



**The Performance Option:
EnerGuide New Houses & R-2000**

Presented by:



NOVA SCOTIA
HOME BUILDERS' ASSOCIATION

Today's Agenda

- What is it? -
- What are the costs? -
- How does it work? -
- How is it controlled? -



Changes to the provincial building code

- Date of Transition -

December 31, 2009



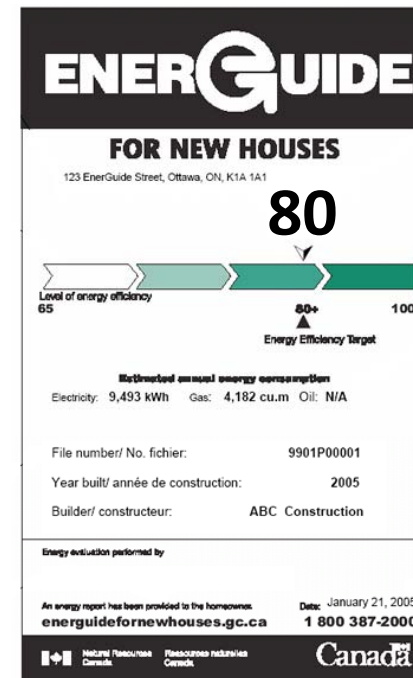
The Choice

Builders across the province have two choices
when building new homes

Prescriptive

Or

Performance





Building For **Change**

The Green Building Rule

“To be affordable, homes must be energy efficient”



What is EnerGuide For New Houses

- Developed by the Office of Energy Efficiency of Natural Resources Canada, EnerGuide For New Houses (NSHBA) is a rating system that will help you understand the energy efficiency of your new home.
- EGNH helps determine how much your annual heating costs will be and provide you an energy rating between 1 and 100.
- Includes detailed energy analysis with the latest version of Hot2000. A powerful modeling software developed by NRCan and CanmetENERGY.
- Provides a blower door test to measure actual rate of air infiltration.



Goals of the Program

- Rate the energy efficiency of new houses
- Raise the awareness of energy efficiency
- Encourage builders to have their houses rated
- See reduction in greenhouse gas emissions
- Save on homeowner energy spending



Why?

- Anyone can claim that a house is energy efficient.
- An EnerGuide for New Houses label proves it.
- The label gives you annual usage estimates for:
 - Electricity
 - Natural Gas
 - Oil
 - Propane
 - Wood
- Estimates are based on a number of standard assumptions.
(i.e.. A family of four living in the home and specific thermostat settings and usage rates for hot water, lighting and appliances.)



Basic Construction

The intention of the National Building Code of Canada is to provide a building that:

- Is safe to live in.
- Is structurally sound.
- Has a heating system of sufficient size to overcome all heat losses at design temperature.
- The 2009 Nova Scotia Building Code has prescriptive requirements to reduce energy use

Minimum Standard



EnerGuide 80

Same as EnerGuide Rated plus:

Improved energy efficiency of the house leading to reduced energy use.

examples:

- Improved air tightness level.
- Low-E Argon or better windows.
- Higher efficiency mechanical systems.



EnerGuide 80 – Why stop there?

- EnerGuide 83 -

Same as EnerGuide 80 plus:

Extra steps taken to further reduce energy consumption.

examples:

- Improved air tightness levels.
- Optimized windows.
- Solar assist DHW.
- Heat Pump systems
- Cash-back incentives





ENERGUIDE FOR NEW HOUSES



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Basic Construction	EnerGuide Rated	EnerGuide 80	EnerGuide 83	R-2000 Certified
The intention of the National Building Code of Canada is to provide a building that:	Provides estimates of energy use.	Same as EnerGuide Rated plus:	Same as EG80 plus:	Has energy efficiency Rating of EG80 plus:
Is safe to live in.	Includes a basic heat loss calculation.	Improved energy efficiency of the house leading to reduced energy use.	Extra steps taken to further reduce energy consumption.	*IAQ features.
Is structurally sound.	Includes a blower door (air tightness) test on the house.	examples:	examples:	*Environmentally friendly material choices.
Has a Heating System of sufficient size to overcome all heat losses.	Provides an EnerGuide Rating and label.	Improved air tightness levels.	Improved air tightness levels.	*Water conservation requirements.
The 2009 NS Building Code has prescriptive requirements to reduce energy use.		Low-E argon or better windows.	Optimized windows.	*Balanced and tested ventilation system.
		Higher efficiency heating and ventilation systems.	Solar assist DHW.	*Required air tightness level of 1.5 ACH or better.
			Heat Pump systems.	*Requires a Pre-Drywall inspection.
				*Built by a licensed R-2000 builder.
				*Third party warranty.

