Guide to the Energy Efficiency Design Summary Form

The *Energy Efficiency Design Summary* form summarizes the compliance path used by a house designer to comply with energy efficiency requirements of the Ontario Building Code. This form is completed by the person responsible for the energy efficiency design of the project, and must be submitted with the building permit application. The information on this form MUST reflect the drawings and specifications being submitted, or the building permit will be refused. Refer to Supplementary Standard SB-12 for details about building *code* compliance requirements. Further information about energy efficiency requirements for new buildings is available from the provincial building code website at www.mah.gov.on.ca, or the municipal building department.

Beginning January 1, 2012, a house designer must use one of four energy efficiency compliance options in the building code:

1. Comply with the *SB-12 Prescriptive* design tables,
2. Use the *SB-12 Performance* compliance method, and model the design against the prescriptive standards,
3. Design to *Energy Star* standards, or
4. Evaluate the design according to *EnerGuide* technical procedures and achieve a rating of 80 or more.

COMPLETING THE FORM

B. Compliance Options

Indicate the compliance option being used.

- *SB-12 Prescriptive* requires that the building conforms to a package of thermal insulation, window and mechanical system efficiency requirements set out in Subsection 2.1.1. of SB-12. Energy efficiency design modeling and testing of the building is not required under this option.
- *SB-12 Performance* refers to the alternative method of compliance set out in Subsection 2.1.2. of SB-12.. Using this approach the designer must use recognized energy simulation software (HOT2000 V9.34c1.2 or newer), and submit documents which show that the annual energy use of the building is equal to a prescriptive package.
- *Energy Star* houses must be designed to *Energy Star* requirements and be labelled on completion by Enerquality or other agency. The *Energy Star* BOP form must be submitted with the permit documents.
- *EnerGuide80* houses are validated by NRCan authorized energy advisors and must achieve a rating of 80 or more when evaluated in accordance with EnerGuide administrative and technical procedures.

C. Project Design Conditions

Climatic Zone: The number of degree days for Ontario cities is contained in Supplementary Standard SB-1
Windows, Skylights and Glass Doors: If the ratio of the total gross area of windows, sidelights, skylights and glass doors to the total gross area of walls is more than 17%, higher efficiency glazing is required. If the ratio is more than 22% the *SB-12 Prescriptive* option may not be used. The total area is the sum of all the structural rough openings. Some exceptions apply. Refer to 2.1.1.1. of SB-12 for further details.

Fuel Source and Heating Equipment Efficiency: The fuel source and efficiency of the proposed heating equipment must be specified in order to determine which *SB-12 Prescriptive* compliance package table applies.
Other Building Conditions: These construction conditions affect *SB-12 Prescriptive* compliance requirements.

D. Building Specifications

Thermal Insulation: Indicate the RSI or R-value being proposed where they apply to the house design. Under the *SB-12 Prescriptive* option, RSI 3.52 wall insulation is permitted in certain conditions where other design elements meet higher standards. Refer to SB-12 for further details.

E. Performance Design Summary

This section is not required to be completed if the *SB-12 Prescriptive* option is being used.

AIRTIGHTNESS REQUIREMENTS FOR NEW HOUSES

All houses must comply with increased air barrier requirements in the building code. Notice of air barrier completion must be provided and an inspection conducted prior to it being covered. A blower door test to verify the air tightness of the house must be conducted during construction if the *NRCan EnerGuide80* option is used, or if the *SB-12 Performance* or *Energy Star* options are used and an air tightness of less than 2.5 ACH @ 50 Pa in the case of detached houses, or 3.0 ACH @ 50 Pa in the case of attached houses is necessary to meet the required energy efficiency standard.

ENERGY EFFICIENCY LABELING FOR NEW HOUSES

Energy Star and *EnerGuide* issue labels for new homes constructed under their energy efficiency programs. The building code does not regulate new home labelling.

Energy Efficiency Design Summary

(Part 9 Residential)

This form to be completed & signed by the person who reviews and takes responsibility for the energy efficiency design of the project
Information on completing this form is contained on the reverse

For use by Principal Authority	
Application No:	Model/Certification Number

A. Project Information

Building number, street name		Unit number	Lot/Con
Municipality	Postal Code	Reg. Plan number/other description	

B. Compliance Option

❑ *SB-12 Prescriptive* [SB-12-2.1.1.]	Table: Package:
❑ *SB-12 Performance** [SB-12- 2.1.2.1	• Attach energy performance calculations using an approved software
❑ *Energy Star®** [SB-12- 2.1.3.]	• Attach BOP form. House must be labeled on completion by Energy Star
❑ *EnerGuide 80® **	• House must be evaluated by NRCan advisor and meet a rating of 80

C. Project Design Conditions

Climatic ZoneJSB'1):'	Heating Equipment Efficiency	. Space Heating Fuel Source
❑ Zone 1 (< 5000 degree days)	❑≥ 90% AFUE ❑≥ 78% < 90% AFUE	❑ Gas ❑ Propane ❑ Solid Fuel ❑ Oil ❑ Electric ❑ Earth Energy
❑ Zone 2 (≥ 5000 degree days)		

Windows + Skylights + Glass Doors		'Other Building Conditions
Gross Wall Area = m^2	% Windows + ___%	❑ ICF Basement ❑ Walkout Basement ❑ Log/Post&Beam
Gross Window + Area = m^2		❑ ICF Above Grade ❑ Slab-on-ground

