



FAQs for Energy Efficiency Design Summary Forms

December 6, 2016

These Q & As are meant to offer guidance for building officials, builders and permit applicants when encountering interpretation issues with Building Code requirements under SB-12 and the use of the Energy Efficiency Design Summary (EEDS) forms. If you have other interpretation questions you would like to see included here, please send them along to the OBOA at: info@oboa.on.ca.

Q: Is a signature and BCIN of the House Designer required at the bottom of the EEDS form?

A: Clause 3.2.4.7.(f) of Division C of the Building Code stipulates that a registered person who reviews and takes responsibility for design activities is to provide their name, identifying number and signature on any document submitted in support of an application for a permit. Since the EEDS form is not a prescribed document (unless required under Bylaw) a designer has the option of providing similar information that is sufficiently detailed on the plans or other forms to permit the design to be assessed for compliance. The benefit of using the EEDS form is to capture basic SB-12 information to minimize delays in permit processing and to improve efficiency with inspections. For guidance on qualification requirements for Energy Evaluators, please refer to the Ministry of Municipal Affairs & Housing's Information Sheet 2011-2 which can be found on their website.

Q: Why are there two separate EEDS forms and how much information needs to be completed on the form?

A: With refinements to the compliance path options in SB-12 it was felt separate forms for the prescriptive and performance methods would better serve the industry. The two forms capture similar information found on the old form as well as incorporating new changes effective January 2017. The amount of information to be provided depends on which compliance path and options the applicant chooses.

Q: Can I submit a performance design based on model analogues that exceed by not less than 15% the energy efficiency levels that were in effect prior to January 1, 2017?

A: This would be permitted under Part 12; however, the intent of the new requirements is to move towards a new Energuide Rating Scale that better reflects energy improvements.

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- Q:** Under which option(s) is an air tightness (blower door/house depressurization) test required to achieve compliance with the Building Code?
- A:** Previously an air tightness test was only required to be submitted to the Building Official for EnerGuide 80 or ENERGY STAR® performance options or if the performance compliance option in 2.1.2. of SB-12 was used where the designer assumed an air tightness less than 2.5 ACH @ 50Pa in case of detached houses, or 3.0 ACH @50Pa in the case of attached townhouses (2.1.2.(6)). Under Chapter 3 the same requirements for testing apply. In addition an air tightness test is required when substitutions are being used under the prescriptive option path.
- Q:** What should a municipality be looking for to confirm compliance with the performance path options?
- A:** Completion of EEDS form and a sign-off form or report including results from the blower door test when used to verify air tightness less than 2.5 ACH @ 50Pa in the case of detached houses, or 3.0 ACH @ 50Pa in the case of attached townhouses (see 2.1.2.(6)) for construction conformance. NOTE: While the involvement by a certified energy evaluator may be needed as a program requirement, it is not necessarily a requirement under the Building Code.
- Q:** In section C, what does “ W, S & G % = ” mean?
- A:** This is the ratio, expressed as a percentage of the gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors against the gross area of wall and is used to determine the appropriate compliance path option and any required fenestration upgrades.
- Q:** For the purposes of calculating window area, what dimension is used: rough structural opening; window frame; or actual glass area?
- A:** Window area is based on the rough structural opening (studs, header and sill) because the gap between the window and the rough opening does not meet the performance levels of the wall assembly.
- Q:** For the purposes of calculating the percentage of window-to-wall area in a townhouse, is the party wall considered as part of the wall area? Refer to Appendix 3.1.1.1. (7), (8) and (9).
- A:** Yes. For the purposes of calculating the percentage of window-to-wall area in a townhouse, the party wall between units is considered an exterior wall in determining the gross wall area of the home.

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Q: When an applicant selects the ENERGY STAR® option, do they need to complete section D of the EEDS form in addition to attaching the BOP (Builder Option Package) summary?

A: Although all of the information in section D is captured on the BOP form, having the information duplicated on the EEDS may be beneficial for record keeping and to assist inspection personal in the field.

Q: The EEDS form includes the requirement for a BOP form for compliance verification under Section E. Do I still need to ensure that the house is labeled?

A: No, labelling is not a requirement under the Building Code. Labeling is a program requirement by the agencies responsible for administering ESNH in Ontario. The Building Code only requires compliance with the Technical Specifications which can be certified by an Energy Advisor on the BOP Form.