What's the difference?

What are the costs?

- EnerGuide for New Houses is a \$500 + HST service.
- Currently the registrant pays \$250 + HST while Conserve NS pays the other \$250 + HST.
- NSPI offers several grants dependant on mechanical equipment installed. Only offered to houses scoring 83 or above. Visit <http://nspower/energuide> for more information.
- Conserve NS will pay up to \$7000 for houses that reach 88 or above,. Other grants are available. Visit <http://Conservens/performanceplus> for more information.





**ENERGUIDE FOR
NEW HOUSES**

Step – by – Step

Step 1 - Registration

- Submit the enrolment form, house plans and fee to the Nova Scotia Home Builders' Association office.
- **All information must be completed on the form in order to begin the process.**
- Sign a rebate form at the NSHBA office to be eligible for possible rebates and incentives after the file is complete.





File Number :
Office Use Only

Enrolment Application

Client/Builder Name: _____ Contact: _____

Phone: _____ Fax: _____ Email: _____

Mailing Address: _____

House Owner: _____ Phone: _____

New House Address: _____

(Include Postal Code) _____

The following information is required to perform the EnerGuide Design Evaluation of your house.
Ensure ALL the information is clearly marked in the space provided to avoid delays.

Provide the following: Full set of plans (min. 1/8"=1') Site plan with North arrow.
 Window and Door Schedule Floor heights marked on plan.
 Floor Joist Depth: _____ inches Roof truss Heel Regular Raised Heel

<u>Insulation</u>		Type	Quantity	* R-value	Type	Quantity	" R-value
Flat Ceiling	_____	_____	_____	R-_____	Overhanging Floors	_____	R-_____
Sloped Ceiling	_____	_____	_____	R-_____	Floors Over Garage	_____	R-_____
Main Walls	_____	_____	_____	R-_____	Concrete Walls	_____	R-_____
Shared Wall (Garage)	_____	_____	_____	R-_____	Floor Perimeter	_____	R-_____
Headers	_____	_____	_____	R-_____	Floor Center	_____	R-_____

Window Type: (circle) Glazing: double / triple Coating: clear / LowE Fill: air / argon Spacer: metal / insulated

Heat Recovery Ventilator: Manufacturer: _____ Model: _____

Heating System: Fuel: _____ Type: _____

Make/Model: _____ Output: _____ BTU/hr

Domestic Hot Water: Fuel: _____ Type: _____

Make: _____ Model: _____ Size: _____ gal

Solar Equipment: Make: _____ Type: _____

* The EnerGuide For New Homes enrolment fee of \$250.00 + \$32.50 HST must accompany this form and be paid in full before the Design Evaluation is started. Make cheques payable to Nova Scotia Home Builders' Association. Visa and MasterCard accepted.

Client Signature: _____ Date: _____





ENERGUIDE FOR NEW HOUSES

File Number :
Office Use Only

Enrolment Application

Client/Builder Name: Joe Builder Contact: Joe Fiction
 Phone: 555-1234 Fax: 555-5678 Email: joef@joebuilder.com
 Mailing Address: 99 Ficticious Lane,
Dartmouth, NS, B2Z 1B4
 House Owner: John + Jane Doe Phone: 555-1111
 New House Address: 88 Ficticious Lane,
 (Include Postal Code) Dartmouth, NS, B2Z 1B4

The following information is required to perform the EnerGuide Design Evaluation of your house.
 Ensure ALL the information is clearly marked in the space provided to avoid delays.

