Ministry of
Municipal Affairs

Building and Development Branch
777 Bay St., 23rd Floor
Toronto ON M5G 2E5
Telephone: (416) 585-6656
Fax: (416) 585-7455
www.ontario.ca/buildingcode

Ministère des
Affaires municipales

Direction du bâtiment et de l'aménagement
777, rue Bay, 23é étage
Toronto ON M5G 2E5
Téléphone: (416) 585-6656
Télécopieur: (416) 585-7455
www.ontario.ca/buildingcode

July 7, 2016

TO: BUILDING CODE USERS

The enclosed replacement pages to the 2012 Building Code Compendium Edition[1] reflect recent revisions to Supplementary Standards SB-5 and SB-12.

In particular, Supplementary Standard SB-12 "Energy Efficiency for Housing" has been amended to include:

- changes to Chapter 1 which relate to revisions in Chapter 3
- minor editorial changes to Chapter 2 which will continue to apply to construction for which a permit has been applied for before January 1, 2017
- major revisions to 3 Chapter which will apply to construction for which a permit has been applied for after December 31, 2016 which include:
    - new prescriptive compliance packages that provide minimum 15 per cent energy efficiency improvement over existing packages
    - drain water heat recovery units as a mandatory requirement for all prescriptive compliance packages
    - heat or energy recovery ventilators as a mandatory requirement in all packages in order to protect indoor air quality as homes get increasingly "air tight"
    - thermal U and effective RSI values along with nominal RSI values to provide added flexibility in the choice of different assembly structures e.g. basement wall and roofs
    - credits for reducing air leakage to encourage better energy conservation

Changes to the Code are identified on the amendment pages by a unique symbol and a corresponding effective date. These pages should be inserted in your Code now. Replaced pages should be kept for future reference.

ServiceOntario Publications is the official publisher and vendor of the 2012 Building Code Compendium and the amendment pages. You may contact ServiceOntario Publications by phone at 416-326-5300, 1-800-668-9938 (toll-free), TTY 1-800-268-7095 or www.serviceontario.ca/publications.

For further information, please visit the Building Code website at www.ontario.ca/buildingcode.

Brenda Lewis
Director

Encl.

[1] The Compendium is not an official copy of the Act and Code. Official copies of the legislation can be accessed from www.e-laws.gov.on.ca.

2012 Building Code Compendium

Volume 1

July 7, 2016 update
(Containing MR-16-S-25 and MR-16-S-26)

COMMENCEMENT

Ontario Regulation 332/12 comes into force on the 1st day of January, 2014.

r$_1$ Amending Ontario Regulation 151/13 comes into force on the 1st day of January, 2014.
r$_2$ Amending Ontario Regulation 360/13 comes into force on the 1st day of January, 2014.
r$_{2.1}$ Amending Ontario Regulation 360/13 comes into force on the 1st day of January, 2015.
r$_3$ Amending Ontario Regulation 361/13 comes into force on the 1st day of January, 2014.
r$_{3.1}$ Amending Ontario Regulation 361/13 comes into force on the 1st day of January, 2015.
r$_4$ Amending Ontario Regulation 368/13 comes into force on the 1st day of January, 2015.
r$_5$ Amending Ontario Regulation 191/14 comes into force on the 1st day of January, 2015.

m$_1$ Ruling of the Minister of Municipal Affairs and Housing (Minister's Ruling) MR-13-S-24 comes into force on the 1st day of January 2014.
m$_2$ Ruling of the Minister of Municipal Affairs (Minister's Ruling) MR-16-S-25 comes into force on the 7th day of July 2016.
m$_3$ Ruling of the Minister of Municipal Affairs (Minister's Ruling) MR-16-S-26 comes into force on the 7th day of July 2016.

EDITORIAL

e$_1$ Editorial correction issued for January 1st, 2014.
e$_2$ Editorial correction issued for January 1st, 2014.
e$_{2.1}$ Editorial correction issued for January 1st, 2015.
e$_3$ Editorial correction issued for January 1st, 2015.
e$_4$ Editorial correction issued for July 7th, 2016.

COVER PHOTO CREDITS

1	2	3	4
5	6	7	8

1. Stephen Hawking Centre at the Perimeter Institute of Theoretical Physics; Teeple Architects Inc.; Scott Norsworthy Photography
2. Lawren Harris House; Drew Mandel Architects; Tom Arban Photography Inc.
3. Sisters of St. Joseph Motherhouse; Teeple Architects Inc.; Shai Gil Photography
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Code Amendment History

The first Ontario Building Code was issued in 1975. The 1975 and subsequent editions of the Building Code have been issued as follows:

Building Code Edition	Date Filed	Effective Date
O. Reg. 925/75 (1975 Building Code)	November 24, 1975	December 31, 1975
O. Reg. 583/83 (1983 Building Code)	September 15, 1983	November 30, 1983
O. Reg. 419/86 (1986 Building Code)	July 18, 1986	October 20, 1986
O. Reg. 413/90 (1990 Building Code)	July 30, 1990	October 1, 1990
O. Reg. 403/97 (1997 Building Code)	November 3, 1997	April 6, 1998
O. Reg. 350/06 (2006 Building Code)	June 28, 2006	December 31, 2006
O. Reg. 332/12 (2012 Building Code)	November 2, 2012	January 1, 2014

The following Table lists the amendments to the 2012 Building Code made since the filing of O. Reg. 332/12.

Regulatory Amendments to the 2012 Building Code – Ontario Regulation 332/12			
Amendment	Date Filed	Effective Date	Nature of Amendment
O. Reg. 151/13	May 9, 2013	January 1, 2014	Sprinklering of retirement homes
O. Reg. 360/13	December 20, 2013	January 1, 2014	Fees
		January 1, 2015	
O. Reg. 361/13	December 20, 2013	January 1, 2014	Housekeeping changes, fireplace emission limits Revise Supplementary Standard SA-1
		January 1, 2015	EIFS
O. Reg. 368/13	December 27, 2013	January 1, 2015	Accessibility
O. Reg. 191/14	September 23, 2014	January 1, 2015	Midrise wood construction, accessibility, housekeeping changes Revise Supplementary Standards SA-1, SB-1, SB-2, SB-3, SB-12

The following Table lists Minister's Rulings that have been made to adopt amendments to codes, formulae, standards, guidelines or procedures referenced in the 2012 Building Code.

Minister's Rulings to adopt amendments to codes, formulae, standards, guidelines or procedures referenced in the 2012 Building Code			
Ruling Number	Date of Ruling	Effective Date	Nature of Amendment
MR-13-S-24	September 1, 2013	January 1, 2014	Revise Table 1.3.1.2. of Division B Revise Supplementary Standards SA-1, SB-5 and SB-12
MR-16-S-25	July 7, 2016	July 7, 2016	Revise Table 1.3.1.2. of Division B Revise Supplementary Standard SB-5
MR-16-S-26	July 7, 2016	July 7, 2016	Revise Table 1.3.1.2. of Division B Revise Supplementary Standard SB-12

r5

Table 1.3.1.2. (Cont'd)
Documents Referenced in the Building Code
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document(1)	Code Reference
MMAH	Supplementary Standard SB-1, September 2, 2014	Climatic and Seismic Data	1.1.2.1.(1) 1.1.2.1.(2) 3.2.6.2.(2) 3.3.1.7.(1) 5.2.1.1.(1) 5.2.1.1.(2) 6.2.1.1.(1) 6.2.1.7.(1) 7.4.10.4.(1) 9.4.1.1.(3) 9.4.2.2.(1) Table 9.25.5.2. Table 9.32.3.10.A. 9.33.3.2.(1)
MMAH	Supplementary Standard SB-2, September 2, 2014	Fire Performance Ratings	3.1.5.23.(1) 3.1.7.1.(2) 3.1.8.14.(2) 3.1.9.5.(1) 3.1.9.5.(2) 3.1.12.1.(3) 3.2.3.12.(1) 3.2.3.13.(4) 3.13.2.1.(8) 3.13.3.5.(1) 3.13.3.6.(2) 3.13.4.2.(7) 9.10.3.1.(1) 9.10.3.2.(1) 9.10.5.1.(4) 9.10.9.9.(1) 9.10.13.14.(1)
MMAH	Supplementary Standard SB-3, September 2, 2014	Fire and Sound Resistance of Building Assemblies	9.10.3.1.(1) 9.10.5.1.(4) 9.11.2.1.(1) 9.11.2.1.(2)
MMAH	Supplementary Standard SB-4, September 14, 2012	Measures for Fire Safety in High Buildings	3.2.6.2.(1) 3.2.6.2.(6) 3.2.6.5.(3) 3.2.6.9.(1) 3.2.6.10.(2) 3.2.6.14.(1) Table 11.5.1.1.C. Table 11.5.1.1.D/E. Table 11.5.1.1.F.
m2 MMA	Supplementary Standard SB-5, July 7, 2016	Approved Sewage Treatment Units	8.6.2.2.(5)
Column 1	2	3	4

r5

Table 1.3.1.2. (Cont'd)
Documents Referenced in the Building Code
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document(1)	Code Reference
MMAH	Supplementary Standard SB-6, September 14, 2012	Percolation Times and Soil Descriptions	8.2.1.2.(2)
MMAH	Supplementary Standard SB-7, September 14, 2012	Guards for Housing and Small Buildings	9.8.8.2.(5)
MMAH	Supplementary Standard SB-8, September 14, 2012	Design, Construction and Installation of Anchorage Systems for Fixed Access Ladders	3.6.1.5.(1)
MMAH	Supplementary Standard SB-9, September 14, 2012	Requirements for Soil Gas Control	9.13.4.1.(1) 9.13.4.2.(2) to (4)
MMAH	Supplementary Standard SB-10, September 14, 2012	Energy Efficiency Requirements	Table 9.7.3.3. 12.2.1.1.(2) 12.2.1.2.(2) 12.2.2.1.(1) 12.2.3.1.(1)
MMAH	Supplementary Standard SB-11, September 14, 2012	Construction of Farm Buildings	1.3.1.2.(4) of Division A
m3 MMA	Supplementary Standard SB-12, July 7, 2016	Energy Efficiency for Housing	Table 9.7.3.3. Table 11.5.1.1.C. 12.2.1.1.(3) 12.2.1.2.(3)
MMAH	Supplementary Standard SB-13, September 14, 2012	Glass in Guards	3.1.20.1.(1)
MMAH	Supplementary Standard SC-1, September 14, 2012	Code of Conduct for Registered Code Agencies	3.7.4.1.(2) of Division C
MOE	PIBS 6879 2008	Design Guidelines for Sewage Works	7.1.5.5.(2)
MOE	PIBS 6881e 2008	Design Guidelines for Drinking-Water Systems	7.1.5.5.(1)
NFPA	2014 Publication	National Fire Codes	6.2.1.1.(1)
NFPA	13-2013	Installation of Sprinkler Systems	3.1.9.1.(4); 3.2.4.9.(2) 3.2.4.17.(1); 3.2.5.13.(1) 3.2.8.4.(7); 3.3.2.12.(3) 3.15.1.1.(3); 3.15.1.1.(4) 3.15.1.5.(2); 3.15.1.6.(2) 3.15.2.1.(1); 3.15.2.2.(1) 3.15.3.1.(1); 9.10.9.6.(11)
NFPA	13D-2010	Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes	3.2.5.13.(3)
NFPA	13R-2010	Installation of Sprinkler Systems in Residential Occupancies up to and including Four Stories in Height	3.2.5.13.(2)
NFPA	14-2010	Installation of Standpipe and Hose Systems	3.2.9.2.(1)
NFPA	20-2010	Installation of Stationary Pumps for Fire Protection	3.2.4.10.(4) 3.2.5.19.(1)
Column 1	2	3	4

3.2.5.6. Access Route Design

(1) A portion of a roadway or yard provided as a required access route for fire department use shall,
(a) have a clear width not less than 6 m, unless it can be shown that lesser widths are satisfactory,
(b) have a centreline radius not less than 12 m,
(c) have an overhead clearance not less than 5 m,
(d) have a change of gradient not more than 1 in 12.5 over a minimum distance of 15 m,
(e) be designed to support the expected loads imposed by firefighting equipment and be surfaced with concrete, asphalt or other material designed to permit accessibility under all climatic conditions,
(f) have turnaround facilities for any dead-end portion of the access route more than 90 m long, and
(g) be connected with a public thoroughfare.
(See Appendix A.)

r_5 **(2)** A *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. shall have no portion of the required access route more than 20 m below the floor level of the uppermost *storey* or *mezzanine* that is not a rooftop enclosure, provided for elevator machinery, a stairway or a *service room* used for no purpose other than for service to the *building*.

3.2.5.7. Water Supply (See Appendix A.)

(1) An adequate water supply for firefighting shall be provided for every *building*.

(2) Hydrants shall be located within 90 m horizontally of any portion of a *building* perimeter that is required to face a *street* in Subsection 3.2.2.

3.2.5.8. Reserved

3.2.5.9. Reserved

3.2.5.10. Reserved

3.2.5.11. Reserved

3.2.5.12. Reserved

3.2.5.13. Automatic Sprinkler Systems

r_1 **(1)** Except as provided by Sentences (2) to (4), an automatic sprinkler system shall be designed, constructed, installed and tested in conformance with NFPA 13, "Installation of Sprinkler Systems". (See Appendix A.)

(2) NFPA 13R, "Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height", is permitted to be used for the design, construction, installation and testing of an automatic sprinkler system installed in a *building,*
(a) of *residential occupancy* that is not more than 4 *storeys* in *building height,* or
(b) of Group B, Division 3 *occupancy* that contains sleeping accommodation for not more than 10 persons and not more than six occupants require assistance in evacuation in case of an emergency.

r_5 **(3)** Except as required by Sentence (9), NFPA 13D, "Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes", is permitted to be used for the design, construction, installation and testing of an automatic sprinkler system installed in a *building* of *residential occupancy* that contains not more than two *dwelling units*.

(4) If a *building* contains fewer than nine sprinklers, the water supply for these sprinklers is permitted to be supplied from the domestic water system for the *building* provided the required flow for the sprinklers can be met by the domestic system.

(5) If a water supply serves both an automatic sprinkler system and a system serving other equipment, control valves shall be provided so that either system can be shut off independently.

r_5 **(6)** Despite the requirements of the standards referenced in Sentences (1) and (2) for the installation of automatic sprinkler systems, sprinklers shall not be omitted in any room or closet in the *storey* immediately below a roof assembly if the *fire-resistance rating* of the roof assembly is waived as permitted by Article 3.2.2.17. (See Appendix A.)

r_5 **(7)** Despite the requirements of the standards referenced in Sentences (1) and (2) for the installation of automatic sprinkler systems, sprinklers shall be provided for all balconies and decks forming part of a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A., other than,

e_4 (a) balconies or decks that are not more than 610 mm in depth measured perpendicular to the exterior wall of the *building*, or

(b) decks on the uppermost roof of the *building*.

(See Appendix A.)

r_5 **(8)** Sprinklers in elevator machine rooms shall have a temperature rating not less than that required for an intermediate temperature classification and shall be protected against physical damage. (See Appendix A.)

r_5 **(9)** The sprinkler system described in Sentence (3) shall be provided with a minimum 20 min water supply when installed in a retirement home regulated under the *Retirement Homes Act, 2010*.

3.2.5.14. Combustible Sprinkler Piping

(1) *Combustible* sprinkler piping shall be used only for wet systems in *residential occupancies* and other light hazard *occupancies*. (See Appendix A.)

(2) *Combustible* sprinkler piping shall meet the requirements of ULC/ORD-C199P, "Combustible Piping for Sprinkler Systems".

(3) Except as permitted by Sentence (5), *combustible* sprinkler piping shall be separated from the area served by the sprinkler system, and from any other *fire compartment*, by ceilings, walls, or soffits consisting of, as a minimum,

(a) lath and plaster,

(b) gypsum board not less than 9.5 mm thick,

(c) plywood not less than 13 mm thick, or

(d) a suspended membrane ceiling with,

  (i) steel suspension grids, and

  (ii) lay-in panels or tiles having a mass not less than 1.7 kg/m^2.

(4) Except as permitted by Sentence (5), *combustible* sprinkler piping may be located above a ceiling, provided that the distance between the edge of any ceiling opening that is not protected in conformance with Sentence (3) and the nearest sprinkler is not more than 300 mm.

(5) The protection required by Sentences (3) and (4) is permitted to be waived where *combustible* sprinkler piping has been tested in conformance with ULC/ORD-C199P, "Combustible Piping for Sprinkler Systems", and has been shown to meet the requirements in that document without additional protection.

3.2.5.15. Sprinklered Service Space

(1) An automatic sprinkler system shall be installed in a *service space* referred to in Sentence 3.2.1.1.(9) if flooring for access within the *service space* is other than catwalks.

(2) The sprinkler system required by Sentence (1) shall be equipped with waterflow detecting devices, with each device serving not more than 1 *storey*.

2012 Building Code Compendium

Volume 2

July 7, 2016 update

COMMENCEMENT

Supplementary Standards SA-1, SB-1 to SB-13 and SC-1 come into force on the 1st day of January, 2014.

See "Code Amendment History" page in the Preface of Volume 1 for information concerning amendments to Supplementary Standards issued through Minister's Rulings.

a_1 Amendment made to Appendix A or B issued for January 1st, 2014.
a_2 Amendment made to Appendix A or B issued for January 1st, 2014.
$a_{2.1}$ Amendment made to Appendix A or B issued for January 1st, 2015.
a_3 Amendment made to Appendix A or B issued for January 1st, 2015.
a_4 Amendment made to Appendix A or B issued for July 7th, 2016.

EDITORIAL

e_1 Editorial correction issued for January 1st, 2014.
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Public Heritage Building

This definition addresses smaller heritage buildings that are to be made available to the public for viewing as examples of an architectural period or periods in the past, depicting how our forebears lived, worked or played, and what artifacts, objects or clothing were in use at that time. These buildings are not considered museums as such, and therefore would not be subject to the more stringent requirements of assembly occupancies for that use.

Service Room

Typical examples of service rooms include boiler rooms, furnace rooms, incinerator rooms, garbage handling rooms, and rooms to accommodate air-conditioning or heating appliances, pumps, compressors and electrical equipment. Rooms such as elevator machine rooms and common laundry rooms are not considered as service rooms.

Suite

Tenancy in the context of the term "suite" applies to both rental and ownership tenure. In a condominium arrangement, for example, dwelling units are considered separate suites even though they are individually owned. In order to be of complementary use, a series of rooms that constitute a suite are in reasonably close proximity to each other and have access to each other either directly by means of a common doorway or indirectly by a corridor, vestibule or other similar arrangement.

The term "suite" does not apply to rooms such as service rooms, common laundry rooms and common recreational rooms that are not leased or under a separate tenure in the context of the Code. Similarly, the term suite is not normally applied in the context of buildings such as schools and hospitals, since the entire building is under a single tenure. A rented room in a long-term care home could be considered as a suite if the room was under a separate tenure. A hospital bedroom on the other hand is not considered to be under a separate tenure, since the patient has little control of that space, even though he pays the hospital a per diem rate for the privilege of using the hospital facilities, which include the sleeping areas.

For certain requirements in the Code, the expression "room or suite" is used (e.g. travel distance). This means that the requirement applies within the rooms of suites as well as to the suite itself and to rooms that may be located outside the suite. In other places the expression "suite, and rooms not located within a suite" is used (e.g. for the installation of smoke and heat detectors). This means that the requirement applies to individual suites as defined, but not to each room within the suite. The rooms "not within a suite" would include common laundry rooms, common recreational rooms and service rooms, that are not considered as tenant occupied space.

a_4 A-1.4.1.3. Applicable Law.