Q: If a builder elects to use trade-offs or substitutions, how should the EEDS form be completed?

A: This information is captured in Section D on the prescriptive EEDS Form. The form is to be completed in the normal manner with the appropriate Table and package indicated in Section B.

Q: Why are both nominal and effective insulation values shown on the EEDS form and what methodology can I use to calculate U value or Effective R value of an assembly?

A: This was a change requested by the industry to recognize higher performing assemblies. The Code is introducing the effective R value concept for the first time for houses and while the Appendix provides guidance on one way of calculating effective R values, there are other established and recognized good engineering practices such as those identified in 6.2.1.1.(1) of the Building Code. In the case of wood framed walls, literature (ASHRAE) suggests that either parallel-path method or isothermal-planes method can be used. The examples and methodology used in the Appendix are not intended to limit the calculation to only one methodology. Designers are expected to select a methodology that is appropriate to their circumstances. Where effective values are used, supporting documentation may be required by the authority having jurisdiction (AHJ).

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- Q:** Will the AHJ accept a combination of effective and nominal R values to meet minimum compliance? For example, if a home contains multiple wall types (e.g. a tall wall assembly, attached garage wall, etc.) does the builder need to report R values for all exterior walls in nominal, or all in effective, or weighted average of the effective R values?
- A:** The use of weighted averages could cause some confusion. SB12 specifies that the component(s) need only conform to one of the compliance thermal values indicated. Where different configurations are being used in different areas it should be clearly noted on the EEDS form.
- Q:** Can the EEDS form be used for additions?
- A:** The prescriptive EEDS form includes a location for noting the use of Table 3.1.1.11 when using the prescriptive option path for additions. Information for those areas as applicable can be inserted to support other documentation provided with the permit application. An applicant may also choose to use one of the packages in Article 3.1.1.2., 3.1.1.3. or use the performance path. Where a substitution is being considered under 3.1.1.4., air leakage of the whole dwelling needs to be considered.
- Q:** I have heard there are some differences between the CSA F280-M90/HRAI Digest referenced in Part 6 of the Building Code and Heat loss/gain calculations provided by HOT2000. Should I be concerned?
- A:** There may be differences in heat loss / heat gain loads when comparing values from the CSA F280-M, HRAI licensed design schedule or the HOT2000 House report. The Building Code currently references a few good design practices such as CSA F280-M, the HRAI Digest, and the ASHRAE Fundamentals. HOT2000 is essentially based on standards listed under acceptable good design practice.
- Q:** Which version of ENERGY STAR for New Homes should we be using for compliance under the OBC?
- A:** The document that is referenced is known as "ENERGY STAR® for New Homes: Technical Specification – Ontario". Since the last SB-12 update, Natural Resources Canada has issued a new ESNH standard known as "ENERGY STAR for New Homes Standard Version 12.6 which is approximately 3 - 8% more energy efficient than the SB-12 coming into force on January 1, 2017. Since the Building Code is a minimum standard, building to the energy efficiency levels under the ESNH Standard Version 12.6 would be deemed to meet or exceed the prescriptive performance requirements of SB12 (A 3.1.3.1).

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- Q:** Drain water heat recovery (DWHR) units are now mandatory under the prescriptive compliance paths in SB-12. I am designing a bungalow and do not have the necessary clearances below the shower to install one. What are my options?
- A:** While the performance method is available, the intent of the provision is to require their installation where space permits. The AHJ may want to evaluate on a case by case basis.
- Q:** What is the maximum distance between two showers that can be served by one DWHR unit?
- A:** The two CSA Standards referenced in 3.1.1.12 do not specify how close a shower must be to a DWHR unit; however, the effectiveness could be reduced if drain water must travel a great distance. In most cases the maximum distance will be dictated by the minimum pipe slope and available joist space.
- Q:** 3.1.1.1.(14) states the thermal value of the rim joist or header area shall not be less than the value of the insulation in the walls above grade. If I am doing a design based on continuous insulation does this mean it must extend over the rim joist?
- A:** Continuous insulation is intended to minimize thermal bridges in an assembly and is generally uninterrupted across all structural members. While it is desirable to minimize thermal bridging, the rim joist is not part of the wall assembly.
- Q:** Under Section D it shows an EF rating for domestic hot water heaters. Some manufactures do not have published EF ratings and instead use thermal efficiency (TE). Will Building Officials accept efficiency in TE where there is no published EF rating?
- A:** In some instances the appliance used for domestic hot water heating (not combined space and water heating) will not have an EF rating available. There are large capacity (75,000 btu+) condensing domestic hot water appliances which have efficiency ratings based on TE (Thermal efficiency) only. Since home efficiency technical standards such as "Energy Star for New Homes version 12.6 allocates the same credit for 90% TE condensing hot water appliances and 0.80 EF condensing hot water appliances, they may be considered interchangeable (refer to Natural Resources Canada Energy Star for New Homes Standard version 12.6, page 55-table 49 ; Domestic Hot Water Tank Ratings).