Provide the following: Full set of plans (11x17 preferred) Site plan with North arrow.
 Window and Door Schedule Floor heights marked on plan.
 Floor Joist Depth: 9 1/2 inches Roof truss Heel Regular Raised Heel

Insulation	Type	Quantity	" R-value	Type	Quantity	" R-value
Flat Ceiling	Blown Cell	13"	R-50	Overhanging Floors	FG	8" R-32
Sloped Ceiling	Fibreglass	12"	R-40	Floors Over Garage	FG	8" R-32
Main Walls	FG + Rigid	6" + 1"	R-25	Concrete Walls	FG	6" R-20
Shared Wall (Garage)	FG	6"	R-20	Floor Perimeter	Rigid EPS	2" R-8
Headers	FG + Rigid	6" + 1"	R-25	Floor Center	Rigid EPS	2" R-8

Window Type: (circle) Glazing: double/triple Coating: clear LowE Fill: air argon Spacer: metal/insulated

Heat Recovery Ventilator: Manufacturer: Blower Model: B1000

Heating System: Fuel: Grease Type: Baseboard

Make/Model: N/A Output: N/A BTU/hr

Domestic Hot Water: Fuel: Grease Type: Conservor

Make: HOTH2O Model: H60C Size: 60 gal

Solar Equipment: Make: _____ Type: _____

* The EnerGuide For New Homes enrolment fee of \$250.00 + \$32.50 HST must accompany this form and be paid in full before the Design Evaluation is started. Make cheques payable to Nova Scotia Home Builders' Association. Visa and MasterCard accepted.

Client Signature: SAMPLE Date: _____



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Where do I register?



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EGNH Application Checklist

Along with a completed EnerGuide for New Houses application homeowners should work with their builder to ensure they include all of the following information:

A set of House plans (11 x 17 Ledger)

- R-values for all areas
- Windows and door RSO's (rough stud openings)
- Numbers assigned to bedrooms so they can be identified
- Site plan with north arrow for orientation
- Raised or cathedral ceiling dimensions
- Roof truss heel height
- Floor joist types and depths
- Ceiling heights
- Grade lines



Step 2 – File setup

- Nova Scotia Home Builders' Association will create the house file and assign it to an energy advisor.
- The energy advisor will pick up the file and follow it through the rest of the process.
- They will perform a Design Evaluation using the information and house plans that are provided.



Estimated Annual Energy Consumption

- Estimates are based on a number of standard assumptions, such as a family of four living in the home, specific thermostat settings, and usage rates for hot water, lighting and appliances.
- These assumptions may not reflect all lifestyles but, since they are the same for all houses, they allow a comparison between the house's rating with similar-sized houses built in similar regions.



Step 2 - "P" Base

- Just as energy usage was standardized for fair comparison, construction details are as well.
- For Nova Scotia the 'Base' house is considered one that meets the prescriptive requirements of the new Nova Scotia Building Code Regulations.
- R-40 Ceilings, R-24 Walls, R-20 basement walls, double glazed low-E argon windows with insulated spacers, a basic HRV and Electric baseboard heat and hot water.



Design Evaluation Sequence

“P” Base

The same for every file. Based on common construction practices in Nova Scotia which meet the Provincial Code.

EG80

Starting with the Base each upgrade is added which is specified on application. Then following through the list of standard upgrades until EG80 is achieved. Additional upgrades should only be added to obtain the EG80 target.

EG83

Continue adding items from the lists of as specified, standard and significant upgrades until EG83 is achieved.

As-Spec'd

All actual data from enrolment application. (R-values, model numbers, etc.)

Standard Upgrade List

* Now standard requirements in the 2009 NS Building

*R-20 Basement Walls

*3.57 AC/H Air-tightness

*Low-E Argon Windows – with insulated spacers or specified ER

*R-24 Walls and Headers

R-25 Walls and Headers

R-26 Walls and Headers

R-27.5 Walls and Headers

1.5 AC/H Air-tightness

R-40 Exposed/Overhanging Floors

R-50 Ceilings

High Efficiency HRV (Sensible Recovery Efficiency of 80 or above @ 32°F)

Other Upgrades

Other energy efficient upgrades that have a significant effect on the EnerGuide rating are:

- Drain Water Heat Recovery
- Solar Assist Hot Water Systems for heat or domestic
- Heat Pump Systems
- Condensing Furnaces
- ICF Construction



Step 3 – Evaluation Results

The Energy Advisor will provide you with the Initial Design Evaluation Summary.