Applicants for building permits are required to establish compliance with applicable law. The following table lists contact information for those agencies responsible for the statutory provisions defined in Sentence 1.4.1.3.(1):

Applicable Law Provision	Responsible Agency	Contact
City of Toronto Act, 2006: Subsection 102 (3) of the *City of Toronto Act, 2006* By-laws made under section 108 of the *City of Toronto Act, 2006* but only with respect to the issuance of a permit for the construction of a green roof. Section 114 of the *City of Toronto Act, 2006*, with respect to the approval by the City of Toronto or the Ontario Municipal Board of plans and drawings.	City of Toronto	General Inquiry: ph: 311 or 416-392-2489

Applicable Law Provision	Responsible Agency	Contact
Clean Water Act, 2006: Clause 59(1)(b) of the *Clean Water Act, 2006* with respect to the issuance of a notice by the risk management official for the construction of a building.	Ministry of Environment and Climate Change	General Inquiry: ph: 416-325-4000 or 800-565-4923
Conservation Authorities Act: Clause 28(1)(c) under the *Conservation Authorities Act*, with respect to the permission of the authority for the construction of a building if the control of flooding, erosion, dynamic beaches or pollution may be affected by the development.	Local Conservation Authority	
Child Care and Early Years Act, 2014: Section 14 of Regulation 137/15, under the *Child Care and Early Years Act, 2014,* with respect to the approval of plans for a new building to be erected or an existing building to be used, altered or renovated for use as a child care centre or for alterations or renovations to be made to premises used by a child care centre.	Ministry of Children and Youth Services	General Inquiry: ph: 416-212-7432 Central East Regional Office ph: 905-868-8900 Central West Regional Office ph: 905-567-7177 or 877-832-2818 Eastern Regional Office ph: 613-234-1188 or 800-267-5111 Hamilton/Niagara Regional Office ph: 905-521-7280 North East Regional Office ph: 705-474-3540 or 800-461-6977 Northern Regional Office ph: 705-564-6699 or 800-265-1222 South East Regional Office ph: 613-545-0539 or 800-646-3209 South West Regional Office ph: 519-438-5111 or 800-265-4197 Toronto Regional Office ph: 416-325-0500
Development Charges Act, 1997: Sections 28 and 53 under the *Development Charges Act, 1997*.	Local Municipality	
Education Act: *Education Act*, Section 194, with respect to the approval of the Minister for the demolition of a building.	Ministry of Education	General Inquiry ph: 416-325-2929 or 800-387-5514
Education Act: Sections 257.83 and 257.93 under the *Education Act*.	Local Municipality	
Elderly Persons Centres Act: Section 6 of Regulation 314, of the *Elderly Persons Centres Act*, with respect to the approval of the Minister for the construction of a building project.	Ministry of Health and Long-Term Care	General Inquiry: ph: 416-327-4327 or 800-268-1153

Applicable Law Provision	Responsible Agency	Contact
Environmental Assessment Act: Section 5 of the *Environmental Assessment Act,* with respect to the approval of the Ministry or the Environmental Review Tribunal to proceed with an undertaking. Subsection 5(4) of the *Environmental Assessment Act*	Ministry of the Environment and Climate Change	General Inquiry: ph: 416-325-4000 or 800-565-4923 Environmental Approvals Branch ph: 416-314-8001 or 800-461-6290
Environmental Protection Act: Section 46 of the *Environmental Protection Act* with respect to the approval of the Minister to use land or land covered by water that has been used for the disposal of waste. Section 47.3 of the *Environmental Protection Act*, with respect to the issuance of a renewable energy approval. Section 168.3.1 of the *Environmental Protection Act*, with respect to the construction of a building to be used in connection with a change of use of a property. Paragraph 2 of Subsection 168.6(1) of the *Environmental Protection Act*, if a certificate of property use has been issued in respect of the property under subsection 168.6(1) of the Act.	Ministry of the Environment and Climate Change	General Inquiry: ph: 416-325-4000 or 800-565-4923 Central Region ph: 416-326-6700 or 800-810-8048 Eastern Region ph: 613-549-4000 or 800-267-0974 Northern Region ph: 807-475-1205 or 800-875-7772 Southwestern Region ph: 519-873-5000 or 800-265-7672 West Central Region ph: 905-521-7640 or 800-668-4557
Milk Act Section 14 of the *Milk Act*, with respect to the permit from the Director for the construction or alteration of any building intended for use as a plant.	Ministry of Agriculture, Food and Rural Affairs	General Inquiry ph: 519-826-3100 or 888-466-2372
Municipal Act, *2001* Subsection 133(4) of the *Municipal Act*, *2001.*	Local Municipality	
Niagara Escarpment Planning and Development Act: Subsection 24(3) of the *Niagara Escarpment Planning and Development Act.*	Ministry of Natural Resources and Forestry	General Inquiry ph: 800-667-1940 Niagara Escarpment Commission ph: 905-877-5191
Nutrient Management Act, 2002: Section 11.1 of O. Reg. 267/03 of the *Nutrient Management Act, 2002*, with respect to a proposed building or structure to house farm animals or store nutrients if that Regulation requires the preparation and approval of a nutrient management strategy before construction of the proposed building or structure.	Ministry of Agriculture, Food and Rural Affairs	General Inquiry ph: 519-826-3100 or 888-466-2372

Applicable Law Provision	Responsible Agency	Contact
Ontario Heritage Act: Subsection 27 (3) of the *Ontario Heritage Act*, with respect to a notice to the council of a municipality to the demolition or removal of a building from a registered property. Subsection 30 (2) of the *Ontario Heritage Act*, with respect to a consent of the council of a municipality to the alteration or demolition of a building. Section 33 of the *Ontario Heritage Act*, with respect to the consent of the council of a municipality for the alteration of a property. Section 34 of the *Ontario Heritage Act*, with respect to the consent of the council of a municipality for the demolition of a building. By-laws made under Section 40.1 of the *Ontario Heritage Act* Section 42 of the *Ontario Heritage Act*, with respect to the permit given by the council of a municipality for the erection, alteration, or demolition of a building.	Local Municipality	
Ontario Heritage Act: Section 34.5 of the *Ontario Heritage Act,* with respect to a consent of the Minister to the alteration or demolition of a designated building Subsection 34.7(2) of the *Ontario Heritage Act*, with respect to a consent of the Minister to the alteration or demolition of a designated building	Ministry of Tourism, Culture and Sport	General Inquiry: ph: 416-326-9326
Ontario Planning and Development Act, 1994, Section 14 *Ontario Planning and Development* *Act, 1994*, with respect to any conflict between a development plan made under that Act and a zoning by-law that affects the proposed building or structure. Subsection 17(1) *Ontario Planning and Development Act, 1994* with respect to orders made under that Act.	Ministry of Municipal Affairs	General Inquiry: ph: 416-585-7041 Central Municipal Services Office ph: 416-585-6226 or 800-668-0230 Eastern Municipal Services Office ph: 613-545-2100 or 800-267-9438 Northeastern Municipal Services Office ph: 705-564-0120 or 800-461-1193 Northwestern Municipal Services Office ph: 807-475-1651 or 800-465-5027 Southwestern Municipal Services Office ph: 519-873-4020 or 800-265-4736

Applicable Law Provision	Responsible Agency	Contact
Planning Act: Section 33 of the *Planning Act*, except where in the case of demolition of a residential property, a permit to demolish the property is obtained under that Section By-laws made under Sections 34 or 38 of the *Planning Act*. Section 41 of the *Planning Act*, with respect to the approval by the council of the municipality of the Municipal Board of plans and drawings. Section 42 of the *Planning Act*, with respect to the payment of money to the Municipality. Section 46 of the *Planning Act*. By-laws made under O. Reg. 608/06 (Development Permits) made under the *Planning Act*. By-laws made under O. Reg. 246/01 (Development Permits) made under the *Planning Act*.	Local Municipality	
Planning Act: Section 47 of the *Planning Act,* with respect to orders made under that Act.	Ministry of Municipal Affairs	General Inquiry: ph: 416-585-7041 Central Municipal Services Office ph: 416-585-6226 or 800-668-0230 Eastern Municipal Services Office ph: 613-545-2100 or 800-267-9438 Northeastern Municipal Services Office ph: 705-564-0120 or 800-461-1193 Northwestern Municipal Services Office ph: 807-475-1651 or 800-465-5027 Southwestern Municipal Services Office ph: 519-873-4020 or 800-265-4736
Public Lands Act: Section 2 of O. Reg. 453/96 of the *Public Lands Act*, with respect to the work permit from the Minister authorizing the construction or placement of a building on public land.	Ministry of Natural Resources and Forestry	General Inquiry ph: 800-667-1940
Public Transportation and Highway Improvement Act: Section 34 or 38 of the *Public Transportation and Highway Improvement Act*, with respect to the permit from the Minister for the placement, erection or alteration of any building or other structure or the use of land.	Ministry of Transportation	General Inquiry ph: 800-268-4686 Central Region: ph: 416-235-5412 Eastern Region: ph: 800-267-0295 Northeastern Region: ph: 705-472-7900 or 800-461-9547 Northwestern Region: ph: 807-473-2000 or 800-465-5034 Southwestern Region: ph: 519-873-4335 or 800-265-6072

A-1.5.1.1.(1) Application of Referenced Documents.

Documents referenced in the Building Code may contain provisions covering a wide range of issues, including issues that are unrelated to the objectives and functional statements stated in Parts 2 and 3 of Division A respectively; e.g. aesthetic issues such as colour-fastness or uniformity. Sentence 1.5.1.1.(1) is intended to make it clear that, whereas referencing a document in the Building Code generally has the effect of making the provisions of that document part of the Code, provisions that are unrelated to buildings or to the objectives and functional statements attributed to the provisions in Division B where the document is referenced are excluded.

Furthermore, many documents referenced in the Building Code contain references to other documents, which may also, in turn, refer to other documents. These secondary and tertiary referenced documents may contain provisions that are unrelated to buildings or to the objectives and functional statements of the Building Code: such provisions - no matter how far down the chain of references they occur - are not included in the intent of Sentence 1.5.1.1.(1) of Division A.

A-2.2.1.1.(1) Objectives.

Listing of Objectives

Any gaps in the numbering sequence of the objectives are due to the fact that there is a master list of objectives covering the Building Code, Fire Code and the three principal model National Code Documents (National Building Code of Canada 2010, National Plumbing Code of Canada 2010 and National Fire Code of Canada 2010) but not all objectives are pertinent to all Codes.

The Building

Where the term “the building” is used in the wording of the objectives, it refers to the building for which compliance with the Building Code is being assessed.

Emergency

The term “emergency" - in the context of safety in buildings - is often equated to the term “fire emergency”; however, the wording of objectives OS3.7 and OS5.9 makes it clear that the Code addresses any type of emergency that would require the rapid evacuation of the building, such as the release of hazardous substances or the presence of intruders.

A-3.2.1.1.(1) Functional Statements.

Listing of Functional Statements

The numbered functional statements are grouped according to functions that deal with closely related subjects. For example, the first group deals with fire risks, the second group deals with emergency egress and response, etc. There are gaps in the numbering sequence for the following reasons:

- Each group has unused numbers which allows for the possible future creation of additional functional statements within any one group.

- There is a master list of functional statements covering the Building Code, Fire Code and the three principal model National Code Documents (National Building Code of Canada 2010, National Plumbing Code of Canada 2010 and National Fire Code of Canada 2010) but not all functional statements are pertinent to all Codes.

MMA Supplementary Standard SB-5

Approved Sewage Treatment Units

July 7, 2016 update

COMMENCEMENT

MMAH Supplementary Standard SB-5 comes into force on the 1st day of January, 2014.

m_1 Ruling of the Minister of Municipal Affairs and Housing (Minister's Ruling) MR-13-S-24 takes effect on the 1st day of January, 2014.
m_2 Ruling of the Minister of Municipal Affairs (Minister's Ruling) MR-16-S-25 takes effect on the 7th day of July, 2016.

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Table 2 (Cont'd)
List of Approved Treatment Units Meeting Level IV Effluent Quality Criteria
in Table 8.6.2.2. of Division B in the 2012 Building Code
(Approved for Type A and B Dispersal Beds or Shallow Buried Trenches)

Manufacturer/Distributor	Models	Comments
Southern Ontario Biocycle Ltd. 280 South Blair St. Whitby, Ontario L1N 9N2 Phone: 905-665-0537 Fax: 905-665-7552 Contact: Jake Rempel	Biocycle Aerated Wastewater System Model: 5800-10	See attached system description.
Seprotech Systems Inc. (formerly CMS Rotodisk Inc.) 2378 Holly Lane Ottawa, Ontario K1V 7P1 Phone: 613-523-1641 Fax: 613-731-0851 Contact: Cliff Johnson	Rotordisk Wastewater Systems Model: S12	See attached system description.
Bio-Microbics, Inc. 8450 Cole Pkwy. Shawnee, KS USA 66227 Phone: 913-422-0707 or 800-753-3278 Fax: 913-422-0808 Contact: R. Peat	FAST® Wastewater Treatment Systems Models: MicroFAST® 0.5 MicroFAST® 0.9 MicroFAST® 0.625 MicroFAST® 1.5 MicroFAST® 0.75 MicroFAST® 3.0	See attached system descriptions.
Aquarobic Canada P.O. Box 149 Utterson, Ontario POB 1M0 Phone: 705-644-1877 or 800-452-0144 Fax: 705-788-9204 Contact: John Reid	Model MicroMini-28 Model MicroMini-45 Model MiniPlant-70 Model MiniPlant-85	See attached system descriptions.
Nayadic Wastewater Treatment Systems c/o EZFlow Canada 7024 Smith Industrial Drive McGregor, Ontario N0R 1J0 Phone: 519-726-6444 Fax: 519-726-6211 Contact: Janis Bortolotti or John Winkup	Model M6A Model M8A Model M1050A Model M1200A Model M2000A Model M6 - EV	See attached system descriptions.
Bionest Technologies Inc. 55, 12e Rue, CP 697 Grand-Mère, Québec G9T 5L4 Phone: 819-538-5662 or 866-538-5662 Fax: 819-538-5707 Contact: Marlène Bonneville	Bionest Treatment Systems Models: BN-400 BN-1000 BN-500 BN-1500 BN-600 BN-2000 BN-750 BN-2650	See attached system descriptions.
Column 1	2	3

m_2

Table 2 (Cont'd)
List of Approved Treatment Units Meeting Level IV Effluent Quality Criteria
in Table 8.6.2.2. of Division B in the 2012 Building Code
(Approved for Type A and B Dispersal Beds or Shallow Buried Trenches)

Manufacturer/Distributor	Models	Comments
Premier Tech Aqua 1 Ave. Premier Rivière-du-Loup, Québec G5R 6C1 Phone: 418-867-8883 Fax: 418-862-6642 Contact: Marie-Christine Bélanger	Ecoflo Biofilter Treatment Systems Models: ST-500 ST-570P ST-650 ST-650P ST-730P STB-500 / STB-500B / STB-500BR STB-570P / STB-570PR STB-650 / STB-650B / STB-650BR STB-650P / STB-650PR STB-730P / STB-730PR	See attached system descriptions.
Orenco Systems, Inc. 814 Airway Avenue Sutherlin, OR 97470 Phone: 1-800-348-9843 Contact: Sam Carter	AdvanTex® Wastewater Treatment System Models: AX20 AX20-Multiple Units AX20-RT	See attached system descriptions.
Ecological Tanks, Inc. 2247 Hwy 151 North Downsville, Louisiana 71234 Phone: (318) 644-0397 Fax: (318) 644-7257 Contact: Calvin Locker	Aqua Safe Treatment Systems Models: AS500, AS600, AS750, AS1000, AS1500 Aqua Air Treatment Systems Models: AA500, AA600, AA750, AA1000, AA1200, AA1500, AA500-35, AA600-50, AA800-65	See attached system descriptions.
Bord na Móna Environmental Products U.S. Inc. PO Box 77457 Greensboro, NC 27417 Phone: (336) 547-9338 or (409) 466-4644 Fax: (336) 547-8559 Contact: Colin Bishop	Puraflo© Peat Fiber Biofilter Treatment Systems Models: Puraflo® P150N*1B Puraflo® P150N*1B Multiple Units	See attached system descriptions.
RH2O North America Inc. 268 Woolwich St. South Breslau, Ontario N0B 1M0 Phone: (519) 648-3475 Fax: (519) 648-3585 Contact: Scott Robinson	WSB® clean Treatment Systems Models: WSB clean 400 WSB clean 1000 WSB clean 500 WSB clean 1250 WSB clean 600 WSB clean 1500 WSB clean 750	See attached system descriptions.
Column 1	2	3

Model M2000A

This Nayadic Wastewater Treatment Unit is designed for a **daily design sanitary sewage flow of up to 5700 L**. It consists of a 7000 L pre-treatment septic tank, Nayadic M2000A treatment unit with a total volumetric capacity of 7.57 m^3, including an integral aeration tank equipped with a diaphragm air diffuser and a ½ HP air pump. It also includes an inner conical up welling clarifier overflowing 360-degree weir to a dosing pump chamber.

Where the percolation rate of the native subsoil is between 50 min/cm and 125 min/cm, the treatment unit shall include a 1.5 in SpinClean filter with max. 100 micron mesh screen, or a single pass free access sand filter consisting of a tank with openings accessible from grade, 100 mm distribution piping, sand filter with an area of 13.94 m^2 at 600 mm depth (sand media with 0.4 mm to 1.5 mm dia effective size with uniformity coefficient of 3), underlaid by 150 mm pea gravel and 100 mm dia. slotted collection piping discharging the effluent by gravity to a dosing chamber.

The dosing pump chamber has a volumetric capacity of 9.9 m^3 and is equipped with a minimum 0.4 HP submersible effluent pump complete with pressure activated level switches, alarm and control panel, a 1.5 in SpinClean filter with max. 100 micron mesh screen and a forcemain discharging the effluent at controlled intervals.

This approval is only for the treatment unit component of the sewage system and **the sewage system shall comply with the Building Code, as amended from time to time**.

It is the responsibility of the Consolidated Treatment System Inc., and/or its licensed agents to ensure that units meet all other applicable standards. Other standards may include those of the Canadian Standards Association, Ontario Ministry of Labour, Electric Safety Authority, etc.

m_2 **Model M6-EV**

This Nayadic Wastewater Treatment Unit is designed for a **daily design sanitary sewage flow of up to 1900 L**. It consists of a 3600 L septic tank followed by a Nayadic M6-EV treatment unit that is comprised of a 1500 L pretreatment tank, a treatment chamber of volumetric capacity of 2.27 m^3 followed by a 3.3 m^3 dosing pump chamber which is an integral part of the unit. The dosing pump chamber is equipped with a minimum 0.4 HP submersible effluent pump complete with pressure activated level switches, alarm and control panel, and a forcemain discharging the effluent at controlled intervals.

Where the percolation rate of the native subsoil is between 50 min/cm and 125 min/cm, the treatment unit shall include a 1.5 in SpinClean filter with max. 100 micron mesh screen, or a single pass free access sand filter consisting of a tank with openings accessible from grade, 100 mm distribution piping, sand filter with an area of 4.65 m^2 at 600 mm depth (sand media with 0.4 mm to 1.5 mm dia. effective size with uniformity coefficient of 3), underlaid by 150 mm pea gravel and 100 mm dia. slotted collection piping discharging the effluent by gravity to a dosing chamber.

This approval is only for the treatment unit component of the sewage system and **the sewage system shall comply with the Building Code, as amended from time to time**.

