

Energy Efficiency Design Summary: Performance & Other Acceptable Compliance Methods

(Building Code Part 9, Residential)

This form is used by a designer to demonstrate that the energy efficiency design of a house complies with the building code using the Performance or Other Acceptable Compliance Methods described in Subsections 3.1.2. and 3.1.3. of SB-12,

This form must accurately reflect the information contained on the drawings and specifications being submitted. 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 or the municipal building department.

| 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 [indicate the building code compliance option being employed in this house design]

| | |
|---|--|
| <input type="checkbox"/> SB-12 Performance* [SB-12 - 3.1.2.] | * Attach energy performance results using an approved software (see guide) |
| <input type="checkbox"/> ENERGY STAR®* [SB-12 - 3.1.3.] | * Attach Builder Option Package [BOP] form |
| <input type="checkbox"/> R-2000®* [SB-12 - 3.1.3.] | * Attach R-2000 HOT2000 Report |

C. Project Building Design Conditions

| Climatic Zone (SB-1): | Heating Equipment Efficiency | Space Heating Fuel Source |
|---|---|---|
| <input type="checkbox"/> Zone 1 (< 5000 degree days) | <input type="checkbox"/> ≥ 92% AFUE | <input type="checkbox"/> Gas <input type="checkbox"/> Propane <input type="checkbox"/> Solid Fuel |
| <input type="checkbox"/> Zone 2 (≥ 5000 degree days) | <input type="checkbox"/> ≥ 84% < 92% AFUE | <input type="checkbox"/> Oil <input type="checkbox"/> Electric <input type="checkbox"/> Earth Energy |
| Ratio of Windows, Skylights & Glass (W, S & G) to Wall Area | | Other Building Characteristics |
| Area of walls = _____m ² or _____ft ² | W, S & G % = _____ | <input type="checkbox"/> Log/Post&Beam <input type="checkbox"/> ICF Above Grade <input type="checkbox"/> ICF Basement |
| Area of W, S & G = _____m ² or _____ft ² | | <input type="checkbox"/> Slab-on-ground <input type="checkbox"/> Walkout Basement <input type="checkbox"/> Air Conditioning <input type="checkbox"/> Combo Unit <input type="checkbox"/> Air Source Heat Pump (ASHP) <input type="checkbox"/> Ground Source Heat Pump (GSHP) |
| SB-12 Performance Reference Building Design Package indicating the prescriptive package to be compared for compliance | | |
| SB-12 Referenced Building Package (input design package): Package: _____ Table: _____ | | |

D. Building Specifications [provide values and ratings of the energy efficiency components proposed, or attach ENERGY STAR BOP form]

| Building Component | Minimum RSI / R values or Maximum U-Value ⁽¹⁾ | Building Component | Efficiency Ratings |
|--|--|--|--------------------|
| Thermal Insulation | Nominal Effective | Windows & Doors Provide U-Value ⁽¹⁾ or ER rating | |
| Ceiling with Attic Space | | Windows/Sliding Glass Doors | |
| Ceiling without Attic Space | | Skylights/Glazed Roofs | |
| Exposed Floor | | Mechanicals | |
| Walls Above Grade | | Heating Equip.(AFUE) | |
| Basement Walls | | HRV Efficiency (SRE% at 0° C) | |
| Slab (all >600mm below grade) | | DHW Heater (EF) | |
| Slab (edge only ≤600mm below grade) | | DWHR (CSA B55.1 (min. 42% efficiency)) | # Showers_____ |
| Slab (all ≤600mm below grade, or heated) | | Combined Space / Dom. Water Heating | |

(1) U value to be provided in either W/(m²·K) or Btu/(h·ft²·F) but not both.

E. Performance Design Verification [Subsection 3.1.2. Performance Compliance]

The annual energy consumption using Subsection 3.1.1. SB-12 Reference Building Package is _____ GJ (1 GJ =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 tightness baseline of:

- OBC reference ACH, NLA or NLR default values (no depressurization test required)
- Targeted ACH, NLA or NLR. Depressurization test to meet _____ ACH50 or NLR or NLA

- Reduction of overall thermal performance of the proposed building envelope is not more than 25% of the envelope of the compliance package it is compared against (3.1.2.1.(6)).
- Standard Operating Conditions Applied (A-3.1.2.1 - 4.6.2)
- Reduced Operating Conditions for Zero-rated homes Applied (A-3.1.2.1 - 4.6.2.5)