Q: What do I need to consider to ensure that the heat or energy recovery ventilator that I will select complies with the compliance packages of the new Ontario Building Code starting January 1st 2017?

A: There are three factors that need to be considered when selecting a heat or energy recovery ventilator (H/ERV) to ensure it complies with the new compliance packages of the SB-12 starting January 1st 2017.

- 1- The installed capacity (L/s) of the H/ERV must equal or exceed the minimum capacity required by the building code (Table 9.32.3.4.A);
- 2- The H/ERV must equal or exceed the minimum SRE required in the compliance package based on a test temperature of 0°C at an air flow equal to the principle exhaust flow but need not to exceed 30 L/s.
- 3- The H/ERV must equal or exceed the minimum SRE of 55% based on a test temperature of -25°C at an air flow not less than 30L/s.

No. bedrooms	Compliance package	Min SRE requirement	
		0°C	-25°C
1	A1	75% at 15 L/s (31.8 cfm)	55% at 30 L/s (63.6 cfm)
2	A1	75% at 22.5 L/s (47.7 cfm)	55% at 30 L/s (63.6 cfm)
3 and more	A1	75% at 30 L/s (63.6 cfm)	55% at 30 L/s (63.6 cfm)

Q: Does a house energy label or an air tightness test affect the issuance of an Occupancy Permit?

A: The requirements for an Occupancy Permit make no specific reference to the requirement for an air tightness test to confirm compliance with air tightness requirements under the various performance paths. The requirements of an Occupancy Permit as noted earlier includes the requirement that the building envelope be substantially complete and the heating system is complete, operational and tested. Substantial completion of the building envelope could mean that the building envelope is substantially in compliance with the required air tightness test results under the performance path. However it would not require full compliance. Some additional work may be required to be in full compliance. Moreover, the provisions for Occupancy Permits do not in fact include a requirement that the building envelope be tested for the purposes of issuing an Occupancy Permit.

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Q: Does compliance with the energy efficiency requirements using the prescriptive paths affect the issuance of an occupancy permit?

A: Yes. Compliance with the prescriptive energy provisions in the Building Code would require various building components and assemblies in a house to have certain characteristics. Accordingly, cladding, windows, insulation, vapour barriers, air barriers and heating systems must be complete or substantially complete. *Substantial completion* means the building is ready to be used for its intended purpose, although some work may remain to be done. *Substantial completion* includes completion of all life safety systems, a weather-tight envelope and adequate protection of building occupants from consequences of additional construction activities during final completion.

Under the requirements for occupancy of certain residential buildings including houses, semi-detached buildings and townhouses, Occupancy Permits have been required since January 1, 2012. Under these new provisions, occupancy can only be granted and an Occupancy Permit can only be issued when the house passes an occupancy inspection. The occupancy inspection requires among other things that the 'building envelope' including cladding, roofing, windows, doors, insulation, vapour barriers and air barriers are substantially complete. In addition, the occupancy inspection requires the heating systems to be 'complete, operational and tested'.

This means that the prescriptive requirements for energy efficiency under the Building Code would need to be met before occupancy could be allowed and an Occupancy Permit issued.

Q: There are no thermal requirements listed for the separation of conditioned spaces at a party wall. Is there a requirement to minimize thermal bridging and in particular at the foundation wall?

A: A good practice would be to return the insulation along the party wall a minimum of 600 mm. which is consistent with the insulation requirement for concrete slabs.

The above FAQ's were developed by an industry stakeholder group, including the Ontario Home Builders Association, Large Municipal Chief Building Officials and the Ontario Building Officials Association. The group continues to monitor and transfer information that will increase the understanding and compliance with the new Code requirements on Energy Efficiency.