It is the responsibility of the Consolidated Treatment System Inc., and/or its licensed agents to ensure that units meet all other applicable standards. Other standards may include those of the Canadian Standards Association, Ontario Ministry of Labour, Electrical Safety Authority, etc.

Bionest™ Treatment Systems

Model BN-400

This Bionest Treatment System is designed for **daily design sanitary sewage flow up to 1600 L**. The system requires a standard two-compartment septic tank with a volumetric capacity of 3.8 m^3 or greater with an effluent filter on the outlet to screen out particles larger than 1.6 mm, overflowing to the Bionest bioreactor through a 100 mm diameter pipe.

The Bionest bioreactor is comprised of a tank with a volumetric capacity of 3.8 m^3 of similar configuration to that of the standard two-compartment septic tank. A specific quantity of Bionest synthetic media is placed into each of the two-compartments. The media is non-toxic polymer ribbon having a relative density of 1.04. Continuous aeration of the first compartment of the bioreactor is provided by a linear air pump and fine bubble air diffusers. A recirculation pump is installed in the last compartment of the bioreactor and part of the treated effluent is returned to the septic tank. The treated effluent is directed through a 100 mm diameter pipe to a dosing chamber.

The dosing chamber has a minimum effective volume of 0.75 of the daily design flow and is equipped with a minimum 0.3 HP pump, activated by a conventional on/off float or by a control panel. The dosing chamber is monitored by an alarm float installed in the chamber and is connected to an alarm panel placed inside the building on an independent electrical circuit. The effluent from the dosing tank is discharged to a shallow buried trench.

This approval is only for the treatment unit component of the sewage system and **the sewage system shall comply with the Building Code, as amended from time to time**.

It is the responsibility of Bionest Technologies and/or its licensed agents to ensure that units meet all other applicable standards. Other standards may include those of the Canadian Standards Association, Ontario Ministry of Labour, Electrical Safety Authority, etc.

Model BN-500

This Bionest Treatment System is designed for **daily design sanitary sewage flow from 1600 L to 2000 L**. The system requires a standard two-compartment septic tank with a volumetric capacity of 4.7 m^3 or greater with an effluent filter on the outlet to screen out particles larger than 1.6 mm, overflowing to the Bionest bioreactor through a 100 mm diameter pipe.

The Bionest bioreactor is comprised of a tank with a volumetric capacity of 4.7 m^3 of similar configuration to that of the standard two-compartment septic tank. A specific quantity of Bionest synthetic media is placed into each of the two-compartments. The media is non-toxic polymer ribbon having a relative density of 1.04. Continuous aeration of the first compartment of the bioreactor is provided by a linear air pump and fine bubble air diffusers. A recirculation pump is installed in the last compartment of the bioreactor and part of the treated effluent is returned to the septic tank. The treated effluent is directed through a 100 mm diameter pipe to a dosing chamber.

The dosing chamber has a minimum effective volume of 0.75 of the daily design flow and is equipped with a minimum 0.3 HP pump, activated by a conventional on/off float or by a control panel. The dosing chamber is monitored by an alarm float installed in the chamber and is connected to an alarm panel placed inside the building on an independent electrical circuit. The effluent from the dosing tank is discharged to a shallow buried trench or other approved disposal methods.

This approval is only for the treatment unit component of the sewage system and **the sewage system shall comply with the Building Code, as amended from time to time**.

It is the responsibility of Bionest Technologies and/or its licensed agents to ensure that units meet all other applicable standards. Other standards may include those of the Canadian Standards Association, Ontario Ministry of Labour, Electrical Safety Authority, etc.

MMA Supplementary Standard SB-12

Energy Efficiency For Housing

July 7, 2016 update

Effective Date: July 7, 2016

Issued July 7, 2016

COMMENCEMENT

MMAH Supplementary Standard SB-12 comes into force on the 1st day of January, 2014.

m1 Ruling of the Minister of Municipal Affairs and Housing (Minister's Ruling) MR-13-S-24 takes effect on the 1st day of January, 2014.

r5 SB-12 as amended by Ontario Regulation 191/14 comes into force on the 1st day of January, 2015.

m3 Ruling of the Minister of Municipal Affairs (Minister's Ruling) MR-16-S-26 takes effect on 7th day of July, 2016.

EDITORIAL

e2 Editorial correction issued for January 1st, 2014.
e4 Editorial correction issued for July 7th, 2016.

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m_3 SB-12 Energy Efficiency for Housing

Chapter 1 General

Chapter 2 Acceptable Solutions for Energy Efficiency Compliance Before January 1, 2017

Chapter 3 Acceptable Solutions for Energy Efficiency Compliance After December 31, 2016

FOREWORD[1]

This Supplementary Standard includes design options regarding the energy efficiency of a building or part of a building of residential occupancy that is within the scope of Part 9 and is intended for occupancy on a continuing basis during the winter months. Conformance with the options in this Supplementary Standard is one method of demonstrating compliance with the requirements in Sentences 12.2.1.1.(3) and 12.2.1.2.(3) of the Building Code (Ontario Regulation 332/12). The options in this Supplementary Standard are intended to recognize the needs of consumers and the building industry for predictable prescriptive and flexible performance-based solutions. Two sets of options are contained in this Supplementary Standard, one that is applicable to construction for which a permit has been applied for before January 1, 2017 and the other that is applicable to permit applications made after December 31, 2016.

The first edition of this Supplementary Standard was published in 2009. The energy efficiency levels achieved in that edition were intended to meet or exceed, on a systematic basis, the EnerGuide 80 level of energy efficiency that would be met by model analogues evaluated against the NRCan "EnerGuide for New Houses: Administrative and Technical Procedures" (2005). The editions published in 2012 and 2013 included certain trade-off options in recognition of the Energy Star program that expanded the number of building component and assembly permutations considered to represent acceptable solutions. The September 2013 also included a new "Chapter 3" with compliance packages that demonstrated how to achieve an additional energy efficiency level increase of 15% over the requirements that took effect on January 1, 2012.

This July 7th, 2016 update of the Supplementary Standard is primarily intended to update the compliance packages set out in Chapter 3. Changes include the identification of credits based on airtightness. The compliance packages and options described in Chapter 3 are applicable to building permits applied for after December 31, 2016. Other changes include the recognition of the technical requirements of Energy Star and R2000 programs as design options for meeting the energy efficiency requirements of the Building Code.

Labelling is not required to demonstrate compliance with this Supplementary Standard.

[1] Unless otherwise indicated, all Building Code references in this foreword refer to provisions located in Division B of the Building Code.

SUMMARY OF THE CONTENTS OF SB-12

Chapter 1: General

This Chapter sets out the scope and application of this Supplementary Standard.

Chapter 2: Acceptable Solutions for Achieving Energy Efficiency Compliance Before January 1, 2017.

This Chapter contains acceptable solutions for achieving energy efficiency compliance with Clause 12.2.1.1.(3)(b) of Division B of the Building Code and applies to construction for which a permit has been applied for before January 1, 2017. Conformance with one of the prescriptive compliance packages in Subsection 2.1.1., the performance compliance method in Subsection 2.1.2. or Energy Star requirements as specified in Subsection 2.1.3. of this Supplementary Standard will achieve an energy efficiency performance level that is intended to meet or exceed, on a systemic basis, the level that would be met by model analogues evaluated against the EnerGuide Rating System-2005.

Chapter 3: Acceptable Solutions for Achieving Energy Efficiency Compliance After December 31, 2016.

This Chapter contains acceptable solutions for achieving energy efficiency compliance with Clause 12.2.1.2.(3)(b) of Division B of the Building Code and applies to construction of buildings for which a permit has been applied for after December 31, 2016. Conformance with one of the prescriptive compliance packages in Subsection 3.1.1., the performance compliance method in Subsection 3.1.2. or Energy Star or R2000 requirements as specified in Subsection 3.1.3. of this Supplementary Standard is intended to achieve, on a systemic basis, an energy efficiency performance level that exceeds the energy efficiency requirements of Sentence 12.2.1.1.(3) of Division B of the Building Code by 15%.

Chapter 1

General

Section 1.1. Scope

1.1.1. Energy Efficiency Compliance

1.1.1.1. Energy Efficiency

(1) This Section is concerned with the energy used by *buildings* as a result of
(a) the design and *construction* of the *building* envelope, and
(b) the design and *construction* or specification of systems and equipment for
  (i) heating, ventilating or *air-conditioning*, and
  (ii) service water heating.

(2) Compliance with Chapters 1 and 2 of this Supplementary Standard shall be deemed to meet the energy efficiency requirements in accordance with Sentence 12.2.1.1.(3) of Division B of the *Building Code*.

(3) Compliance with Chapters 1 and 3 of this Supplementary Standard shall be deemed to meet the energy efficiency requirements in accordance with Sentence 12.2.1.2.(3) of Division B of the *Building Code*.

(4) The energy efficiency of existing *building*s shall comply with
(a) Part 10 of Division B of the *Building Code* with respect to change of use, or
(b) Part 11 of Division B of the *Building Code* for renovation.

1.1.1.2. Compliance Options Before January 1, 2017

(1) The energy efficiency of a *building* or part of a *building* of *residential occupancy* that is within the scope of Part 9 of Division B of the *Building Code* and is intended for occupancy on a continuing basis during the winter months shall comply with
(a) Subsection 2.1.1. (Prescriptive Compliance Packages) of Chapter 2,
(b) Subsection 2.1.2. (Performance Compliance) of Chapter 2, or
(c) Subsection 2.1.3. (Other Acceptable Compliance Methods) of Chapter 2.

(2) Factory-built modular homes manufactured before January 1, 2012 in accordance with the *Building Code* as it read on December 31, 2011 shall be deemed to be in compliance with Sentence (1).

1.1.1.3. Compliance Options After December 31, 2016

(1) The energy efficiency of a *building* or part of a *building* of *residential occupancy* that is within the scope of Part 9 of Division B of the *Building Code* and is intended for occupancy on a continuing basis during the winter months shall comply with
(a) Subsection 3.1.1. (Prescriptive Compliance Packages) of Chapter 3,
(b) Subsection 3.1.2. (Performance Compliance) of Chapter 3, or
(c) Subsection 3.1.3. (Other Acceptable Compliance Methods) of Chapter 3.

(2) Factory-built modular homes manufactured before January 1, 2017 in accordance with the *Building Code* as it read on December 31, 2016 shall be deemed to be in compliance with Sentence (1).

Section 1.2. Application

1.2.1. Application of Supplementary Standard SB-12

1.2.1.1. Energy Efficiency Design

(1) The energy efficiency of a *building* or part of a *building* of *residential occupancy* that is within the scope of Part 9 of Division B of the *Building Code* and is intended for occupancy on a continuing basis during the winter months shall comply with this Supplementary Standard in accordance with Subsection 12.2.1. of Division B of the *Building Code*.

Section 1.3. Terms and Abbreviations

1.3.1. Definitions of Words and Phrases

1.3.1.1. Non-Defined Terms

(1) Definitions of words and phrases used in this Supplementary Standard that are not included in the list of definitions in Articles 1.4.1.2. and 1.4.1.3. of Division A of the *Building Code* and are not defined in another provision of the *Building Code* shall have the meanings that are commonly assigned to them in the context in which they are used, taking into account the specialized use of terms by the various trades and professions to which the terminology applies.

1.3.1.2. Defined Terms

(1) Each of the words and terms in italics in this Supplementary Standard has the same meaning as in subsection 1(1) of the *Building Code Act, 1992* or Sentence 1.4.1.2.(1) of Division A of the *Building Code*.

(2) In this Supplementary Standard,

common space means all spaces required to be *conditioned spaces* in accordance with the requirements of the *Building Code* that are not within a *suite* but does not include crawl spaces and *vertical service spaces*;

effective RSI value means the effective thermal resistance, which is the inverse of the *overall thermal transmittance* of a *building* assembly, in $(m^2 \cdot K)/W$; (See Appendix A.)

fenestration means a *building* envelope assembly that transfers visible light, such as a window, clerestory, skylight, translucent wall panel, glass block assembly, transom, sidelight, sliding or swinging glass door, or glazed insert in a door, and includes the frames and other components of the assembly;

overall coefficient of heat transfer means *overall thermal transmittance* of *fenestration* and, for greater certainty, includes all components of *fenestration*;

e4 *overall thermal transmittance* means the rate, in $W/(m^2 \cdot K)$, at which heat is transferred through all components of a *building* envelope assembly that is subject to temperature differences and includes interior and exterior air films that are in contact with the assembly, but does not include exterior air films where the assembly is in contact with *soil*.

1.3.2. Symbols and Other Abbreviations

1.3.2.1. Symbols and Other Abbreviations

(1) Where used in this Supplementary Standard, a symbol or abbreviation listed in Column 2 of Table 1.4.2.1. of Division A of the *Building Code* shall have the meaning listed opposite it in Column 3.

(2) The abbreviations listed in Column 2 of Table 1.3.2.1. shall also apply to this Supplementary Standard and shall have the meaning listed opposite it in Column 3.

Table 1.3.2.1.
Abbreviations
Forming Part of Sentence 1.3.2.1.(2)

Item	Abbreviation	Meaning
1	ACH	air changes per hour
2	AFUE	annual fuel utilization efficiency
3	ASHP	air source heat pump
4	ci	continuous insulation (See Appendix A.)
5	EF	energy factor
6	HRV	heat or energy recovery ventilator
7	HSPF	heating seasonal performance factor
8	ICF	insulating concrete form
9	IP	inch-pound - imperial
10	K	Kelvin
11	NLA	normalised leakage area
12	NLR	normalised leakage rate
13	SI	standard international – metric
14	SRE	sensible recovery efficiency
15	TPF	thermal performance factor
16	U-Value	overall thermal transmittance or overall coefficient of heat transfer
Column 1	2	3

Section 1.4. Referenced Documents and Organizations

1.4.1. Referenced Documents

1.4.1.1. Effective Date

(1) Unless otherwise specified in this Supplementary Standard, the documents referenced in this Supplementary Standard shall include all amendments, revisions and supplements effective to October 31, 2011.

1.4.1.2. Applicable Editions

(1) Where documents are referenced in this Supplementary Standard, they shall be the editions designated in Column 2 of Table 1.4.1.2.

Table 1.4.1.2.
Referenced Documents
Forming Part of Sentence 1.4.1.2.(1)

Issuing Agency	Document Number	Title of Document	Supplementary Standard Reference
CGSB	CAN/CGSB 149.10-M86	Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method	3.1.1.4.(2)
CSA	CAN/CSA-A440.2-09	Fenestration Energy Performance Evaluation of Windows and Sliding Glass Doors	2.1.1.8.(2); 3.1.1.9.(2)
CSA	B55.1-12	Test Method for Measuring Efficiency and Pressure Loss of Drain Water Heat Recovery Units	2.1.1.11.(3); 3.1.1.12.(4)
CSA	B55.2-12	Drain Water Heat Recovery Units	2.1.1.11.(2); 3.1.1.12.(3)
CSA	CAN/CSA-P.9-11	Test Method for Determining the Performance of Combined Space and Water Heating Systems (Combos)	3.1.1.2.(7); 3.1.1.3.(7)
NFRC	NFRC 100-2010	Procedure for Determining Fenestration Product U-factors	2.1.1.8.(2); 3.1.1.9.(2)
NFRC	NFRC 200-2010	Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence	2.1.1.8.(2); 3.1.1.8.(2)
NRCan	NRCan January 2011	Energy Star for New Homes: Technical Specifications – Ontario	2.1.3.1.(1)
NRCan	NRCan January 2012	Energy Star for New Homes Standard Version 12.1	2.1.3.1.(1)
NRCan	NRCan January 2012	Energy Star for New Homes Standard Version 12.6	3.1.3.1.(1)
NRCan	NRCan November 2015	EnerGuide Rating System Technical Procedures Version 15.1	3.1.1.4.(2); 3.1.2.1.
e_4 NRCan	NRCan 2012	2012 R-2000 Standard	2.1.3.1.(2); 3.1.3.1.(2)
Column 1	2	3	4

Notes to Table 1.4.1.2.:
(1) NFRC refers to the National Fenestration Rating Council. (See Appendix A.)

1.4.2. Abbreviations

1.4.2.1. Abbreviations of Proper Names

(1) Where used in this Supplementary Standard, abbreviations of proper names listed in Column 1 of Table 1.3.2.1. of Division B of the *Building Code* shall have the meaning assigned opposite it in Column 2.

Chapter 2

Acceptable Solutions for Energy Efficiency Compliance Before January 1, 2017

(Applies to construction for which a permit has been applied for before January 1, 2017)

Section 2.1. Methods for Achieving Energy Efficiency Compliance

2.1.1. Prescriptive Compliance Packages (See Appendix A.)

2.1.1.1. Energy Efficiency

(1) Except as permitted in Articles 2.1.1.5. to 2.1.1.10., the minimum thermal performance and energy efficiency of *building* envelope and space heating equipment, domestic water heating equipment and heat or energy recovery ventilator equipment shall conform to

(a) Article 2.1.1.2. if the *building* is located in Zone 1 with less than 5000 heating degree days, or

(b) Article 2.1.1.3. if the *building* is located in Zone 2 with 5000 or more heating degree days.

(2) All walls, ceilings, floors, windows and doors that separate heated space from unheated space, the exterior air or the exterior *soil* shall have thermal resistance ratings conforming to this Subsection.

(3) Where specified in compliance packages in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C, space heating equipment, domestic water heating equipment and heat or energy recovery ventilators shall have the efficiency rating conforming to this Subsection. (See Appendix A.)

(4) Insulation shall be provided between heated and unheated spaces and between heated spaces and the exterior in accordance with this Chapter.

(5) Reflective surfaces of insulating materials shall not be considered in calculating the thermal resistance of *building* assemblies.

(6) Where glass block is used in a wall, the required minimum overall performance of the *building* envelope shall be maintained by increasing thermal performance of other components sufficient to compensate for the additional heat loss through the glass block.

(7) Except as provided in Sentence (8) and except as permitted in Sentences (9) and 2.1.1.10.(3), where the ratio of the gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is not more than 17%, the *building* shall comply with a compliance package selected from Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C. (See Appendix A.)

(8) Except as permitted in Sentences (9) and 2.1.1.10.(3), where the ratio of the gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is more than 17% but not more than 22%, the *building* shall comply with a compliance package selected from Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C, and the *overall coefficient of heat transfer* of the glazing shall be upgraded to
(a) 1.8 where the selected compliance package requires 2.0,
(b) 1.6 where the selected compliance package requires 1.8, and
(c) 1.4 where the selected compliance package requires 1.6.
(See Appendix A.)

(9) Glazing in main entrance doors and adjacent sidelights to main entrance doors need not be calculated for the purposes of Sentences (7), (8) and (10).

(10) Except as provided in Sentences (9) and 2.1.1.10.(3), where the ratio of gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is more than 22%, the *building* shall comply with Subsection 2.1.2. (See Appendix A.)

(11) Where a *dwelling* unit has a walkout *basement*, the thermal performance level of the exterior *basement* wall shall be not less than that required for the above grade wall for
(a) the *basement* wall containing the door opening, and
(b) any *basement* wall that has an exposed wall area above the ground level exceeding 50% of that *basement* wall area.

(12) The minimum thermal resistance of insulation shall conform to the applicable values specified in Articles 2.1.1.2., 2.1.1.3. and 2.1.1.10.

(13) The minimum annual fuel utilization efficiency of a natural gas- or propane-fired furnace serving a *building* of *residential occupancy* shall conform to Table 2.1.1.1.A.