- On Site Renewable(s): Solar: _____
Other Types: _____

F. ENERGY STAR or R-2000 Performance Design Verification [Subsection 3.1.3. Other Acceptable Compliance Methods]

- The NRCan “ENERGY STAR for New Homes Standard Version 12.6 ” technical requirements, applied to this building design result in the building performance meeting or exceeding the prescriptive performance requirements of the Supplementary Standard SB12 (A-3.1.3.1).
- The NRCan, “2012 R-2000 Standard ” technical requirements, applied to this building design result in the building performance meeting or exceeding the prescriptive performance requirements of the Supplementary Standard SB12 (A-3.1.3.1).

Performance Energy Modeling Professional

Energy Evaluator/Advisor/Rater/CEM Name and company:

Accreditation or Evaluator/Advisor/Rater License #

ENERGY STAR or R-2000

Energy Evaluator/Advisor/Rater/ Name and company:

Evaluator/Advisor/Rater License #

G. Designer(s) [name(s) & BCIN(s), if applicable, of person(s) providing information herein to substantiate that design meets the building code]

Qualified Designer: Declaration of designer to have reviewed and take responsibility for the design work.

| Name | BCIN | Signature |
|------|------|-----------|
| | | |

Guide to the Energy Efficiency Design Summary Form for Performance & Other Acceptable Compliance Methods

COMPLETING THE FORM

B. Compliance Options

Indicate the compliance option being used.

- *SB-12 Performance* refers to the method of compliance in Subsection 3.1.2. of SB-12. Using this approach the designer must use recognized energy simulation software (such as HOT2000 V10.51 or newer), and submit documents which show that the annual energy use of the proposed building is equal to or less than a prescriptive (referenced) building package.
- *ENERGY STAR* houses must be designed to *ENERGY STAR* requirements and verified on completion by a licensed energy evaluator and/or service organization. The *ENERGY STAR* BOP form must be submitted with the permit documents.
- *R-2000* houses must be designed to the *R-2000 Standard* and verified on completion by a licensed energy evaluator and/or service organization. The HOT2000 report must be submitted with the permit documents.

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, glazing in doors and sliding glass doors to the total gross area of walls is more than 17%, higher efficiency glazing is required. The total area is the sum of all the structural rough openings. Some exceptions apply. Refer to 3.1.1.1. 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. Refer to SB-12 for further details.

E. Performance Design Summary

A summary of the performance design applicable only to the *SB-12 Performance* option.

F. ENERGY STAR or R-2000 Performance Method

Design to ENERGY STAR or R-2000 Standards.

G. House Designer

The building code requires designers providing information about whether a building complies with the building code to have a BCIN. Exemptions apply to architects, engineers and owners designing their own house.

BUILDING CODE REQUIREMENTS FOR AIRTIGHTNESS IN 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.

The air leakage rates in Table 3.1.2.1. are not requirements. The Table is not intended to require or suggest that the building meet those airtightness targets. They are provided only as default or reference values for the purpose of annual energy simulations, should the builder/owner decide to perform such simulations. They are given in three different metrics; ACH, NLA, NLR. Any one of them can be used. They can be used as a default values for both a reference and proposed building or, where an air leakage test is conducted and credit for airtightness is claimed, the airtightness values in Table 3.1.2.1. can be used for the reference building and the actual leakage rates obtained from the air leakage test can be used as inputs for the proposed building.

OBC Reference Default Air Leakage Rates (Table 3.1.2.1.)

| | | | |
|-------------------|-----------|--|-----------------------------|
| Detached dwelling | 3.0 ACH50 | NLA 2.12 cm ² /m ² | NLR 1.32 L/s/m ² |
| Attached dwelling | 3.5 ACH50 | NLA 2.27 cm ² /m ² | NLR 1.44 L/s/m ² |

The building code requires that a blower door test be conducted to verify the air tightness of the house during construction if the *SB-12 Performance* option is used and an air tightness of less than 3.0 ACH @ 50 Pa (or NLA or NLR equivalent) in the case of detached houses, or 3.5 ACH @ 50 Pa (or NLA or NLR equivalent) in the case of attached houses is necessary to meet the required energy efficiency standard.

ENERGY EFFICIENCY LABELING FOR NEW HOUSES

ENERGY STAR and *R-2000* may issue labels for new homes constructed under their energy efficiency programs. The building code does not currently regulate or require new home labeling.