D. Building Specifications

Building Component	RSI//R values	Building Component	Efficiency Ratings
Thermal Insulation		**Windows & Doors**	
Ceiling with Attic Space		Windows/Sliding Glass Doors	
Ceiling without Attic Space		Skylights	
Exposed Floor		**Mechanicals**	
Walls Above Grade		Space Heating Equip[2]	
Basement Walls		HRV Efficiency (%)	
Slab (all >600mm below grade)		DHW Heater (EF)	
Slab (edge only ≤ 600mm below grade)		·NOTES **1. Provide U-Value in W/m2.K, or ER rating**	
Slab (all ≤ 60Dmm below grade, or heated)		**2. Provide AFUE or indicate if condensing type combined system used**	

E. Performance Design Verification [complete applicable sections if *SB-12* Performance, *Energy Star* or *EnerGuide80* options used]

SB-12 Performance:
The annual energy consumption using Subsection 2.1.1. SB-12 Package_____is_____Gj (1GJ=1000Mj)
The annual energy consumption of this house as designed is_____Gj
The software used to simulate the annual energy use of the building is; _____
The building is being designed using an air leakage of air change

Energy Star. BOP form attached. The house will be labeled on completion by:

Energy Star and *EnerGuideBO:*
Evaluator/Advisor/Rater Name: **Evaluator/Advisor/Rater Licence#:**

F. Declaration {by the person who reviews and takes responsibility for the energy efficiency design]

Il certify that I have reviewed the design documents submitted with the permit application, that the information contained on this form is consistent with the design documents, and that information used in any annual energy use calculations, if applicable, is the true representation of the design documents.

Name **Signature** **Date:**

Table 3.1.1.2.A (IP)
ZONE 1 - Compliance Packages for Space Heating Equipment with AFUE ≥ 92%
Forming Part of Sentence 3.1.1.2.(1)

Component	Thermal Values[8]	Compliance Package					
		A1	A2	A3	A4	A5	A6
Ceiling with Attic Space	Min. Nominal R[1]	60	60	50	60	50	60
	Max. U[2]	0.017	0.017	0.020	0.017	0.020	0.017
	Min. Effective R[2]	59.22	59.22	49.23	59.22	49.23	59.22
Ceiling Without Attic Space	Min. Nominal R[1]	31	31	31	31	31	31
	Max. U[2]	0.036	0.036	0.036	0.036	0.036	0.036
	Min. Effective R[2]	27.65	27.65	27.65	27.65	27.65	27.65
Exposed Floor	Min. Nominal R[1]	31	31	35	31	35	31
	Max. U[3]	0.034	0.034	0.031	0.034	0.031	0.034
	Min. Effective R[3]	29.80	29.80	32.02	29.80	32.02	29.80
Walls Above Grade	Min. Nominal R[1]	22	19 + 5 ci	14 + 7.5 ci	22 + 5 ci	19 + 5 ci	22 + 5 ci
	Max. U[3]	0.059	0.049	0.054	0.047	0.049	0.047
	Min. Effective R[3]	17.03	20.32	18.62	21.40	20.32	21.40
Basement Walls[6]	Min. Nominal R[1]	20 ci	12 +10 ci	20 ci	20 ci	12 + 5 ci	20 ci
	Max. U[4]	0.047	0.048	0.047	0.047	0.063	0.047
	Min. Effective R[4]	21.12	20.84	21.12	21.12	15.96	21.12
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal R[1]	—	—	—	—	—	—
	Max. U[4]	—	—	—	—	—	—
	Min. Effective R[4]	—	—	—	—	—	—
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal R[1]	10	10	10	10	10	10
	Max. U[4]	0.090	0.090	0.090	0.090	0.090	0.090
	Min. Effective R[4]	11.13	11.13	11.13	11.13	11.13	11.13
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal R[1]	10	10	10	10	10	10
Windows and Sliding Glass Doors	Max. U[5]	0.28	0.28	0.25 –	0.28	0.28	0.28
	Energy Rating	25	25	29	25	25	25
Skylights	Max. U[5]	0.49	0.49	0.49	0.49	0.49	0.49
Space Heating Equipment	Min. AFUE	96%	96%	94%	96%	94%	92%
HRV	Min. SRE	75%	75%	61%	75%	70%	65%
Domestic Water Heater[7]	Min. EF	0.80	0.70	0.67	0.67	0.80	0.80
Column 1	2	3	4	5	6	7	8

Notes to Table 3.1.1.2.A (IP):
(1) The values listed are minimum Nominal R-Values for the thermal insulation component only.
(2) U-Value and effective R value shall include entire ceiling assembly components, from interior air film to vented space air film above insulation.
(3) U-Value and effective R value shall include entire exposed floor or above grade wall assembly components, from interior air film to exterior air film.
(4) U-Value and effective R value shall include entire basement wall or slab assembly components and interior air film.
(5) U-Value is the *overall coefficient of heat transfer* for a window assembly, sliding glass door assembly or skylight assembly expressed in Btu/(h·ft²·F).
(6) In the case of *basement* wall assemblies, where R20 ci is required R12 + 10 ci is permitted to be used or vice versa; or where R12 + 5 ci is required, R15 ci is permitted to be used or vice versa.
(7) If an EF of a water tank is not indicated in a compliance package, there is no EF requirement for water tank for that specific compliance package.
(8) Nominal and effective R values are expressed in (h·ft²·F)/Btu. U-Values are expressed in Btu/(h·ft²·F).