Table 2.1.1.1.A.
Furnace Minimum Annual Fuel Utilization Efficiency
Forming Part of Sentence 2.1.1.1.(13)

Furnace Fuel Source	Minimum AFUE
Natural gas	90%
Propane	90%
Column 1	2

(14) Where space heating is supplied by a solid fuel-burning *appliance* or an earth energy system, the compliance package is permitted to comply with Tables 2.1.1.2.A. and 2.1.1.3.A.

(15) Where an enclosed unheated space is separated from a heated space by glazing, the unheated enclosure may be considered to provide a thermal resistance of RSI 0.16.

(16) Where space heating equipment and domestic water heating equipment efficiencies are specified in a compliance package in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C, the equipment efficiencies shall be determined in accordance with test procedures regulated by an applicable Ontario Regulation, or in the absence of such regulation, determined in accordance with test procedures governed by the applicable equipment standard.

(17) Where heat or energy recovery ventilators are specified in a compliance package in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C, they shall
(a) meet the requirements of Article 9.32.3.11. of Division B of the *Building Code*, and
(b) meet the minimum efficiency rating required in this Chapter based on a test temperature of 0°C at an air flow rate equal to the principle exhaust flow but need not exceed 30 L/s.

2.1.1.2. Energy Efficiency for Buildings Located in Zone 1

(1) Except as required in Sentences (2) to (4) and permitted in Sentences (5) to (11), the minimum thermal performance of *building* envelope and equipment shall conform to Table 2.1.1.2.A.

(2) Except for solid fuel-burning space heating equipment and natural gas and propane furnaces, where the space heating equipment efficiency ranges from 78% to less than 90%, the minimum thermal performance of the *building* envelope and equipment shall conform to Table 2.1.1.2.B.

(3) Where *electric space heating* is used, the minimum thermal performance of the *building* envelope and equipment shall conform to Table 2.1.1.2.C.

(4) Except for solid fuel-burning space heating equipment, where the space heating equipment efficiency is less than 78% or it cannot meet the requirements of the applicable compliance packages, energy efficiency compliance shall be achieved in accordance with Clause 12.2.1.1.(3)(a) of Division B of the *Building Code* or Subsection 2.1.2. of this Supplementary Standard.

(5) Where the thermal performance of above grade walls, windows or *basement* walls is reduced by applying Sentences (6) through (11), only the thermal performance of one of those *building* components is permitted to be reduced.

(6) Except as permitted in Sentence (7), where compliance package I or J in Table 2.1.1.2.A is used, the minimum RSI value for thermal insulation in exposed above grade walls is permitted to be not less than RSI 3.52 provided that

(a) the *overall coefficient of heat transfer* of the glazing is upgraded in accordance with Sentence 2.1.1.1.(8), in addition to a upgrade where it is required due to high fenestration to wall ratio, or (See Appendix A.)
(b) the thermal insulation value in *basement* walls has a minimum RSI 3.52 where compliance package J is used.

(7) Where blown-in insulation or spray-applied foam insulation is used in compliance package I or J in Table 2.1.1.2.A, the minimum RSI value for thermal insulation in exposed above grade walls is permitted to be not less than RSI 3.52 provided that

(a) the thermal insulation value in a ceiling with an attic space is not less than RSI 10.55,
(b) the minimum efficiency of the HRV is increased by not less than 8 percentage points,
(c) the minimum AFUE of the space heating equipment is increased by not less than 2 percentage points,
(d) the minimum EF of the domestic water heater is increased by not less than 4 percentage points, or
(e) the *building* is in compliance with Sentence (6).

(8) Except as permitted in Sentence (9), where compliance package D, E, F, G, H or M in Table 2.1.1.2.A is used, the minimum RSI value for thermal insulation of exposed above grade walls is permitted to be not less than RSI 3.52 provided that

(a) the *overall coefficient of heat transfer* of the glazing is upgraded in accordance with Sentence 2.1.1.1.(8), in addition to an upgrade where it is required due to high fenestration to wall ratio, and the minimum EF of the domestic water heater is increased by not less than 8 percentage points, or (See Appendix A.)
(b) the thermal insulation value in *basement* walls has a minimum RSI 3.52 where compliance package F, G, or H is used, and the *building* is in compliance with at least two requirements of Clauses (7)(a) to (d).

(9) Where blown-in insulation or spray-applied foam insulation is used in compliance package D, E, F, G, H or M in Table 2.1.1.2.A, the minimum RSI value for thermal insulation in exposed above grade walls is permitted to be not less than RSI 3.52 provided that

(a) the *overall coefficient of heat transfer* of the glazing is upgraded in accordance with Sentence 2.1.1.1.(8), in addition to an upgrade where it is required due to high fenestration to wall ratio or the thermal insulation value in *basement* walls has a minimum RSI 3.52 where compliance package F, G, or H is used, and (See Appendix A.)
(b) the *building* is in compliance with Clause (7)(a), (b), (c) or (d).

(10) Where a drain water heat recovery unit conforming to Article 2.1.1.11. is provided in addition to the requirements of a compliance package selected from Tables 2.1.1.2.A to 2.1.1.2.C.

(a) the thermal insulation value in exposed above grade walls is permitted to be not less than RSI 3.52 where it is required to be RSI 3.87,

(b) the thermal insulation value in exposed above grade walls is permitted to be not less than RSI 3.52 where it is required to be RSI 4.23, provided that the drain water heat recovery unit has a minimum efficiency of not less than 46%,

(c) the thermal insulation value in *basement* walls is permitted to be not less than RSI 2.11 where it is required to be RSI 3.52,

(d) the *overall coefficient of heat transfer* of glazing is permitted to be not greater than 1.8 W/(m²•K) where it is required to be 1.6 W/(m²•K), or not greater than 1.6 W/(m²•K) where it is required to be 1.4 W/(m²•K),

(e) the minimum efficiency of an HRV is permitted to be not less than 55% where it is required to be 75% or less, or

(f) the minimum efficiency of a furnace is permitted to be not less than 90% where it is required to be 94%.

(11) Where an HRV is only required for the purpose of meeting the energy efficiency requirements of a compliance package included in Table 2.1.1.2.A, the HRV may be omitted provided that a drain water heat recovery unit with a minimum efficiency of not less than 62% is installed in conformance with Article 2.1.1.11.

Table 2.1.1.2.A
ZONE 1 - Compliance Packages for Space Heating Equipment with AFUE ≥ 90%
Forming Part of Sentence 2.1.1.2.(1)

Component	Compliance Package												
	A	B	C	D	E	F	G	H	I	J	K[3]	L[4]	M[5]
Ceiling with Attic Space Minimum RSI (R)-Value[1]	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)
Ceiling Without Attic Space Minimum RSI (R)-Value[1]	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Exposed Floor Minimum RSI (R)-Value[1]	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Walls Above Grade Minimum RSI (R)-Value[1]	4.23 (R24)	4.75 (R27)	4.75 (R27)	4.23 (R24)	4.23 (R24)	4.23 (R24)	4.23 (R24)	4.23 (R24)	3.87 (R22)	3.87 (R22)	3.87 (R22)	4.23 (R24)	4.23 (R24)
Basement Walls Minimum RSI (R)-Value[1]	3.52 (R20)	3.52 (R20)	3.52 (R20)	3.52 (R20)	3.52 (R20)	2.11 (R12)	2.11 (R12)	2.11 (R12)	3.52 (R20)	2.11 (R12)	3.87 (R22)	3.87 (R22)	3.52 (R20)
Below Grade Slab Entire Surface > 600 mm Below Grade Minimum RSI (R)-Value[1]	0.88 (R5)	—	—	—	—	—	—	—	—	—	—	—	—
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value[1]	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Heated Slab or Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value[1]	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Windows and Sliding Glass Doors Maximum U-Value[2]	1.6	1.6	1.8	1.8	1.8	1.8	1.8	2.0	1.8	1.8	1.8	1.8	1.8
Skylights Maximum U-Value[2]	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Space Heating Equipment Minimum AFUE	90%	90%	94%	94%	90%	94%	92%	94%	92%	94%	90%	94%	90%[7]
HRV[6] Minimum Efficiency	—	—	—	—	55%	60%	60%	70%	55%	60%	—	—	—
Domestic Water Heater Minimum EF	0.57	0.57	0.62	0.67	0.57	0.57	0.62	0.67	0.62	0.67	0.57	0.57	0.80[7]
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14

Notes to Table 2.1.1.2.A:

(1) Except for notes (3) and (4), the values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values are expressed in (m²•K)/W.

(2) U-Value is the *overall coefficient of heat transfer* for a window assembly, sliding glass door assembly or skylight assembly expressed in W/(m²•K). See exceptions and use of alternative Energy Ratings (ER) in Article 2.1.1.8.

(3) Compliance package K applies only to a *building* with both ICF *basement* walls and ICF above grade walls. Alternatively, any other compliance package is permitted to be used for a *building* with both ICF *basement* walls and ICF above grade walls. The thermal resistance value of an ICF wall is the total thermal resistance of the entire wall assembly.

(4) Compliance package L applies only to a *building* with ICF *basement* walls. Alternatively, any other compliance package except compliance package K, is permitted to be used for a *building* with ICF *basement* walls. The thermal resistance value of an ICF wall is the total thermal resistance of the entire wall assembly.

(5) Applies to a *building* with combined space heating and domestic water heating system.

(6) Except as required in Subsection 9.32.3. of Division B of the *Building Code*, an HRV is only required as a part of a compliance package where a minimum efficiency level is specified.

(7) Only the water heating equipment shall meet the minimum AFUE or EF specified in the Table or shall be of the condensing type.

Table 2.1.1.2.B
ZONE 1 - Compliance Packages for Space Heating Equipment with AFUE ≥ 78% and < 90%
Forming Part of Sentence 2.1.1.2.(2)

Component	Compliance Package					
	A	B	C	D	E	F
Ceiling with Attic Space Minimum RSI (R)-Value(1)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)
Ceiling Without Attic Space Minimum RSI (R)-Value(1)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Exposed Floor Minimum RSI (R)-Value(1)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Walls Above Grade Minimum RSI (R)-Value(1)	5.11 (R29)	5.11 (R29)	5.11 (R29)	4.75 (R27)	4.75 (R27)	4.75 (R27)
Basement Walls Minimum RSI (R)-Value(1)	3.52 (R20)	2.11 (R12)	3.52 (R20)	3.52 (R20)	3.52 (R20)	3.52 (R20)
Below Grade Slab Entire Surface > 600 mm Below Grade Minimum RSI (R)-Value(1)	—	—	—	—	—	—
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Heated Slab or Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Windows and Sliding Glass Doors Maximum U-Value(2)	1.6	1.6	1.8	1.6	1.6	1.8
Skylights Maximum U-Value(2)	2.8	2.8	2.8	2.8	2.8	2.8
Space Heating Equipment Minimum AFUE	78%	84%	84%	84%	78%	84%
HRV Minimum Efficiency	55%	55%	70%	55%	70%	75%
Domestic Water Heater Minimum EF	—	—	—	—	—	—
Column 1	2	3	4	5	6	7

Notes to Table 2.1.1.2.B:

(1) The values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values are expressed in (m²•K)/W.

(2) U-Value is the *overall coefficient of heat transfer* for a window assembly, sliding glass door assembly or skylight assembly expressed in W/(m²•K). See exceptions and use of alternative Energy Ratings (ER) in Article 2.1.1.8.

Table 2.1.1.2.C
ZONE 1 - Compliance Packages for Electric Space Heating
Forming Part of Sentence 2.1.1.2.(3)

Component	Compliance Package	
	A	B
Ceiling with Attic Space Minimum RSI (R)-Value(1)	8.81 (R50)	8.81 (R50)
Ceiling Without Attic Space Minimum RSI (R)-Value(1)	5.46 (R31)	5.46 (R31)
Exposed Floor Minimum RSI (R)-Value(1)	5.46 (R31)	5.46 (R31)
Walls Above Grade Minimum RSI (R)-Value(1)	5.11 (R29)	5.11 (R29)
Basement Walls Minimum RSI (R)-Value(1)	3.52 (R20)	2.11 (R12)
Below Grade Slab Entire Surface > 600 mm Below Grade Minimum RSI (R)-Value(1)	—	—
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)	1.76 (R10)
Heated Slab or Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)	1.76 (R10)
Windows and Sliding Glass Doors Maximum U-Value(2)	1.6	1.6
Skylights Maximum U-Value(2)	2.8	2.8
Space Heating Equipment Minimum AFUE	—	—
HRV Minimum Efficiency	55%	75%
Domestic Water Heater Minimum EF	—	—
Column 1	2	3

Notes to Table 2.1.1.2.C:

(1) The values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values are expressed in (m²•K)/W.

(2) U-Value is the *overall coefficient of heat transfer* for a window assembly, sliding glass door assembly or skylight assembly expressed in W/(m²•K). See exceptions and use of alternative Energy Ratings (ER) in Article 2.1.1.8.

2.1.1.3. Energy Efficiency for Buildings Located in Zone 2

(1) Except as required in Sentences (2) to (4) and permitted in Sentences (5) to (8), the minimum thermal performance of the *building* envelope and equipment shall conform to Table 2.1.1.3.A.

(2) Except for solid fuel-burning space heating equipment and natural gas and propane furnaces, where the space heating equipment efficiency ranges from 78% to less than 90%, the minimum thermal performance of *building* envelope and equipment shall conform to Table 2.1.1.3.B.

(3) Where *electric space heating* is used, the minimum thermal performance of the *building* envelope and equipment shall conform to Table 2.1.1.3.C.

(4) Except for solid fuel-burning space heating equipment, where the space heating equipment efficiency is less than 78% or it cannot meet the requirements of the applicable compliance packages, energy efficiency compliance shall be achieved in accordance with Clause 12.2.1.1.(3)(a) of Division B of the *Building Code* or Subsection 2.1.2. of this Supplementary Standard.

(5) Where the thermal performance of above grade walls, windows or *basement* walls is reduced by applying Sentences (6) through (8), only the thermal performance of one of those *building* components is permitted to be reduced.

(6) Except as permitted in Sentence (7), where compliance package H, I, J or M in Table 2.1.1.3.A is used, the minimum RSI value for thermal insulation of exposed above grade walls is permitted to be not less than RSI 3.52 provided that

(a) the *overall coefficient of heat transfer* of the glazing is upgraded in accordance with Sentence 2.1.1.1.(8), in addition to a upgrade where it is required due to high fenestration to wall ratio and the minimum EF of the domestic water heater is increased by not less than 8 percentage points, or (See Appendix A.)
(b) the thermal insulation value in *basement* walls has a minimum RSI 3.52 where compliance package J is used, and the *building* is in compliance with at least two requirements of Clauses 2.1.1.2.(7)(a) to (d).

(7) Where blown-in insulation or spray-applied foam insulation is used in compliance package H, I, J or M in Table 2.1.1.3.A, the minimum RSI value for thermal insulation in exposed above grade walls is permitted to be not less than RSI 3.52 provided that

(a) the *overall coefficient of heat transfer* of the glazing is upgraded in accordance with Sentence 2.1.1.1.(8), in addition to a upgrade where it is required due to high fenestration to wall ratio or the thermal insulation value in *basement* walls has a minimum RSI 3.52 where compliance package J is used, and (See Appendix A.)
(b) the *building* is in compliance with Clause 2.1.1.2.(7)(a), (b), (c) or (d).

(8) Where a drain water heat recovery unit conforming to Article 2.1.1.11. is provided in addition to the requirements of a compliance package selected from Tables 2.1.1.3.A to 2.1.1.3.C

(a) the thermal insulation value in exposed above grade walls is permitted to be not less than RSI 3.87 where it is required to be RSI 4.23 provided that the drain water heat recovery unit has a minimum efficiency of not less than 41%,
(b) the thermal insulation value in *basement* walls is permitted to be not less than RSI 2.11 where it is required to be RSI 3.52, provided that the drain water heat recovery unit has a minimum efficiency of not less than 46%,
(c) the *overall coefficient of heat transfer* of glazing is permitted to be not greater than 1.8 W/(m²•K) where it is required to be 1.6 W/(m²•K),
(d) the *overall coefficient of heat transfer* of glazing is permitted to be not greater than 1.6 W/(m²•K) where it is required to be 1.4 W/(m²•K), provided that the drain water heat recovery unit has a minimum efficiency of not less than 41%, or
(e) the minimum efficiency of an HRV is permitted to be not less than 55% where it is required to be 75% or less.

Table 2.1.1.3.A
ZONE 2 - Compliance Packages for Space Heating Equipment with AFUE ≥ 90%
Forming Part of Sentence 2.1.1.3.(1)

Component	Compliance Package												
	A	B	C	D	E	F	G	H	I	J	K[3]	L[4]	M[5]
Ceiling with Attic Space Minimum RSI (R)-Value[1]	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)	8.81 (R50)
Ceiling Without Attic Space Minimum RSI (R)-Value[1]	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Exposed Floor Minimum RSI (R)-Value[1]	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Walls Above Grade Minimum RSI (R)-Value[1]	5.11 (R29)	5.11 (R29)	5.11 (R29)	4.75 (R27)	4.75 (R27)	4.75 (R27)	4.75 (R27)	4.23 (R24)	4.23 (R24)	4.23 (R24)	3.87 (R22)	4.23 (R24)	4.23 (R24)
Basement Walls Minimum RSI (R)-Value[1]	3.52 (R20)	3.52 (R20)	3.52 (R20)	3.52 (R20)	3.52 (R20)	3.52 (R20)	2.11 (R12)	3.52 (R20)	3.52 (R20)	2.11 (R12)	3.87 (R22)	3.87 (R22)	3.52 (R20)
Below Grade Slab Entire Surface > 600 mm Below Grade Minimum RSI (R)-Value[1]	0.88 (R5)	—	—	0.88 (R5)	—	—	—	0.88 (R5)	—	—	—	—	—
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value[1]	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Heated Slab or Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value[1]	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Windows and Sliding Glass Doors Maximum U-Value[2]	1.6	1.6	1.8	1.6	1.6	1.8	1.8	1.6	1.6	1.6	1.8	1.8	1.8
Skylights Maximum U-Value[2]	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Space-Heating Equipment Minimum AFUE	90%	94%	92%	94%	94%	94%	94%	94%	90%	94%	94%	94%	90%[7]
HRV[6] Minimum Efficiency	—	—	60%	—	—	60%	75%	—	60%	60%	—	—	55%
Domestic Water Heater Minimum EF	0.57	0.57	0.57	0.57	0.67	0.57	0.62	0.67	0.57	0.67	0.57	0.67	0.80[7]
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14

Notes to Table 2.1.1.3.A:

(1) Except for notes (3) and (4), the values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values are expressed in (m²•K)/W.

(2) U-Value is the *overall coefficient of heat transfer* for a window assembly, sliding glass door assembly or skylight assembly expressed in W/(m²•K). See exceptions and use of alternative Energy Ratings (ER) in Article 2.1.1.8.

(3) Compliance package K applies only to a *building* with both ICF *basement* walls and ICF above grade walls. Alternatively, any other compliance package is permitted to be used for a *building* with both ICF *basement* walls and ICF above grade walls. The thermal resistance value of an ICF wall is the total thermal resistance of the entire wall assembly.

(4) Compliance package L applies only to a *building* with ICF *basement* walls. Alternatively, any other compliance package except compliance package K, is permitted to be used for a *building* with ICF *basement* walls. The thermal resistance value of an ICF wall is the total thermal resistance of the entire wall assembly.

(5) Applies to a *building* with combined space heating and domestic water heating system.

