's heating requirements. A smaller heating system may then be sufficient. Your energy advisor applied the house-as-a-system concept when developing your recommended upgrades.

For more information about this concept and how it relates to your house, refer to the Natural Resources Canada publication *Keeping the Heat In* available at

[nrcan.gc.ca/energy/efficiency/housing/home-improvements/15768](http://nrcan.gc.ca/energy/efficiency/housing/home-improvements/15768).



## IMPORTANT UPGRADE CONSIDERATIONS

### Building codes and by-laws

Before undertaking upgrades or renovations, ensure that all proposed renovations meet local building codes and by-laws.

### Health and safety

If your energy advisor has identified a potential health or safety concern related to insufficient outdoor air, risk of combustion fumes being drawn into the house or the presence of vermiculite, a warning has been included in this report. However energy advisors are not required to have expertise in health and safety matters, and homeowners are solely responsible for consulting a qualified professional to determine potential hazards before undertaking any upgrades or renovations.

### Hiring a contractor

Before hiring a contractor, find out about the appropriate products and installation techniques. Request written quotations from several contractors for comparison and obtain a written contract. The Canada Mortgage and Housing Corporation and the Canadian Home Builder's Association publish a useful brochure on this subject, *Get it in Writing!* Visit [hiringacontractor.com](http://hiringacontractor.com) or call 1-800-668-2642 to order. The Canadian Home Builder's Association also provides advice on hiring a contractor at [chba.ca/renovating/hiring-contractor.aspx](http://chba.ca/renovating/hiring-contractor.aspx).

Natural Resources Canada does not endorse the services of any contractor, nor any specific product, and accepts no liability in the selection of materials, products, contractors nor the performance of workmanship.

### Vermiculite insulation

Vermiculite insulation installed in homes may contain asbestos. This can cause health risks if inhaled. If you find vermiculite insulation during renovations, avoid disturbing it.

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 asbestos, refer to the Government of Canada web page entitled *"Health Risks of Asbestos"* at [healthycanadians.gc.ca/environment-environnement/outdoor-air-exterieur/asbestos-amiante-eng.php](http://healthycanadians.gc.ca/environment-environnement/outdoor-air-exterieur/asbestos-amiante-eng.php).

## FEDERAL GOVERNMENT RESOURCES FOR TAKING ACTION

### 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 [nrcan.gc.ca/energy/efficiency/housing/publications/15813](http://nrcan.gc.ca/energy/efficiency/housing/publications/15813) or by calling the publications order desk at 1-800-387-2000.

### Health and safety

Natural Resources Canada produces a brochure entitled *Planning Energy Efficiency Renovations for Your Home* which includes important information on health and safety issues, as well as links to related documents from Health Canada and the Canada Mortgage and Housing Corporation. It can be accessed at [nrcan.gc.ca/energy/efficiency/housing/home-improvements/5021](http://nrcan.gc.ca/energy/efficiency/housing/home-improvements/5021).

### Renovation publications

The Canada Mortgage and Housing Corporation 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 material.

### Humidity control

A relative humidity level of between 30 and 55 percent is recommended in your home for optimal health and comfort. Dehumidifiers can help reduce moisture levels, especially in basements where relative humidity levels are often high. 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. The Canada Mortgage and Housing Corporation fact sheet *Measuring Humidity in Your Home* at [publications.gc.ca/collections/collection\\_2011/schl-cmhc/nh18-24/NH18-24-1-2009-eng.pdf](http://publications.gc.ca/collections/collection_2011/schl-cmhc/nh18-24/NH18-24-1-2009-eng.pdf) gives good advice.

### Radon

Radon is a naturally occurring radioactive gas that is colourless, odourless and tasteless. It is formed from the radioactive decay of uranium, a natural material found in some soil, rock and groundwater. When radon is released 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 both your or your family's health. For more information, visit Health Canada's website at [hc-sc.gc.ca/ewh-semt/radiation/radon/index-eng.php](http://hc-sc.gc.ca/ewh-semt/radiation/radon/index-eng.php).

### Keeping the Heat In



Natural Resources Canada has produced a guide to educate you on basic principles of building science and to provide guidance on upgrading the energy performance of your home. *Keeping the Heat In* is a useful tool when planning an energy-efficient retrofit to your home. Visit [nrcan.gc.ca/energy/efficiency/housing/home-improvements/15768](http://nrcan.gc.ca/energy/efficiency/housing/home-improvements/15768) to learn more.

## GET STARTED TODAY!

You now have information about your home and recommendations on how to improve its energy efficiency. Taking action can lead to improved comfort, better health and reduced annual utility costs. It can also contribute to reduced greenhouse gas emissions.

Some municipalities, provinces and territories, and some utilities offer energy efficiency incentive programs. For further information or links to complementary regional programs, visit [nrcan.gc.ca/energy/funding/efficiency/4947](http://nrcan.gc.ca/energy/funding/efficiency/4947).

Along with the upgrade recommendations, here are some simple actions you can take to save energy and money:

# ENERGY-SAVING TIPS

- Install and use a programmable electronic thermostat to reduce the heating temperature of your home 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® certified products. ENERGY STAR certified products are among the most efficient and use up to less than half as much energy in standby mode (i.e. when they are turned "off") than non-certified products. For more information, go to [energystar.gc.ca](http://energystar.gc.ca). You can also look for the EnerGuide product label to help you select the most energy-efficient model. For more information, visit [www.nrcan.gc.ca/energy/products/energuide/label/13609](http://www.nrcan.gc.ca/energy/products/energuide/label/13609).
- Replace your light bulbs with ENERGY STAR certified ones, such as compact fluorescents or light emitting diodes (LEDs). They last longer and reduce electricity consumption;
- Insulate the first two metres of the hot and cold water pipes, starting from the water heater, with insulating foam sleeves or pipe wrap insulation. By doing so, you will save on your water heating costs and reduce your water consumption. For a fuel-fired water heater, maintain a 15 cm (6 in.) clearance between the water piping insulation and the vent pipe;
- If you use a block heater for your car, use a timer. Set the timer so that it only turns on one to two hours before you plan to start your vehicle;
- Replace your kitchen and bathroom exhaust fans with ENERGY STAR certified exhaust fans vented to the outside;
- Install a timer on your bathroom exhaust fans so that the fans are not left running for extended periods of time;
- Install low-flow showerheads (rated at less than 7.6 litres per minute) and faucet aerators;
- Fix leaky faucets and outside hose bibs; and
- Plug your home entertainment systems 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 [nrcan.gc.ca/energy/products/reference/publications/14629](http://nrcan.gc.ca/energy/products/reference/publications/14629) for information on standby losses.