This sheet will show the ratings and estimates of energy consumption for:

- “P” Base
- EnerGuide 80
- EnerGuide 83
- As Specified

Energy advisors can not recommend brands or specific products.



HAWK-EYE
Design & Construction Services



ENERGUIDE FOR NEW HOUSES

File Number :

Initial Design Evaluation Summary

Client/Bldr: _____ Contact: _____
 Phone No.: 902- _____ Cell: _____ Fax: 902- _____
 House: _____
 Address: _____

	P Base	EGNH80	EGNH83	As Specified
Ceilings (Flat)	R-40			
Ceilings (Sloped)	R-32			
Ext. Frame Walls	R-24			
Shared Walls (Garage)	R-24			
Floor Joist Headers	R-24			
Cantilevered Floors	R-32			
Floors Above Garage	R-32			
Bsmt. Pony Walls	R-24			
Bsmt. Conc. Walls	R-20			
Basement Floor - Partial	R-0			
Basement Floor - Centre	R-0			
Windows	double/low-e argon/insul			
Heat Recovery Ventilator	Basic			
Heating System	Electric BaseBoard			
DHW System	Electric 40 G Conservar			
Air Tightness Change/Hr	3.57			
Energide Rating		0	0	
Electric Use (kWh)	0.0	0.0	0.0	0.0
Nat. Gas Use (GJ)				
Oil Use (Litres)				
Propane Use (Litres)				
Estimated Fuel Cost(\$)	\$0.00	\$0.00	\$0.00	\$0.00
Difference (\$)		\$0.00	\$0.00	\$0.00
Difference from Base	\$0.00	\$0.00	\$0.00	\$0.00
Green House Gas Emissions Tonnes				
Design Heat Loss BTU/hr				



Energy Upgrade Mortgage Calculator

Home Address: Enter your home address here.

Upgrade Package Name: Enter upgrade package name here.

Upgrade Cost	Annual Fuel Savings
\$6,640.00	\$988.00
Mortgage Interest Rate	Mortgage Term
6.50%	20
Monthly Cost on Mortgage	Monthly Savings
\$49.51	\$82.33
<hr/>	
Monthly Savings After Upgrade	Is it worth it?
\$32.83	Yes

Step 4 – Decision Time

- Decide on which option or combination of options will be used in constructing the new house.
- Consider the potential benefits of constructing a more energy efficient house.
- Make construction contract changes and begin construction.



Step 5 – Testing and Verification

- Upon nearing completion, call to schedule the air tightness test and on-site verification. **Call 1-2 weeks in advance to allow for scheduling.**
- The house should be ready for occupancy with all systems installed.
- Mechanical systems need to have model numbers and outputs clearly marked on each machine.





Blower door (Air tightness) testing





Blower door (Air tightness) testing



Step 6 – Post-Inspection

- After the air tightness test and on-site verification, the energy advisor will perform the final computer simulation of the house using the data gathered.
- This will determine the final EnerGuide Rating that the house will receive.
- A revised Design Evaluation Summary will be generated showing the updated Base and As-Built column.
- The applicant signs off on the completed process.
- The report and label are mailed to the applicant.



Address
Identifies the house to which the rating applies.

Scale
The low end of the scale represents a house that is built to minimum industry standards.

File Number
Official EnerGuide for New Houses number assigned to houses that have been evaluated.

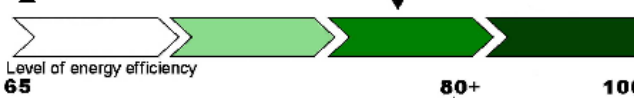
Evaluated By
Name and contact information of the EnerGuide for New Houses Energy Advisor or Service Organization.