(6) Except as required in Subsection 9.32.3. of Division B of the *Building Code*, an HRV is only required as a part of a compliance package where a minimum efficiency level is specified.

(7) Only the water heating equipment shall meet the minimum AFUE or EF specified in the Table or shall be of the condensing type.

Table 2.1.1.3.B
ZONE 2 - Compliance Packages for Space Heating Equipment with AFUE ≥ 78% and < 90%
Forming Part of Sentence 2.1.1.3.(2)

Component	Compliance Package	
	A	B
Ceiling with Attic Space Minimum RSI (R)-Value(1)	8.81 (R50)	8.81 (R50)
Ceiling Without Attic Space Minimum RSI (R)-Value(1)	5.46 (R31)	5.46 (R31)
Exposed Floor Minimum RSI (R)-Value(1)	5.46 (R31)	5.46 (R31)
Walls Above Grade Minimum RSI (R)-Value(1)	5.11 (R29)	5.11 (R29)
Basement Walls Minimum RSI (R)-Value(1)	3.52 (R20)	3.52 (R20)
Below Grade Slab Entire Surface > 600 mm Below Grade Minimum RSI (R)-Value(1)	0.88 (R5)	0.88 (R5)
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)	1.76 (R10)
Heated Slab or Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)	1.76 (R10)
Windows and Sliding Glass Doors Maximum U-Value(2)	1.6	1.6
Skylights Maximum U-Value(2)	2.8	2.8
Space Heating Equipment Minimum AFUE	78%	84%
HRV Minimum Efficiency	75%	60%
Domestic Water Heater Minimum EF	—	—
Column 1	2	3

Notes to Table 2.1.1.3.B:

(1) The values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values are expressed in (m²•K)/W.

(2) U-Value is the *overall coefficient of heat transfer* for a window assembly, sliding glass door assembly or skylight assembly expressed in W/(m²•K). See exceptions and use of alternative Energy Ratings (ER) in Article 2.1.1.8.

Table 2.1.1.3.C
ZONE 2 - Compliance Packages for Electric Space Heating
Forming Part of Sentence 2.1.1.3.(3)

Component	Compliance Package A
Ceiling with Attic Space Minimum RSI (R)-Value(1)	8.81 (R50)
Ceiling Without Attic Space Minimum RSI (R)-Value(1)	5.46 (R31)
Exposed Floor Minimum RSI (R)-Value(1)	5.46 (R31)
Walls Above Grade Minimum RSI (R)-Value(1)	5.11 (R29)
Basement Walls Minimum RSI (R)-Value(1)	3.52 (R20)
Below Grade Slab Entire Surface > 600 mm Below Grade Minimum RSI (R)-Value(1)	0.88 (R5)
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)
Heated Slab or Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)
Windows and Sliding Glass Doors Maximum U-Value(2)	1.6
Skylights Maximum U-Value(2)	2.8
Space Heating Equipment Minimum AFUE	—
HRV Minimum Efficiency	75%
Domestic Water Heater Minimum EF	—
Column 1	2

Notes to Table 2.1.1.3.C:

(1) The values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values are expressed in (m²•K)/W.

(2) U-Value is the *overall coefficient of heat transfer* for a window assembly, sliding glass door assembly or skylight assembly expressed in W/(m²•K). See exceptions and use of alternative Energy Ratings (ER) in Article 2.1.1.8.

2.1.1.4. Elements Acting as a Thermal Bridge

(1) Except for a *foundation* wall, the insulated portion of a wall that incorporates wood stud framing elements that have a thermal resistance of less than RSI 0.90 shall be insulated to restrict heat flow through the studs by a material providing a thermal resistance at least equal to 25% of the thermal resistance required for the insulated portion of the assembly in Articles 2.1.1.2., 2.1.1.3. and 2.1.1.10.

(2) Except as provided in Sentence (3), the thermal resistance of the insulated portion of a *building* assembly in Articles 2.1.1.2. and 2.1.1.3. that incorporates metal framing elements, such as steel studs and steel joists, that act as thermal bridges to facilitate heat flow through the assembly, shall be 20% greater than the values shown in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C and Table 2.1.1.10., unless it can be shown that the heat flow is not greater than the heat flow through a wood frame assembly of the same thickness.

(3) Sentence (2) does not apply to *building* assemblies incorporating thermal bridges where the thermal bridges are insulated to restrict heat flow through the thermal bridges by a material providing a thermal resistance at least equal to 25% of the thermal resistance required for the insulated portion of the assembly in Articles 2.1.1.2., 2.1.1.3. and 2.1.1.10.

2.1.1.5. Log Wall Construction and Post, Beam and Plank Construction

(1) Except as provided in Sentences (2) and (3), log wall construction and post, beam and plank construction shall have a minimum thermal resistance of RSI 2.1 for the total assembly.

(2) The thermal resistance value in Sentence (1) for the total wall assembly may be reduced to not less than RSI 1.61 if,
(a) the thermal resistance of insulation for the exposed roof or ceiling required in Table 2.1.1.2.A. is increased by an amount equivalent to the reduction permitted in this Sentence, and
(b) for log walls, the logs have tongue-and-groove or splined joints.

(3) Where milled log walls are installed, the thermal resistance value in Sentence (1) for the total wall assembly does not apply if,
(a) the mean thickness of each log is not less than 150 mm,
(b) the thermal resistance of insulation for the exposed roof or ceiling required in Table 2.1.1.2.A is increased by RSI 0.53, and
(c) the logs have tongue-and-groove or splined joints.

(4) Where a log wall is constructed in accordance with Sentences (1) to (3), the log wall shall be deemed to comply with the requirements in Subsection 9.25.3. of Division B of the *Building Code*.

2.1.1.6. Insulation of Foundation Walls

(1) *Foundation* walls enclosing heated space shall be insulated from the underside of the subfloor to not more than 200 mm above the finished floor level of the *basement*. (See Appendix A.)

(2) The insulation required by Sentence (1) may be provided by a system installed,
(a) on the interior of the *foundation* wall,
(b) on the exterior face of the *foundation* wall, or
(c) partially on the interior and partially on the exterior, provided the thermal performance of the system is equivalent to that permitted in Clauses (a) or (b).

(3) If a *foundation* wall is constructed of hollow masonry units, one or more of the following shall be used to control convection currents in the core spaces,
(a) filling the core spaces,
(b) at least one row of semi-solid blocks at or below *grade*, or
(c) other similar methods.

(4) Masonry walls of hollow units that penetrate the ceiling shall be sealed at or near the ceiling adjacent to the roof space to prevent air within the voids from entering the *attic or roof space* by,
(a) capping with masonry units without voids, or
(b) installation of flashing material extending across the full width of the masonry.

(5) Except as provided in Sentences (6) and (7), where a portion of a *basement* slab or a portion of a *basement* slab edge is the only part of the slab that is at the exterior ground level such as a walk-out *basement*, or within 600 mm of the exterior ground level, those portions shall have perimeter insulation extend not less than 600 mm below the slab level. (See Appendix A.)

(6) Where the entire concrete slab is within 600 mm of the exterior ground level, the entire surface of the slab shall be insulated. (See Appendix A.)

(7) Where a slab contains heating ducts, pipes, tubes or cables, the entire heated surface of the slab that is in contact with the ground shall be insulated.

2.1.1.7. Thermal Resistance Values for Roof Access Hatches and Eaves

(1) The thermal resistance values for insulation required by Articles 2.1.1.2., 2.1.1.3. and 2.1.1.10. for exposed ceilings with attic spaces are permitted to be reduced
(a) directly above access hatches, and
(b) near eaves to the extent made necessary by the roof slope and required ventilation clearances,

except that the thermal insulation value at the location directly above access hatches and inner surfaces of exterior walls shall be not less than RSI 3.52.

2.1.1.8. Thermal Performance of Windows, Skylights and Sliding Glass Doors

(1) Except as provided in Sentence (3) and except for sidelights to main entrance doors, windows, skylights and sliding glass doors shall meet
(a) the required *overall coefficient of heat transfer* in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C and Table 2.1.1.10., or
(b) the corresponding energy rating in Table 2.1.1.8.

Table 2.1.1.8.
Maximum U-Values and Minimum Energy Ratings (ER) for Windows, Skylights and Sliding Glass Doors
Forming Part of Sentence 2.1.1.8.(1)

Component	Maximum U-Values	Minimum Energy Ratings, (ER)
	U-Value, W/(m²•K) (Btu/h•ft²•°F)	ER
Skylights	2.8 (0.50)	—
Windows and Sliding Glass Doors	2.0 (0.35)	17
	1.8 (0.32)	21
	1.6 (0.28)	25
	1.4 (0.25)	29
Column 1	2	3

(2) The energy rating and the *overall coefficient of heat transfer* required for windows and sliding glass doors in a *residential occupancy* shall be determined in conformance with
(a) CAN/CSA-A440.2, "Fenestration Energy Performance", or
(b) NFRC 100, "Procedure for Determining Fenestration Product U-factors" and NFRC 200, "Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence".

(3) A *basement* window that incorporates a *loadbearing* structural frame shall be double glazed with a low-E coating.

2.1.1.9. Minimum Thermal Resistance of Doors

(1) Except for doors in enclosed unheated vestibules and cold cellars, and except for glazed portions of doors, all doors that separate heated space from unheated space shall have a thermal resistance of not less than RSI 0.7 where a storm door is not provided.

2.1.1.10. Additions to Existing Buildings

(1) Except as provided in Sentences (2) and (3), an addition to an existing *building* shall be designed to this Subsection and comply with the applicable requirements of
(a) the Tables referenced in Article 2.1.1.2. or 2.1.1.3. , or
(b) Table 2.1.1.10. in lieu of the Tables referenced in Sentences 2.1.1.1.(7) and (8).
(See Appendix A.)

(2) For the purpose of Sentences 2.1.1.1.(7) to (10) and Subsection 2.1.2., the addition may be considered independently or in combination with the existing *building*, regardless of the thermal characteristics of the existing *building* envelope.
(See Appendix A.)

(3) A *one-storey* sunroom addition to an existing *building* shall be deemed to be in compliance with Articles 2.1.1.2. and 2.1.1.3. and Subsection 2.1.2., provided that the *overall coefficient of heat transfer* of
(a) doors, windows and walls has a maximum U-Value of
  (i) 1.6 if the *building* is located in Zone 1 with less than 5000 heating degree days,
  (ii) 1.4 if the *building* is located in Zone 2 with 5000 or more heating degree days, or
  (iii) 1.4 if the *building* uses *electric space heating*, and
(b) roofs and skylights has a maximum U-Value of 2.6.
(See Appendix A.)

Table 2.1.1.10.
Thermal Performance Requirements for Additions to Existing Buildings(3)
Forming Part of Sentence 2.1.1.10.(2)

Component	Zone 1 Less than 5000 Degree-Days	Zone 2 5000 or more Degree-Days	*Electric Space Heating* Zones 1 and 2
Ceiling with Attic Space Minimum RSI (R)-Value(1)	8.81 (R50)	8.81 (R50)	8.81 (R50)
Ceiling Without Attic Space Minimum RSI (R)-Value(1)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Exposed Floor Minimum RSI (R)-Value(1)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Walls Above Grade Minimum RSI (R)-Value(1)	4.23 (R24)	4.23 (R24)	5.46 (R31)
Basement Walls Minimum RSI (R)-Value(1)	3.52 (R20)	3.52 (R20)	3.52 (R20)
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Heated Slab or Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value(1)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Windows and Sliding Glass Doors Maximum U-Value(2)	1.8	1.6	1.6
Skylights Maximum U-Value(2)	2.8	2.8	2.8
Column 1	2	3	4

Notes to Table 2.1.1.10.:

(1) The values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values are expressed in (m²•K)/W.

(2) U-Value is the *overall coefficient of heat transfer* for a window assembly, sliding glass door assembly or skylight assembly expressed in W/(m²•K). See exceptions and use of alternative Energy Ratings (ER) in Article 2.1.1.8.

(3) The *building* need not conform to minimum efficiency requirements for HRV's, domestic water heaters and space heating equipment required in Article 2.1.1.2. or 2.1.1.3.

2.1.1.11. Drain Water Heat Recovery

(1) Where a drain water heat recovery unit is installed to meet the requirements of this Subsection, the unit and its installation shall conform to Sentences (2) to (5).

(2) Drain water heat recovery units shall conform to CSA B55.2, "Drain Water Heat Recovery Units".

(3) The minimum efficiency of a drain water heat recovery unit shall be determined in conformance with CSA B55.1, "Test Method for Measuring Efficiency and Pressure Loss of Drain Water Heat Recovery Units".

(4) A drain water heat recovery unit shall be installed
(a) to receive drain water from all showers or at least two showers where there are two or more showers in a *dwelling unit*, (See Appendix A.)
(b) in an upright position that does not diverge more than 5 degrees from the vertical,
(c) in a position such that the cold water inlet connection is at the bottom of the unit,
(d) downstream of a water softener where a water softener is installed, and
(e) in a *conditioned space* or on the warm side of the dewpoint of the wall assembly.

(5) Except as required in Clauses 2.1.1.2.(10)(b) and 2.1.1.3.(8)(a), (b) and (d), and Sentence 2.1.1.2.(11), the minimum efficiency of the drain water heat recovery unit shall be not less than 36% when it is tested in accordance with Sentence (3).

2.1.2. Performance Compliance

2.1.2.1. Required Performance Level (See Appendix A.)

(1) The performance level shall be measured based on the simulated annual energy use of the *building*.

(2) The simulated annual energy use of the proposed *building* shall not be greater than the simulated annual energy use of the *building* as if it met the performance level of a permitted compliance package in Subsection 2.1.1. selected on the basis of
(a) zone location,
(b) energy source, and
(c) equipment efficiency.

(3) The simulated annual energy use shall be calculated for the
(a) proposed *building*, and
(b) *building* conforming to the applicable compliance package.

(4) For the purpose of calculations required in Sentence (3),
(a) a recognized annual energy use simulation software shall be used to calculate annual energy use,
(b) local climatic data shall be used, and
(c) the equivalent domestic water, appliance and other plug-in loads shall be assumed in both calculations.

(5) Except as provided in Sentence (6), for the purpose of Clauses (3)(a) and (3)(b), the air leakage rate of a *dwelling unit* may be assumed to be
(a) 2.5 air changes per hour at an air pressure differential of 50 Pa for detached homes, and
(b) 3.0 air changes per hour at an air pressure differential of 50 Pa for attached homes.

(6) For the purpose of Clause (3)(a), values less than Sentence (5) may be used provided that the values are verified with air leakage tests as conducted in accordance with the requirements of Clause 12.2.1.(3)(a) of Division B of the *Building Code*.

(7) For the purpose of calculations required in Clause (3)(b), the *building* shall have identical dimensions and orientation as the proposed design, except where the glazing to wall ratio exceeds 22%, the glazing area shall be reduced proportionally along each exposure until the limit is met.

(8) For the purpose of calculations required in Clause (3)(b), where frame construction is used, the design of the framing system shall assume a spacing of
(a) 406 mm o.c. for wall studs,
(b) 406 mm o.c. for exposed floors joists, roof joists and roof rafters, and
(c) 610 mm o.c. for roof trusses.

(9) For the purpose of calculations required in Clause (3)(b), *building* envelope component properties and characteristics not specifically described in this Subsection and Subsection 2.1.1. shall be modeled the same for both the proposed design and a design based on a permitted compliance package unless it can be shown such properties and characteristics of the proposed design constitute additional energy conservation measures.

(10) Where the overall thermal performance of the proposed *building* envelope is less than the envelope performance of the compliance package that is compared against it, the reduction in the performance level of the *building* envelope shall not be more than 25%.

2.1.3. Other Acceptable Compliance Methods

2.1.3.1. Other Acceptable Compliance Methods (See Appendix A.)

(1) A building shall be deemed to be in compliance with the requirements of Subsection 2.1.1. provided that the building is in compliance with the technical requirements of
(a) NRCan,"Energy Star for New Homes Standard Version 12.1", or
(b) NRCan,"2012 R-2000 Standard".

Chapter 3

Acceptable Solutions for Energy Efficiency Compliance After December 31, 2016

(Applies to construction for which a permit has been applied for after December 31, 2016)

Section 3.1. Methods for Achieving Energy Efficiency Compliance

3.1.1. Prescriptive Compliance Packages (See Appendix A.)

3.1.1.1. Energy Efficiency

(1) Except as provided in Articles 3.1.1.4. to 3.1.1.11., the *building* shall conform to
(a) Article 3.1.1.2. if the *building* is located in Zone 1 with less than 5000 heating degree days, or
(b) Article 3.1.1.3. if the *building* is located in Zone 2 with 5000 or more heating degree days.

(2) Except as required in Sentence (5), all walls, ceilings, floors, windows and doors that separate heated space from unheated space, the exterior air or the exterior *soil* shall have thermal resistance ratings conforming to this Subsection.

(3) Where specified in compliance packages in Tables 3.1.1.2.A to 3.1.1.2.C and Tables 3.1.1.3.A to 3.1.1.3.C, space heating equipment, domestic water heating equipment and heat or energy recovery ventilators shall be provided and have the efficiency rating conforming to this Subsection. (See Appendix A.)

(4) Except as required in Sentence (5), insulation shall be provided between heated and unheated spaces and between heated spaces and the exterior in accordance with this Chapter.

(5) A *building* envelope assembly that separates a *conditioned space* from an adjoining *storage garage* shall be treated as an assembly separating heated space from exterior, even if the *storage garage* is intended to be heated.

(6) Reflective surfaces of insulating materials shall not be considered in calculating the thermal resistance of *building* assemblies.

(7) Except as provided in Sentences (8) and 3.1.1.11.(3), where the ratio of the gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is not more than 17%, the *building* shall comply with a compliance package selected from Tables 3.1.1.2.A to 3.1.1.2.C and Tables 3.1.1.3.A to 3.1.1.3.C, and Table 3.1.1.11. (See Appendix A.)

(8) Except as permitted in Sentences 3.1.1.11.(3), where the ratio of the gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is more than 17% but not more than 22%, the *building* shall comply with a compliance package selected from Tables 3.1.1.2.A to 3.1.1.2.C, Tables 3.1.1.3.A to 3.1.1.3.C and Table 3.1.1.11 and the *overall coefficient of heat transfer* of the *fenestration* shall be upgraded to

(a) 1.6 where 1.8 is required by the selected compliance package or permitted by Article 3.1.1.4.,
(b) 1.4 where 1.6 is required by the selected compliance package or permitted by Article 3.1.1.4.,
(c) 1.2 where 1.4 is required by the selected compliance package or permitted by Article 3.1.1.4., and
(d) 1.0 where 1.2 is required by the selected compliance package or permitted by Article 3.1.1.4..

(See Appendix A.)

(9) Where the ratio of gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is more than 22%, the *building* shall comply with Subsection 3.1.2. (See Appendix A.)

(10) Where a *dwelling unit* has a walkout *basement*, the thermal performance level of the exterior *basement* wall shall be not less than that required for the above grade wall for

(a) the *basement* wall containing the door opening, and
(b) any *basement* wall that has an exposed wall area above the ground level exceeding 50% of that *basement* wall area.

(11) For a *conditioned space*, the exterior *building* envelope or envelope that separates *conditioned space* from unconditioned space shall conform to the applicable values specified in Articles 3.1.1.2. and 3.1.1.3.

(12) Where an enclosed unheated space is separated from a heated space by glazing, the unheated enclosure may be considered to provide a thermal resistance of RSI 0.16.

(13) Where a compliance package in Tables 3.1.1.2.A to 3.1.1.2.C, Tables 3.1.1.3.A to 3.1.1.3.C, or Table 3.1.1.11 specifies a nominal RSI value, *effective RSI value* and U-Value for a component specified in Column 1 of the Table and the component conforms to one of the thermal values, the component need not conform to the other thermal values specified for the component.

(14) Insulation in the rim joist or header area where the floor assembly and wall assembly intersect shall have a thermal value not less than the thermal value of the insulation in the walls above grade.

(15) Where a compliance package in Tables 3.1.1.2.A to 3.1.1.2.C, Tables 3.1.1.3.A to 3.1.1.3.C, or Table 3.1.1.11 specifies an *overall coefficient of heat transfer* and an energy rating value for a *fenestration* component specified in Column 1 of the Table and the component conforms to one of the thermal values, the component need not conform to the other thermal value specified for the component.

(16) Ventilation systems serving *dwelling units* shall have a heat or energy recovery ventilator. (See Appendix A)

(17) Except as provided in Sentence (18), a *building* is permitted to be designed in conformance with any of the compliance packages available for the climate zone that the *building* is located in, if the primary space heating of the *building* is supplied by

(a) a wood burning *appliance*,
(b) an earth energy system, or
(c) an air or water source heat pump that does not use electric resistance as a back-up heat source.

(18) For the purpose of Sentence (17), the requirements in the compliance packages for space heating equipment do not apply.

(19) Heat or energy recovery ventilators specified in compliance packages in Tables 3.1.1.2.A to 3.1.1.2.C and Tables 3.1.1.3.A to 3.1.1.3.C, shall meet

(a) the requirements of Article 9.32.3.11. of Division B of the *Building Code*, and
(b) the minimum SRE required in this Chapter based on a test temperature of 0°C at an air flow rate equal to the principle exhaust flow but need not exceed 30 L/s.

(20) *Building* envelope components that enclose a *common space* and are exposed to exterior or unconditioned space shall conform to this Subsection.

(21) Heating, ventilating, *air-conditioning* and lighting systems serving *common spaces* need not comply with this Subsection but shall comply with the other parts of the *Building Code*.

(22) Drain water heat recovery units shall be installed in accordance with Article 3.1.1.12.

3.1.1.2. Energy Efficiency for Buildings Located in Zone 1

(1) Except as provided in Sentences (2) to (5) and (7), the minimum thermal performance of *building* envelope assemblies and equipment shall conform to Table 3.1.1.2.A.

(2) Except for solid fuel-burning space heating equipment and except as provided in Sentence (5), where the space heating equipment efficiency is 84% or more but less than 92%, the minimum thermal performance of the *building* envelope assemblies and equipment shall conform to Table 3.1.1.2.B.

(3) Where *electric space heating* is used, the minimum thermal performance of the *building* envelope assemblies and equipment shall conform to Table 3.1.1.2.C.

(4) Except as provided in Sentence 3.1.1.1.(17), where the space heating equipment efficiency cannot meet the requirements of the applicable compliance packages, energy efficiency compliance shall be achieved in accordance with Subsection 3.1.2. of this Supplementary Standard.

(5) Where an ICF wall assembly is installed as an above and below grade wall assembly that has minimum RSI 1.76 (R10) insulation on the interior surface of the concrete and minimum RSI 1.76 (R10) insulation on the exterior surface, the ICF wall is deemed to comply with the thermal values set out for walls in the compliance packages in Table 3.1.1.2.A. (See Appendix A.)

(6) An ICF wall assembly described in Sentence (5) is permitted to be used in lieu of *basement* walls that require insulation value of RSI 3.52 ci (R20) or less. (See Appendix A.)

(7) *Building* designs that utilize combined space heating and domestic water heating systems are permitted to use compliance package A4, provided that

(a) the water heating equipment has a minimum of 0.80 EF, 90% AFUE, or is a condensing type, or

(b) the combination of equipment has a minimum of 0.85 TPF determined in accordance with CAN/CSA-P.9, “Test Method for Determining the Performance of Combined Space and Water Heating Systems (Combos)”.

Table 3.1.1.2.A (SI)
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 RSI[1]	10.56	10.56	8.80	10.56	8.80	10.56
	Max. U[2]	0.096	0.096	0.115	0.096	0.115	0.096
	Min. Effective RSI[2]	10.43	10.43	8.67	10.43	8.67	10.43
Ceiling Without Attic Space	Min. Nominal RSI[1]	5.46	5.46	5.46	5.46	5.46	5.46
	Max. U[2]	0.205	0.205	0.205	0.205	0.205	0.205
	Min. Effective RSI[2]	4.87	4.87	4.87	4.87	4.87	4.87
Exposed Floor	Min. Nominal RSI[1]	5.46	5.46	6.16	5.46	6.16	5.46
	Max. U[3]	0.190	0.190	0.177	0.190	0.177	0.190
	Min. Effective RSI[3]	5.25	5.25	5.64	5.25	5.64	5.25
Walls Above Grade	Min. Nominal RSI[1]	3.87	3.34 + 0.88 ci	2.46 + 1.32 ci	3.87 + 0.88 ci	3.34 + 0.88 ci	3.87 + 0.88 ci
	Max. U[3]	0.333	0.280	0.305	0.265	0.280	0.265
	Min. Effective RSI[3]	3.00	3.58	3.28	3.77	3.58	3.77
Basement Walls[6]	Min. Nominal RSI[1]	3.52 ci	2.11 + 1.76 ci	3.52 ci	3.52 ci	2.11 + 0.88 ci	3.52 ci
	Max. U[4]	0.269	0.272	0.269	0.269	0.355	0.269
	Min. Effective RSI[4]	3.72	3.67	3.72	3.72	2.81	3.72
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal RSI[1]	—	—	—	—	—	—
	Max. U[4]	—	—	—	—	—	—
	Min. Effective RSI[4]	—	—	—	—	—	—
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76	1.76	1.76
	Max. U[4]	0.510	0.510	0.510	0.510	0.510	0.510
	Min. Effective RSI[4]	1.96	1.96	1.96	1.96	1.96	1.96
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76	1.76	1.76
Windows and Sliding Glass Doors	Max. U[5]	1.6	1.6	1.4	1.6	1.6	1.6
	Energy Rating	25	25	29	25	25	25
Skylights	Max. U[5]	2.8	2.8	2.8	2.8	2.8	2.8
Space Heating Equipment	Min. AFUE	96%	96%	94%	96%	94%	92%
HRV	Min. SRE	75%	75%	81%	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 (SI):

(1) The values listed are minimum Nominal RSI-Values for the thermal insulation component only.
(2) U-Value and *effective RSI value* shall include entire ceiling assembly components, from interior air film to vented space air film above insulation.
(3) U-Value and *effective RSI 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 RSI 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 W/(m²•K).
(6) In the case of *basement* wall assemblies, where RSI 3.52 ci is required RSI 2.11 + 1.76 ci is permitted to be used or vice versa; or where RSI 2.11 + 0.88 ci is required, RSI 2.64 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 RSI values* are expressed in (m²•K)/W. U-Values are expressed in W/(m²•K).

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%	81%	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).

Table 3.1.1.2.B (SI)
ZONE 1 - Compliance Packages for Space Heating Equipment with 84% ≤ AFUE < 92%
Forming Part of Sentence 3.1.1.2.(2)

Component	Thermal Values[8]	Compliance Package					
		B1	B2	B3	B4	B5	B6
Ceiling with Attic Space	Min. Nominal RSI[1]	8.80	8.80	8.80	10.56 + HH	8.80	10.56
	Max. U[2]	0.115	0.115	0.115	0.095	0.115	0.096
	Min. Effective RSI[2]	8.67	8.67	8.67	10.55	8.67	10.43
Ceiling Without Attic Space	Min. Nominal RSI[1]	5.46	5.46	5.46	5.46	5.46	5.46
	Max. U[2]	0.205	0.205	0.205	0.205	0.205	0.205
	Min. Effective RSI[2]	4.87	4.87	4.87	4.87	4.87	4.87
Exposed Floor	Min. Nominal RSI[1]	6.16	6.16	6.16	5.46	6.16	5.46
	Max. U[3]	0.177	0.177	0.177	0.190	0.177	0.190
	Min. Effective RSI[3]	5.64	5.64	5.64	5.25	5.64	5.25
Walls Above Grade	Min. Nominal RSI[1]	3.87 + 0.88 ci	3.87 + 0.88 ci	3.87 + 1.32 ci	3.87 + 1.32 ci	3.34 + 1.76 ci	3.34 + 1.76 ci
	Max. U[3]	0.265	0.265	0.238	0.238	0.224	0.224
	Min. Effective RSI[3]	3.77	3.77	4.21	4.21	4.46	4.46
Basement Walls[6]	Min. Nominal RSI[1]	3.52 ci	2.11 + 1.76 ci	3.52 ci	2.11 + 1.76 ci	3.52 ci	3.52 ci
	Max. U[4]	0.269	0.272	0.269	0.272	0.269	0.269
	Min. Effective RSI[4]	3.72	3.67	3.72	3.67	3.72	3.72
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal RSI[1]	—	—	—	—	—	1.76
	Max. U[4]	—	—	—	—	—	0.51
	Min. Effective RSI[4]	—	—	—	—	—	1.96
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76	1.76	1.76
	Max. U[4]	0.51	0.51	0.51	0.51	0.51	0.51
	Min. Effective RSI[4]	1.96	1.96	1.96	1.96	1.96	1.96
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76	1.76	1.76
Windows and Sliding Glass Doors	Max. U[5]	1.6	1.4	1.4	1.2	1.4	1.2
	Energy Rating	25	29	29	34	29	34
Skylights	Max. U[5]	2.8	2.8	2.8	2.8	2.8	2.8
Space Heating Equipment	Min. AFUE	90%	90%	87%	87%	84%	84%
HRV	Min. SRE	75%	70%	70%	75%	75%	81%
Domestic Water Heater[7]	Min. EF	0.66	0.62	0.66	—	0.66	—
Column 1	2	3	4	5	6	7	8

Notes to Table 3.1.1.2.B (SI):

The following definition applies: HH = 250 mm high heel

(1) The values listed are minimum Nominal RSI-values for the thermal insulation component only.
(2) U-Value and *effective RSI value* shall include entire ceiling assembly components, from interior air film to vented space air film above insulation.
(3) U-Value and *effective RSI 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 RSI 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 W/(m²•K).
(6) In the case of *basement* wall assemblies, where RSI 3.52 ci is required RSI 2.11 + 1.76 ci is permitted to be used or vice versa; or where RSI 2.11 + 0.88 ci is required, RSI 2.64 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 RSI values* are expressed in (m²•K)/W. U-Values are expressed in W/(m²•K).

Table 3.1.1.2.B (IP)
ZONE 1 - Compliance Packages for Space Heating Equipment with 84% ≤ AFUE < 92%
Forming Part of Sentence 3.1.1.2.(2)

Component	Thermal Values[8]	Compliance Package					
		B1	B2	B3	B4	B5	B6
Ceiling with Attic Space	Min. Nominal R[1]	50	50	50	60 + HH	50	60
	Max. U[2]	0.020	0.020	0.020	0.016	0.020	0.017
	Min. Effective R[2]	49.23	49.23	49.23	59.90	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]	35	35	35	31	35	31
	Max. U[3]	0.031	0.031	0.031	0.034	0.031	0.034
	Min. Effective R[3]	32.02	32.02	32.02	29.80	32.02	29.80
Walls Above Grade	Min. Nominal R[1]	22 + 5 ci	22 + 5 ci	22 + 7.5 ci	22 + 7.5 ci	19 +10 ci	19 +10 ci
	Max. U[3]	0.047	0.047	0.042	0.042	0.040	0.040
	Min. Effective R[3]	21.40	21.40	23.90	23.90	25.32	25.32
Basement Walls[6]	Min. Nominal R[1]	20 ci	12 +10 ci	20 ci	12 +10 ci	20 ci	20 ci
	Max. U[4]	0.047	0.048	0.047	0.048	0.047	0.047
	Min. Effective R[4]	21.12	20.84	21.12	20.84	21.12	21.12
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal R[1]	—	—	—	—	—	10
	Max. U[4]	—	—	—	—	—	0.090
	Min. Effective R[4]	—	—	—	—	—	11.13
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	Max. U[5]	0.28	0.25	0.25	0.21	0.25	0.21
	Energy Rating	25	29	29	34	29	34
Skylights	Max. U[5]	0.49	0.49	0.49	0.49	0.49	0.49
Space Heating Equipment	Min. AFUE	90%	90%	87%	87%	84%	84%
HRV	SRE	75%	70%	70%	75%	75%	81%
Domestic Water Heater[7]	Min. EF	0.66	0.62	0.66	—	0.66	—
Column 1	2	3	4	5	6	7	8

Notes to Table 3.1.1.2.B (IP):

The following definitions apply: HH = 10 inch high heel

Nominal and effective R values are expressed in (h•ft²•F)/Btu. U-Values are expressed in Btu/(h•ft²•F).

(1) The values listed are minimum Nominal RSI-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).

Table 3.1.1.2.C (SI)
ZONE 1 - Compliance Packages for Electric Space Heating
Forming Part of Sentence 3.1.1.2.(3)

Component	Thermal Values[8]	Compliance Package			
		C1	C2	C3	C4
Ceiling with Attic Space	Min. Nominal RSI[1]	10.56 + HH	10.56 + HH	8.80	8.80
	Max. U[2]	0.095	0.095	0.115	0.115
	Min. Effective RSI[2]	10.55	10.55	8.67	8.67
Ceiling Without Attic Space	Min. Nominal RSI[1]	5.46	5.46	5.46	5.46
	Max. U[2]	0.205	0.205	0.205	0.205
	Min. Effective RSI[2]	4.87	4.87	4.87	4.87
Exposed Floor	Min. Nominal RSI[1]	5.46	5.46	6.16	6.16
	Max. U[3]	0.190	0.190	0.177	0.177
	Min. Effective RSI[3]	5.25	5.25	5.64	5.64
Walls Above Grade	Min. Nominal RSI[1]	3.34 + 1.76 ci	3.87 + 1.76 ci	3.87 + 1.76 ci	3.87 + 1.32 ci
	Max. U[3]	0.224	0.215	0.215	0.238
	Min. Effective RSI[3]	4.46	4.65	4.65	4.21
Basement Walls[6]	Min. Nominal RSI[1]	3.52 + 1.40 ci	3.52 ci	3.52 ci	3.52 ci
	Max. U[4]	0.250	0.269	0.269	0.269
	Min. Effective RSI[4]	4.00	3.72	3.72	3.72
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal RSI[1]	1.32	—	—	—
	Max. U[4]	0.658	—	—	—
	Min. Effective RSI[4]	1.52	—	—	—
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76
	Max. U[4]	0.510	0.510	0.510	0.510
	Min. Effective RSI[4]	1.96	1.96	1.96	1.96
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76
Windows and Sliding Glass Doors	Max. U[5]	1.4	1.2	1.2	1.6
	Energy Rating	29	34	34	25
Skylights	Max. U[5]	2.8	2.8	2.8	2.8
Space Heating Equipment	Min.	—	—	—	ASHP: 7.1 HSPF
HRV	Min. SRE	81%	75%	81%	55%
Domestic Water Heater[7]	Min. EF	—	—	—	—
Column 1	2	3	4	5	6

Notes to Table 3.1.1.2.C (SI):

The following definitions apply: HH = 250 mm high heel

(1) The values listed are minimum Nominal RSI-values for the thermal insulation component only.
(2) U-Value and *effective RSI value* shall include entire ceiling assembly components, from interior air film to vented space air film above insulation.
(3) U-Value and *effective RSI 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 RSI 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 W/(m²•K).
(6) In the case of *basement* wall assemblies, where RSI 3.52 ci is required RSI 2.11 + 1.76 ci is permitted to be used or vice versa; or where RSI 2.11 + 0.88 ci is required, RSI 2.64 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 RSI values* are expressed in (m²•K)/W. U-Values are expressed in W/(m²•K).

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Table 3.1.1.2.C (IP)
ZONE 1 - Compliance Packages for Electric Space Heating
Forming Part of Sentence 3.1.1.2.(3)

Component	Thermal Values[8]	Compliance Package			
		C1	C2	C3	C4
Ceiling with Attic Space	Min. Nominal R[1]	60 + HH	60 + HH	50	50
	Max. U[2]	0.016	0.016	0.020	0.020
	Min. Effective R[2]	59.90	59.90	49.23	49.23
Ceiling Without Attic Space	Min. Nominal R[1]	31	31	31	31
	Max. U[2]	0.036	0.036	0.036	0.036
	Min. Effective R[2]	27.65	27.65	27.65	27.65
Exposed Floor	Min. Nominal R[1]	31	31	35	35
	Max. U[3]	0.034	0.034	0.031	0.031
	Min. Effective R[3]	29.80	29.80	32.02	32.02
Walls Above Grade	Min. Nominal R[1]	19 + 10 ci	22 + 10 ci	22 + 10 ci	22 + 7.5 ci
	Max. U[3]	0.040	0.038	0.038	0.042
	Min. Effective R[3]	25.32	26.40	26.40	23.90
Basement Walls[6]	Min. Nominal R[1]	20 + 8 ci	20 ci	20 ci	20 ci
	Max. U[4]	0.044	0.047	0.047	0.047
	Min. Effective R[4]	22.71	21.12	21.12	21.12
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal R[1]	7.5	—	—	—
	Max. U[4]	0.116	—	—	—
	Min. Effective R[4]	8.63	—	—	—
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal R[1]	10	10	10	10
	Max. U[4]	0.090	0.090	0.090	0.090
	Min. Effective R[4]	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
Windows and Sliding Glass Doors	Max. U[5]	0.25	0.21	0.21	0.28
	Energy Rating	29	34	34	25
Skylights	Max. U[5]	0.49	0.49	0.49	0.49
Space Heating Equipment	Min.	—	—	—	ASHP: 7.1 HSPF
HRV	Min. SRE	81%	75%	81%	55%
Domestic Water Heater[7]	Min. EF	—	—	—	—
Column 1	2	3	4	5	6

Notes to Table 3.1.1.2.C (IP):

The following definitions applies: HH = 10 inch high heel

(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).

3.1.1.3. Energy Efficiency for Buildings Located in Zone 2

(1) Except as provided in Sentences (2) to (5) and (7), the minimum thermal performance of *building* envelope and equipment shall conform to Table 3.1.1.3.A.

(2) Except for solid fuel-burning space heating equipment and except as permitted in Sentence (5), where the space heating equipment efficiency is 84% or more but less than 92%, the minimum thermal performance of the *building* envelope and equipment shall conform to Table 3.1.1.3.B.

(3) Where *electric space heating* is used, the minimum thermal performance of the *building* envelope and equipment shall conform to Table 3.1.1.3.C.

(4) Except as permitted in Sentence (5), where the space heating equipment efficiency cannot meet the requirements of the applicable compliance packages, energy efficiency compliance shall be achieved in accordance with Subsection 3.1.2. of this Supplementary Standard.

(5) Where an ICF wall assembly is installed as an above and below grade wall assembly that has minimum RSI 1.76 (R10) insulation on the interior surface of the concrete and minimum RSI 1.76 (R10) insulation on the exterior surface, the ICF wall is deemed to comply with the thermal values set out for walls in compliance packages A1 and A3 in Table 3.1.1.3.A. (See Appendix A.)

(6) An ICF wall assembly described in Sentence (5) is permitted to be used in lieu of *basement* walls that require insulation value of RSI 3.52 ci (R20) or less. (See Appendix A.)