ENERGUIDE

FOR NEW HOUSES

88 Fictitious Lane, SomewhereLand, Nova Scotia

80



Level of energy efficiency: 65 80+ 100

Energy Efficiency Target

Estimated annual energy consumption

Electricity: 14652 kWh Gas: 1231 m³

File number: 1618X1432



Date of construction: 2007

Builder: N0000 Joe Builder

Energy evaluation performed by
Energy Advisor, HAWK-EYE Design & Inspection Services
Tel: 902-827-5941, Email: info@hawk-eyedesigns.com

An energy report has been provided to the homeowner. Date: March 02, 2007

energuidefornewhouses.gc.ca 1 800 387-2000

Energy Efficiency Rating
Allows comparison of energy performance between houses of the same size. The more efficient the house, the higher the rating number.

Estimated Annual Energy Consumption
For the house under standard operating conditions. Allows comparison of the energy consumption of the house to similar houses, and helps estimate energy costs based on standard usage defaults.

Date
The date that the energy efficiency design evaluation was completed.



Step 7 – Final Stage

- When the package arrives in the mail, the EnerGuide label is placed on the electrical panel.
- The EnerGuide Rating will determine if the house qualifies for any available rebates or incentives.
- The new energy efficient house is certified and helps to create a better environment.



What if a House does not meet ERS 80?

- If at the time of final inspection the inspector will review the file and energy estimates.
- If there are any major changes from the enrolment application or from the initial design summary then the builder will be contacted.
- The final evaluation will be done to determine if the ERS 80 has been met.
- If the rating falls below 80 the energy advisor will look at cost effective options to meet compliance and submit in writing to the builder.
- The builder will be responsible to meet compliance.
- Re-inspection and/or re testing may be required.




Quality Assurance

- Parties Involved
- Roles and responsibilities
- Quality assurance



Parties Involved

- **NRCan** – Provide implementation and delivery of EGNH and R-2000, coordinate the administration at the national level and advise and support service organizations in the field.
 - **EGNH service organization** - Whose role under contract contribution agreement with NRCan is to implement and deliver EGNH and R-2000 at the local or regional level.
 - **Energy advisors / File Managers** - Perform energy evaluations, on-site inspections and recommend improvements to clients.
 - **Builder / Homeowner** – Follow the technical requirements of EGNH/R-2000 and meet target compliance. Promote and encourage the use of EGNH and R-2000 as a tool to understand how to make their homes more energy efficient.
- 

Quality Assurance


Service Organization

- Training and certification of energy advisors to ensure that evaluations are preformed by knowledgeable individuals.
- Procedures to ensure the proper collection of data and reporting of all testing.
- De-certification process for energy advisors
- Period assesment of EA's work: client review, data input and file management, air tightness testing accuracy.
- Review and explanation of all problems encountered.
- Insure actions taken to correct any problems found.



Quality Assurance

NRCan

- Contract quality assurance auditors to perform quality assurance on all EGNH service organizations and their trained energy advisors.
 - All quality assurance activities are independently performed to access client satisfaction and the accuracy of files to ensure consistency in the delivery of the EGNH service across Canada.
- 

What is R-2000

R-2000 homes are the most energy-efficient and environmentally friendly homes on the market today. They include features such as:

- A tightly sealed building envelope to reduce drafts and heat loss.
- Higher levels of insulation.
- Energy-efficient windows and doors.
- Advanced heating and cooling systems.
- A whole-house ventilation system.
- Energy-efficient appliances and lighting.
- Reduced water consumption.
- The use of environmentally responsible building materials and techniques.
- Certified to meet the R-2000 Standard; based on Indoor air quality, energy performance and environmental responsibility.



EGNH & R-2000: What's the Difference

- EnerGuide for New Houses is a program with two components.
 1. A rating system (1-100) designed to measure the energy efficiency of a new home.
 2. A step-by-step system that gives people the opportunity to incorporate energy efficient upgrades in to new homes.
- R-2000 is an advanced building standard. Not only is it designed for high levels of energy efficiency, but it also requires features like environmentally friendly building products, and must be built by a certified R-2000 builder.



VS