(7) *Building* designs that utilize combined space heating and domestic water heating systems are permitted to use compliance package A4 or A5, provided that

(a) the water heating equipment has a minimum of 0.80 EF, 90% AFUE, or is a condensing type, or,
(b) the combination of equipment has a minimum of 0.85 TPF determined in accordance with CAN/CSA-P.9, “Test Method for Determining the Performance of Combined Space and Water Heating Systems (Combos)”.

Table 3.1.1.3.A (SI)
ZONE 2 - Compliance Packages for Space Heating Equipment with AFUE ≥ 92%
Forming Part of Sentence 3.1.1.3.(1)

Component	Thermal Values[8]	Compliance Package					
		A1	A2	A3	A4	A5	A6
Ceiling with Attic Space	Min. Nominal RSI[1]	10.56	8.80	10.56 + HH	10.56	10.56	8.80
	Max. U[2]	0.096	0.115	0.095	0.096	0.096	0.115
	Min. Effective RSI[2]	10.43	8.67	10.55	10.43	10.43	8.67
Ceiling Without Attic Space	Min. Nominal RSI[1]	5.46	5.46	5.46	5.46	5.46	5.46
	Max. U[2]	0.205	0.205	0.205	0.205	0.205	0.205
	Min. Effective RSI[2]	4.87	4.87	4.87	4.87	4.87	4.87
Exposed Floor	Min. Nominal RSI[1]	5.46	6.16	5.46	5.46	5.46	6.16
	Max. U[3]	0.190	0.177	0.190	0.190	0.190	0.177
	Min. Effective RSI[3]	5.25	5.64	5.25	5.25	5.25	5.64
Walls Above Grade	Min. Nominal RSI[1]	3.34 + 0.88 ci	3.34 + 1.76 ci	3.87+ 0.88 ci	3.87 + 1.32 ci	3.34 + 1.76 ci	3.87 + 1.32 ci
	Max. U[3]	0.280	0.224	0.265	0.238	0.224	0.238
	Min. Effective RSI[3]	3.58	4.46	3.77	4.21	4.46	4.21
Basement Walls[6]	Min. Nominal RSI[1]	3.52 ci	3.52 ci	3.52 ci	3.52 ci	3.52 ci	3.52 ci
	Max. U[4]	0.269	0.269	0.269	0.269	0.269	0.269
	Min. Effective RSI[4]	3.72	3.72	3.72	3.72	3.72	3.72
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal RSI[1]	—	—	0.88	—	1.76	1.32
	Max. U[4]	—	—	0.926	—	0.51	0.658
	Min. Effective RSI[4]	—	—	1.08	—	1.96	1.52
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76	1.76	1.76
	Max. U[4]	0.510	0.510	0.510	0.510	0.510	0.510
	Min. Effective RSI[4]	1.96	1.96	1.96	1.96	1.96	1.96
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76	1.76	1.76
Windows and Sliding Glass Doors	Max. U[5]	1.2	1.6	1.6	1.2	1.4	1.4
	Energy Rating	34	25	25	34	29	29
Skylights	Max. U[5]	2.8	2.8	2.8	2.8	2.8	2.8
Space Heating Equipment	Min. AFUE	96%	96%	98%	96%	94%	92%
HRV	Min. SRE	81%	70%	65%	65%	65%	75%
Domestic Water Heater[7]	Min. EF	0.70	0.80	0.80	0.67	0.67	0.70
Column 1	2	3	4	5	6	7	8

Notes to Table 3.1.1.3.A (SI):

The following definition applies: HH = 250 mm high heel

(1) The values listed are minimum Nominal RSI-values for the thermal insulation component only.
(2) U-Value and *effective RSI value* shall include entire ceiling assembly components, from interior air film to vented space air film above insulation.
(3) U-Value and *effective RSI 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 RSI 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 W/(m² • K).
(6) In the case of *basement* wall assemblies, where RSI 3.52 ci is required RSI 2.11 + 1.76 ci is permitted to be used or vice versa; or where RSI 2.11 + 0.88 ci is required, RSI 2.64 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 RSI values* are expressed in (m²•K)/W. U-Values are expressed in W/(m²•K).

Table 3.1.1.3.A (IP)
ZONE 2 - Compliance Packages for Space Heating Equipment with AFUE ≥ 92%
Forming Part of Sentence 3.1.1.3.(1)

Component	Thermal Values[8]	Compliance Package					
		A1	A2	A3	A4	A5	A6
Ceiling with Attic Space	Min. Nominal R[1]	60	50	60+HH	60	60	50
	Max. U[2]	0.017	0.020	0.016	0.017	0.017	0.020
	Min. Effective R[2]	59.22	49.23	59.90	59.22	59.22	49.23
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	35	31	31	31	35
	Max. U[3]	0.034	0.031	0.034	0.034	0.034	0.031
	Min. Effective R[3]	29.80	32.02	29.80	29.80	29.80	32.02
Walls Above Grade	Min. Nominal R[1]	19 + 5 ci	19 + 10 ci	22 + 5 ci	22 + 7.5 ci	19 + 10 ci	22 + 7.5 ci
	Max. U[3]	0.049	0.040	0.047	0.042	0.040	0.042
	Min. Effective R[3]	20.32	25.32	21.40	23.90	25.32	23.90
Basement Walls[6]	Min. Nominal R[1]	20 ci	20 ci	20 ci	20 ci	20 ci	20 ci
	Max. U[4]	0.047	0.047	0.047	0.047	0.047	0.047
	Min. Effective R[4]	21.12	21.12	21.12	21.12	21.12	21.12
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal R[1]	—	—	5	—	10	7.5
	Max. U[4]	—	—	0.163	—	0.090	0.116
	Min. Effective R[4]	—	—	6.13	—	11.13	8.63
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]	0.21	0.28	0.28	0.21	0.25	0.25
	Energy Rating	34	25	25	34	29	29
Skylights	Max. U[5]	0.49	0.49	0.49	0.49	0.49	0.49
Space Heating Equipment	Min. AFUE	96%	96%	98%	96%	94%	92%
HRV	Min. SRE	81%	70%	65%	65%	65%	75%
Domestic Water Heater[7]	Min. EF	0.70	0.80	0.80	0.67	0.67	0.70
Column 1	2	3	4	5	6	7	8

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Notes to Table 3.1.1.3.A (IP):

The following definition applies: HH = 10 inch high heel

(1) The values listed are minimum Nominal RSI-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).

Table 3.1.1.3.B (SI)
ZONE 2 - Compliance Packages for Space Heating Equipment with 84% ≤ AFUE < 92%
Forming Part of Sentence 3.1.1.3.(2)

Component	Thermal Values[8]	Compliance Package					
		B1	B2	B3	B4	B5	B6
Ceiling with Attic Space	Min. Nominal RSI[1]	8.80	10.56	10.56 + HH	10.56 + HH	8.80	10.56
	Max. U[2]	0.115	0.096	0.095	0.095	0.115	0.096
	Min. Effective RSI[2]	8.67	10.43	10.55	10.55	8.67	10.43
Ceiling Without Attic Space	Min. Nominal RSI[1]	5.46	5.46	5.46	5.46	5.46	5.46
	Max. U[2]	0.205	0.205	0.205	0.205	0.205	0.205
	Min. Effective RSI[2]	4.87	4.87	4.87	4.87	4.87	4.87
Exposed Floor	Min. Nominal RSI[1]	6.16	5.46	5.46 + 1.76 ci	5.46	6.16	5.46
	Max. U[3]	0.177	0.190	0.143	0.190	0.177	0.190
	Min. Effective RSI[3]	5.64	5.25	7.01	5.25	5.64	5.25
Walls Above Grade	Min. Nominal RSI[1]	3.87 + 1.32 ci	3.87 + 1.32 ci	3.87 + 1.76 ci	3.87 + 1.76 ci	3.87 + 1.76 ci	3.87 + 1.76 ci
	Max. U[3]	0.238	0.238	0.215	0.215	0.215	0.215
	Min. Effective RSI[3]	4.21	4.21	4.65	4.65	4.65	4.65
Basement Walls[6]	Min. Nominal RSI[1]	3.52 ci	2.11 + 1.76 ci	3.52 + 1.76 ci	3.52 + 1.76 ci	3.52 + 2.11 ci	3.52 + 2.11 ci
	Max. U[4]	0.269	0.272	0.226	0.226	0.213	0.213
	Min. Effective RSI[4]	3.72	3.67	4.43	4.43	4.7	4.7
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal RSI[1]	—	0.88	1.76	1.76	0.88	0.88
	Max. U[4]	—	0.926	0.510	0.510	0.926	0.926
	Min. Effective RSI[4]	—	1.08	1.96	1.96	1.08	1.08
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76	1.76	1.76
	Max. U[4]	0.510	0.510	0.510	0.510	0.510	0.510
	Min. Effective RSI[4]	1.96	1.96	1.96	1.96	1.96	1.96
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76	1.76	1.76	1.76	1.76
Windows and Sliding Glass Doors	Max. U[5]	1.2	1.6	1.4	1.4	1.4	1.2
	Energy Rating	34	25	29	29	29	34
Skylights	Max. U[5]	2.8	2.8	2.8	2.8	2.8	2.8
Space Heating Equipment	Min. AFUE	90%	90%	87%	87%	84%	84%
HRV	Min. SRE	75%	81%	70%	75%	81%	81%
Domestic Water Heater[7]	Min. EF	0.66	0.66	0.66	0.62	0.66	—
Column 1	2	3	4	5	6	7	8

Notes to Table 3.1.1.3.B (SI):

The following definition applies: HH = 250 mm high heel

(1) The values listed are minimum Nominal RSI-values for the thermal insulation component only.
(2) U-Value and *effective RSI value* shall include entire ceiling assembly components, from interior air film to vented space air film above insulation.
(3) U-Value and *effective RSI 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 RSI 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 W/(m²•K).
(6) In the case of *basement* wall assemblies, where RSI 3.52 ci is required RSI 2.11 + 1.76 ci is permitted to be used or vice versa; or where RSI 2.11 + 0.88 ci is required, RSI 2.64 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 RSI values* are expressed in (m²•K)/W. U-Values are expressed in W/(m²•K).

Table 3.1.1.3.B (IP)
ZONE 2 - Compliance Packages for Space Heating Equipment with 84% ≤ AFUE < 92%
Forming Part of Sentence 3.1.1.3.(2)

Component	Thermal Values[8]	Compliance Package						
		B1	B2	B3	B4	B5	B6	
Ceiling with Attic Space	Min. Nominal R[1]	50	60	60 + HH	60 + HH	50	60	
	Max. U[2]	0.020	0.017	0.016	0.016	0.020	0.017	
	Min. Effective R[2]	49.23	59.22	59.90	59.90	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]	35	31	31 + 10 ci	31	35	31	
	Max. U[3]	0.031	0.034	0.025	0.034	0.031	0.034	
	Min. Effective R[3]	32.02	29.80	39.80	29.80	32.02	29.80	
Walls Above Grade	Min. Nominal R[1]	22 + 7.5 ci	22 + 7.5 ci	22 + 10 ci	22 + 10 ci	22 + 10 ci	22 + 10 ci	e_4
	Max. U[3]	0.042	0.042	0.038	0.038	0.038	0.038	
	Min. Effective R[3]	23.90	23.90	26.40	26.40	26.40	26.40	
Basement Walls[6]	Min. Nominal R[1]	20 ci	12 + 10 ci	20 + 10 ci	20 + 10 ci	20 + 12 ci	20 + 12 ci	
	Max. U[4]	0.047	0.048	0.040	0.040	0.037	0.037	
	Min. Effective R[4]	21.12	20.84	25.15	25.15	26.69	26.69	
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal R[1]	—	5	10	10	5	5	
	Max. U[4]	—	0.163	0.090	0.090	0.163	0.163	
	Min. Effective R[4]	—	6.13	11.13	11.13	6.13	6.13	
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]	0.21	0.28	0.25	0.25	0.25	0.21	
	Energy Rating	34	25	29	29	29	34	
Skylights	Max. U[5]	0.49	0.49	0.49	0.49	0.49	0.49	
Space Heating Equipment	Min. AFUE	90%	90%	87%	87%	84%	84%	
HRV	Min. SRE	75%	81%	70%	75%	81%	81%	
Domestic Water Heater[7]	Min. EF	0.66	0.66	0.66	0.62	0.66	—	
Column 1	2	3	4	5	6	7	8	

Notes to Table 3.1.1.3.B (IP):

The following definition applies: HH = 10 inch high heel

(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).

Table 3.1.1.3.C (SI)
ZONE 2 - Compliance Packages for Electric Space Heating
Forming Part of Sentence 3.1.1.3.(3)

Component	Thermal Values[8]	Compliance Package	
		C1	C2
Ceiling with Attic Space	Min. Nominal RSI[1]	10.56 + HH	8.80
	Max. U[2]	0.095	0.115
	Min. Effective RSI[2]	10.55	8.67
Ceiling Without Attic Space	Min. Nominal RSI[1]	5.46	5.46
	Max. U[2]	0.205	0.205
	Min. Effective RSI[2]	4.87	4.87
Exposed Floor	Min. Nominal RSI[1]	5.46 + 1.76 ci	6.16
	Max. U[3]	0.143	0.177
	Min. Effective RSI[3]	7.01	5.64
Walls Above Grade	Min. Nominal RSI[1]	4.22 + 1.76 ci	3.87 + 1.32 ci
	Max. U[3]	0.210	0.238
	Min. Effective RSI[3]	4.76	4.21
Basement Walls[6]	Min. Nominal RSI[1]	3.52 + 2.11 ci	3.52 ci
	Max. U[4]	0.213	0.269
	Min. Effective RSI[4]	4.7	3.72
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal RSI[1]	1.76	—
	Max. U[4]	0.51	—
	Min. Effective RSI[4]	1.96	—
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76
	Max. U[4]	0.510	0.510
	Min. Effective RSI[4]	1.96	1.96
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal RSI[1]	1.76	1.76
Windows and Sliding Glass Doors	Max. U[5]	1.2	1.6
	Energy Rating	34	25
Skylights	Max. U[5]	2.8	2.8
Space Heating Equipment	Min.	—	ASHP: 7.1 HSPF
HRV	Min. SRE	81%	70%
Domestic Water Heater[7]	Min. EF	—	—
Column 1	2	3	4

Notes to Table 3.1.1.2.C (SI):

The following definition applies: HH = 250 mm high heel

(1) The values listed are minimum Nominal RSI-values for the thermal insulation component only.
(2) U-Value and *effective RSI value* shall include entire ceiling assembly components, from interior air film to vented space air film above insulation.
(3) U-Value and *effective RSI 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 RSI 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 W/(m²•K).
(6) In the case of *basement* wall assemblies, where RSI 3.52 ci is required RSI 2.11 + 1.76 ci is permitted to be used or vice versa; or where RSI 2.11 + 0.88 ci is required, RSI 2.64 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 RSI values* are expressed in (m²•K)/W. U-Values are expressed in W/(m²•K).

Table 3.1.1.3.C (IP)
ZONE 2 - Compliance Packages for Electric Space Heating
Forming Part of Sentence 3.1.1.3.(3)

Component	Thermal Values[8]	Compliance Package	
		C1	C2
Ceiling with Attic Space	Min. Nominal R[1]	60 + HH	50
	Max. U[2]	0.016	0.020
	Min. Effective R[2]	59.90	49.23
Ceiling Without Attic Space	Min. Nominal R[1]	31	31
	Max. U[2]	0.036	0.036
	Min. Effective R[2]	27.65	27.65
Exposed Floor	Min. Nominal R[1]	31 + 10 ci	35
	Max. U[3]	0.025	0.031
	Min. Effective R[3]	39.80	32.02
Walls Above Grade	Min. Nominal R[1]	24 + 10 ci	22 + 7.5 ci
	Max. U[3]	0.037	0.042
	Min. Effective R[3]	27.02	23.90
Basement Walls[6]	Min. Nominal R[1]	20 + 12 ci	20 ci
	Max. U[4]	0.037	0.047
	Min. Effective R[4]	26.69	21.12
Below Grade Slab Entire Surface > 600 mm Below Grade	Min. Nominal R[1]	10.0	—
	Max. U[4]	0.090	—
	Min. Effective R[4]	11.13	—
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal R[1]	10	10
	Max. U[4]	0.090	0.090
	Min. Effective R[4]	11.13	11.13
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal R[1]	10	10
Windows and Sliding Glass Doors	Max. U[5]	0.21	0.28
	Energy Rating	34	25
Skylights	Max. U[5]	0.49	0.49
Space Heating Equipment	Min.	—	ASHP: 7.1 HSPF
HRV	Min. SRE	81%	70%
Domestic Water Heater[7]	Min. EF	—	—
Column 1	2	3	4

Notes to Table 3.1.1.3.C (IP):

The following definition applies: HH = 10 inch high heel

(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).

3.1.1.4. Airtightness (See Appendix A)

(1) Where a *dwelling unit* is designed and *constructed* to be sufficiently airtight such that the air leakage of the whole *dwelling unit* is less than or equal to one of the applicable airtightness targets specified in the same row of Table 3.1.1.4.A, the requirements of Tables 3.1.1.2.A to 3.1.1.2.C, Tables 3.1.1.3.A to 3.1.1.3.C, and Table 3.1.1.11. are permitted to be substituted in accordance with Table 3.1.1.4.B or Table 3.1.1.4.C.

(2) Airtightness targets described in Sentence (1) shall be measured under as operated conditions in accordance with CAN/CGSB 149.10 "Determination of the Airtightness of *Building* Envelopes by the Fan Depressurization Method" or NRCan, "EnerGuide Rating System Technical Procedures Version 15.1".

(3) For purposes of substitutions described in Sentence (1),
(a) a maximum of one substitution per *dwelling unit* may be made if substitutions are made in accordance with Table 3.1.1.4.B, or
(b) a maximum of two substitutions per *dwelling unit* may be made if substitutions are made in accordance with Table 3.1.1.4.C.

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Table 3.1.1.4.A
Airtightness Targets
Forming Part of Sentence 3.1.1.4.(1) and Subsection 3.1.2.

Building Type	Airtightness Targets				
	ACH @ 50Pa	NLA @ 10 Pa		NLR @ 50 Pa	
		cm^2/m^2	$in^2/100\ ft^2$	$L/s/m^2$	cfm/ft^2
Detached	2.5	1.26	1.81	0.93	0.18
Attached	3.0	2.12	3.06	1.32	0.26
Column 1	2	3	4	5	6

Table 3.1.1.4.B (SI)
Permitted Substitutions for Airtight Dwelling Units(2)
Forming Part of Sentences 3.1.1.4.(1) and (3)

Required Compliance	Permitted Substitution Airtightness Complies with Table 3.1.1.4.A(1)
Maximum One Substitution per *Dwelling Unit*	
RSI 3.87 + 1.32 ci	RSI 3.34 + 0.88 ci
RSI 3.87 + 1.76 ci	RSI 3.34 + 1.32 ci
RSI 4.22 + 1.76 ci	RSI 3.87 + 1.32 ci
HRV with 81% SRE	HRV with 70% SRE
HRV with 75% SRE	HRV with 65% SRE
Furnace with 98%, 96% or 94% AFUE	Reduce furnace efficiency by 4% AFUE
Fenestration U-Value = 1.6, 1.4 or 1.2	Increase U-Value by 0.2
Column 1	2

Notes to Table 3.1.1.4.B (SI):
(1) Where nominal RSI values are given, the use of corresponding U-Value or *effective RSI values* are permitted.
(2) Use only Table 3.1.1.4.B or Table 3.1.1.4.C, not both.

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Table 3.1.1.4.B (IP)
Permitted Substitutions for Airtight Dwelling Units(2)
Forming Part of Sentence 3.1.1.4.(1)

Required Compliance	Permitted Substitution Airtightness Complies with Table 3.1.1.4.A(1)
Maximum One Substitution per *Dwelling Unit*	
R22 + 7.5 ci	R19 + 5 ci
R22 + 10 ci	R19 + 7.5 ci
R24 + 10 ci	R22 + 7.5 ci
HRV with 81% SRE	HRV with 70% SRE
HRV with 75% SRE	HRV with 65% SRE
Furnace with 98%, 96% or 94% AFUE	Reduce furnace efficiency by 4% AFUE
Fenestration U-Value = 0.28, 0.25 or 0.21	Increase U-Value by 0.04 (downgrade one level)
Column 1	2

Notes to Table 3.1.1.4.B (IP):
(1) Where nominal R values are given, the use of corresponding "U" or "effective R" values are permitted.
(2) Use only Table 3.1.1.4.B or Table 3.1.1.4.C, not both.

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Table 3.1.1.4.C (SI)
Permitted Substitutions for Airtight Dwelling Units(3)
Forming Part of Sentences 3.1.1.4.(1) and (3)

Required Compliance	Permitted Substitutions Airtightness Complies with Table 3.1.1.4.A(1)
Maximum Two Substitutions per *Dwelling Unit*(2)	
Above grade continuous wall insulation RSI 1.32 ci or RSI 1.76 ci	Above grade continuous wall insulation RSI 0.88 ci or RSI 1.32 ci respectively
RSI 3.87 or RSI 4.22 insulation between studs in above grade walls with continuous insulation	RSI 3.34 or RSI 3.87 insulation respectively between studs in above grade walls with continuous insulation
Basement wall RSI 3.52 + 2.11 ci, RSI 3.52 +1.76 ci or RSI 3.52 ci	*Basement* wall RSI 2.64 ci or RSI 2.11 + 0.88 ci
Slab located more than 600 mm below grade and entire under slab insultation is RSI 1.76 or RSI 0.88	RSI 0, if slab is unheated RSI 0.88, if slab is heated
RSI 10.56 ceiling insulation with or without 250 mm high heel	RSI 8.80 ceiling insulation
Column 1	2

Notes to Table 3.1.1.4.C (SI):
(1) Where nominal RSI values are given, the use of corresponding U-Value or *effective RSI values* are permitted.
(2) Where the required airtightness is achieved, simultaneous substitution of two components listed in this Table is permitted.
(3) Use only Table 3.1.1.4.B or Table 3.1.1.4.C, not both.

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Table 3.1.1.4.C (IP)
Permitted Substitutions for Airtight Dwelling Units(3)
Forming Part of Sentences 3.1.1.4.(1) and (3)

Required Compliance	Permitted Substitutions Airtightness Complies with Table 3.1.1.4.A(1)
Maximum Two Substitutions per *Dwelling Unit*(2)	
Above grade continuous wall insulation R7.5 ci or R10 ci	Above grade continuous wall insulation R5 ci or R7.5 ci respectively
R22 or R24 insulation between studs in above grade walls with continuous insulation	R19 or R22 insulation respectively between studs in above grade walls with continuous insulation
Basement wall R20 + 12 ci, R20 +10 ci or R20 ci	*Basement* wall R15 ci or R12 + 5 ci
Slab located more than 24 inches below grade and entire under slab insultation is R10 or R5	R0 , if the slab is unheated R5 min, if heated
R60 ceiling insulation with or without 10 inch high heel	R50 ceiling insulation
Column 1	2

Notes to Table 3.1.1.4.C (IP):
(1) Where nominal R values are given, the use of corresponding "U" or "effective R" values are permitted.
(2) Where the required airtightness is achieved, simultaneous substitution of two components listed in this Table is permitted.
(3) Use only Table 3.1.1.4.B or Table 3.1.1.4.C, not both.

3.1.1.5. Elements Acting as a Thermal Bridge

(1) Except for a *foundation* wall, the insulated portion of a wall that incorporates wood stud framing elements that have a thermal resistance of less than RSI 0.90 shall be insulated to restrict heat flow through the studs by a material providing a thermal resistance at least equal to 25% of the thermal resistance required for the insulated portion of the assembly in Articles 3.1.1.2., 3.1.1.3. and 3.1.1.11.

(2) Except as provided in Sentence (3), the thermal resistance of the insulated portion of a *building* assembly in Articles 3.1.1.2. and 3.1.1.3. that incorporates metal framing elements, such as steel studs and steel joists, that act as thermal bridges to facilitate heat flow through the assembly, shall be 20% greater than the values shown in Tables 3.1.1.2.A, to 3.1.1.2. C and Tables 3.1.1.3.A to 3.1.1.3.C and Table 3.1.1.11., unless it can be shown that the heat flow is not greater than the heat flow through a wood frame assembly of the same thickness.

(3) Sentence (2) does not apply to *building* assemblies incorporating thermal bridges where the thermal bridges are insulated to restrict heat flow through the thermal bridges by a material providing a thermal resistance at least equal to 25% of the thermal resistance required for the insulated portion of the assembly in Articles 3.1.1.2., 3.1.1.3. and 3.1.1.11.

3.1.1.6. Log Wall Construction and Post, Beam and Plank Construction

(1) Except as provided in Sentences (2) and (3), log wall construction and post, beam and plank construction shall have a minimum thermal resistance of RSI 2.1 for the total assembly.

(2) The thermal resistance value in Sentence (1) for the total wall assembly may be reduced to not less than RSI 1.61 if,
(a) the thermal resistance of insulation for the exposed roof or ceiling required in selected compliance package is increased by an amount equivalent to the reduction permitted in this Sentence, and
(b) for log walls, the logs have tongue-and-groove or splined joints.

(3) Where milled log walls are installed, the thermal resistance value in Sentence (1) for the total wall assembly does not apply if,
(a) the mean thickness of each log is not less than 150 mm,
(b) the thermal resistance of insulation for the exposed roof or ceiling required in selected compliance package is increased by RSI 0.53, and
(c) the logs have tongue-and-groove or splined joints.

(4) Where a log wall is constructed in accordance with Sentences (1) to (3), the log wall shall be deemed to comply with the requirements in Subsection 9.25.3. of Division B of the *Building Code.*

3.1.1.7. Insulation of Foundation Walls

(1) *Foundation* walls enclosing heated space shall be insulated from the underside of the subfloor to not more than 200 mm above the finished floor level of the *basement*. (See Appendix A.)

(2) The insulation required by Sentence (1) may be provided by a system installed,
(a) on the interior of the *foundation* wall,
(b) on the exterior face of the *foundation* wall, or
(c) partially on the interior and partially on the exterior, provided the thermal performance of the system is equivalent to that permitted in Clauses (a) or (b).

(3) If a *foundation* wall is constructed of hollow masonry units, one or more of the following shall be used to control convection currents in the core spaces,
(a) filling the core spaces,
(b) at least one row of semi-solid blocks at or below *grade*, or
(c) other similar methods.

(4) Masonry walls of hollow units that penetrate the ceiling shall be sealed at or near the ceiling adjacent to the roof space to prevent air within the voids from entering the *attic or roof space* by,
(a) capping with masonry units without voids, or
(b) installation of flashing material extending across the full width of the masonry.

(5) Except as provided in Sentences (6) and (7), where a portion of a *basement* slab or a portion of a *basement* slab edge is the only part of the slab that is at the exterior ground level such as a walk-out *basement*, or within 600 mm of the exterior ground level, those portions shall have perimeter insulation extend not less than 600 mm below the slab level. (See Appendix A.)

(6) Where the entire concrete slab is within 600 mm of the exterior ground level, the entire surface of the slab shall be insulated. (See Appendix A.)

(7) Where a slab contains heating ducts, pipes, tubes or cables, the entire heated surface of the slab that is in contact with the ground shall be insulated.

3.1.1.8. Thermal Resistance Values for Roof Access Hatches and Eaves

(1) Except as provided in Sentence (2), the thermal resistance values for insulation required by Articles 3.1.1.2., 3.1.1.3. and 3.1.1.11. for exposed ceilings with attic spaces are permitted to be reduced
(a) directly above access hatches, and
(b) near eaves to the extent made necessary by the roof slope and required ventilation clearances,

except that the thermal insulation value at the location directly above access hatches and inner surfaces of exterior walls shall be not less than RSI 3.52.

(2) Where 250 mm high heel is required near the eaves, the available space on the inner surface of the wall below the roof venting space shall be fully insulated.

3.1.1.9. Thermal Performance of Windows, Skylights and Sliding Glass Doors

(1) Except as provided in Sentences (3) to (5), windows, skylights and sliding glass doors shall meet
(a) the required *overall coefficient of heat transfer* in Tables 3.1.1.2.A 3.1.1.2.B and 3.1.1.2.C and Tables 3.1.1.3.A, 3.1.1.3.B and 3.1.1.3. C and Table 3.1.1.11., or
(b) the corresponding energy rating in Table 3.1.1.9.

(2) The energy rating and the *overall coefficient of heat transfer* required for windows and sliding glass doors in a *residential occupancy* shall be determined in conformance with
(a) CAN/CSA-A440.2, "Fenestration Energy Performance", or
(b) NFRC 100, "Procedure for Determining Fenestration Product U-factors" and NFRC 200, "Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence".

(3) A *basement* window that incorporates a *loadbearing* structural frame need not meet Sentence (1) provided that it has the following
(a) double glazed with a low-E coating,
(b) inert gas-filled,
(c) have an insulated spacer, and
(d) if the frame is made from metal, the frame shall be thermally broken.

(4) Glass blocks and decorative windows, including side lights, integrated glazing in doors, half-circle windows, leaded windows, transoms and other specialty glazing products, need not comply with Sentence (1) provided that the total area of such decorative glazing in the *building* does not exceed 1.85 m^2.

(5) Windows and sliding glass doors need not meet the *overall coefficient of heat transfer* required by Sentence (1) where the window or sliding glass door necessitates a low solar heat gain coefficient due to its orientation and results in a U-Value greater than that permitted by Sentence (1), provided the overall thermal performance of all windows and sliding glass doors is maintained by improving the performance of other windows or sliding glass doors.

Table 3.1.1.9.
Maximum U-Values and Minimum Energy Ratings (ER) for Windows, Skylights and Sliding Glass Doors
Forming Part of Sentence 3.1.1.9.(1)

Component	Maximum U-Values	Minimum Energy Ratings, (ER)
	U-Value, $W/m^2 \cdot K$ (Btu/h•ft²•°F)	ER
Skylights	2.8 (0.50)	—
Windows and Sliding Glass Doors	2.0 (0.35)	17
	1.8 (0.32)	21
	1.6 (0.28)	25
	1.4 (0.25)	29
	1.2 (0.21)	34
	1.0 (0.18)	38
Column 1	2	3

3.1.1.10. Minimum Thermal Resistance of Doors

(1) Except as provided in Sentence (2) and except for doors in enclosed unheated vestibules and cold cellars, and except for glazed portions of doors, all doors that separate heated space from unheated space shall have a thermal resistance of not less than RSI 0.7 where a storm door is not provided.

(2) One exterior door system, with a single or multiple leaf door, that does not comply with Sentence (1) is permitted for each *dwelling unit*.

(3) All doors that separate heated space from unheated enclosed spaces shall have an insulated core and be installed with weatherstripping.

3.1.1.11. Additions to Existing Buildings

(1) Except as provided in Sentences (2) and (3), an addition to an existing *building* shall comply with
(a) one of the applicable compliance packages in Article 3.1.1.2. or 3.1.1.3. in accordance with this Subsection, or
(b) Sentences 3.1.1.1.(7) to (9), except that the Tables referenced in Sentences 3.1.1.1.(7) and (8) are permitted to be substituted with Table 3.1.1.11.
(See Appendix A.)

(2) For the purpose of Sentences 3.1.1.1.(7) to (9) and Subsection 3.1.2., the addition may be considered independently or in combination with the existing *building*, regardless of the thermal characteristics of the existing *building* envelope.
(See Appendix A.)

(3) A one-storey sunroom addition to an existing *building* shall be deemed to be in compliance with Articles 3.1.1.2. and 3.1.1.3. and Subsection 3.1.2., provided that the *overall coefficient of heat transfer* of
(a) doors, windows and walls has a maximum U-Value of
  (i) 1.4 if the *building* does not use *electric space heating*, and
  (ii) 1.2 if the *building* uses *electric space heating*, and
(b) roofs and skylights has a maximum U-Value of 2.6.
(See Appendix A.)

Table 3.1.1.11. (SI)
Thermal Performance Requirements for Additions to Existing Buildings(3)
Forming Part of Sentence 3.1.1.11.(2)

Component	Thermal Values(7)	Compliance Package		
		Zone 1	Zone 2	Electric Space Heating
		Less than 5000 Degree Days	5000 or more Degree Days	Zones 1 and 2
Ceiling with Attic Space	Min. Nominal RSI(1)	10.56	10.56	10.56
	Max. U(2)	0.096	0.096	0.096
	Min. Effective RSI(2)	10.43	10.43	10.43
Ceiling Without Attic Space	Min. Nominal RSI(1)	5.46	5.46	5.46
	Max. U(2)	0.205	0.205	0.205
	Min. Effective RSI(2)	4.87	4.87	4.87
Exposed Floor	Min. Nominal RSI(1)	5.46	5.46	5.46
	Max. U(3)	0.190	0.190	0.190
	Min. Effective RSI(3)	5.25	5.25	5.25
Walls Above Grade	Min. Nominal RSI(1)	3.34 + 0.88 ci	3.87 + 1.32 ci	3.87 + 1.76 ci
	Max. U(3)	0.280	0.238	0.215
	Min. Effective RSI(3)	3.58	4.21	4.65
Basement Walls(6)	Min. Nominal RSI(1)	3.52 ci	3.52 ci	3.52 ci
	Max. U(4)	0.269	0.269	0.269
	Min. Effective RSI(4)	3.72	3.72	3.72
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal RSI(1)	1.76	1.76	1.76
	Max. U(4)	0.510	0.510	0.510
	Min. Effective RSI(4)	1.96	1.96	1.96
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal RSI(1)	1.76	1.76	1.76
Windows and Sliding Glass Doors	Max. U(5)	1.6	1.4	1.4
	Energy Rating	25	29	29
Column 1	2	3	4	5

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Notes to Table 3.1.1.11. (SI):
(1) The values listed are minimum Nominal RSI-Values for the thermal insulation component only.
(2) U-Value and *effective RSI value* shall include entire ceiling assembly components, from interior air film to vented space air film above insulation.
(3) U-Value and *effective RSI 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 RSI 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 W/(m²•K).
(6) In the case of *basement* wall assemblies, where RSI 3.52 ci is required RSI 2.11 + 1.76 ci is permitted to be used or vice versa; or where RSI 2.11 + 0.88 ci is required, RSI 2.64 ci is permitted to be used or vice versa.
(7) Nominal and *effective RSI values* are expressed in (m²•K)/W. U-Values are expressed in W/(m²•K).

Table 3.1.1.11. (IP)
Thermal Performance Requirements for Additions to Existing Buildings(3)
Forming Part of Sentence 3.1.1.11.(2)

Component	Thermal Values(7)	Compliance Package		
		Zone 1	Zone 2	Electric Space Heating
		Less than 5000 Degree Days	5000 or more Degree Days	Zones 1 and 2
Ceiling with Attic Space	Min. Nominal R(1)	60	60	60
	Max. U(2)	0.017	0.017	0.017
	Min. Effective R(2)	59.22	59.22	59.22
Ceiling Without Attic Space	Min. Nominal R(1)	31	31	31
	Max. U(2)	0.036	0.036	0.036
	Min. Effective R(2)	27.65	27.65	27.65
Exposed Floor	Min. Nominal R(1)	31	31	31
	Max. U(3)	0.034	0.034	0.034
	Min. Effective R(3)	29.80	29.80	29.80
Walls Above Grade	Min. Nominal R(1)	19 + 5 ci	22 + 7.5 ci	22 + 10 ci
	Max. U(3)	0.049	0.042	0.038
	Min. Effective R(3)	20.32	23.90	26.40
Basement Walls(6)	Min. Nominal R(1)	20 ci	20 ci	20 ci
	Max. U(4)	0.047	0.047	0.047
	Min. Effective R(4)	21.12	21.12	21.12
Heated Slab or Slab ≤ 600 mm Below Grade	Min. Nominal R(1)	10	10	10
	Max. U(4)	0.090	0.090	0.090
	Min. Effective R(4)	11.13	11.13	11.13
Edge of Below Grade Slab ≤ 600 mm Below Grade	Min. Nominal R(1)	10	10	10
Windows and Sliding Glass Doors	Max. U(5)	0.28	0.25	0.25
	Energy Rating	25	29	29
Column 1	2	3	4	5

Notes to Table 3.1.1.11 (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) Nominal and effective R values are expressed in (h•ft²•F)/Btu. U-Values are expressed in Btu/(h•ft²•F).

3.1.1.12. Drain Water Heat Recovery

(1) Except as provided in Sentence (2), a drain water heat recovery unit shall be installed in each *dwelling unit* to receive drain water from all showers or from at least two showers where there are two or more showers in the *dwelling unit*. (See Appendix A.)

(2) Sentence (1) does not to apply to *dwelling units* in which:
(a) there are no showers; or
(b) there are no storeys or crawl spaces beneath any of the showers in the *dwelling unit*.

(3) Drain water heat recovery units shall conform to CSA B55.2, "Drain Water Heat Recovery Units".

(4) The minimum efficiency of a drain water heat recovery unit shall be determined in conformance with CSA B55.1, "Test Method for Measuring Efficiency and Pressure Loss of Drain Water Heat Recovery Units".

(5) The efficiency of a drain water heat recovery unit, when tested in accordance with Sentence (4), shall be not less than 42%.

(6) A drain water heat recovery unit shall be installed
(a) in an upright position that does not diverge more than 5 degrees from the vertical,
(b) in a position such that the cold water inlet connection is at the bottom of the unit,
(c) downstream of a water softener where a water softener is installed, and
(d) in a *conditioned space* or on the warm side of the dewpoint of the wall assembly.

3.1.2. Performance Compliance

3.1.2.1. Required Performance Level (See Appendix A.)

(1) The performance level shall be measured based on the simulated annual energy use of the *building*.

(2) For the purpose of this Subsection, reference *building* means a *building* that is identical to the proposed *building*, except that it is designed to meet the requirements and performance level of an applicable compliance package in Subsection 3.1.1. on the basis of
(a) zone location,
(b) energy source, and
(c) equipment efficiency.

(3) The simulated annual energy use of the proposed *building* shall not be greater than the simulated annual energy use of the reference *building*.

(4) The simulated annual energy use of the proposed *building* and the reference *building* shall be calculated in accordance with Table 3.1.2.1.

(5) For the purpose of calculations required in Sentence (4),
(a) the simulation software used shall be a recognized annual energy use simulation software,
(b) the climatic data used shall be the local climatic data,
(c) the equivalent domestic water loads, appliance loads and other plug-in loads shall be assumed for both the proposed *building* and the reference *building*, and
(d) the same software and climatic conditions shall be used for both the proposed *building* and the reference *building*s.

(6) Where the overall thermal performance of the proposed *building* envelope is less than the envelope performance of the compliance package that is compared against it, the reduction in the performance level of the *building* envelope shall not be more than 25%.

(7) The annual energy use simulation of the reference *building* shall be in accordance with Subsection 3.1.1. of this Supplementary Standard, Part 12 and other applicable parts of the *Building Code*.

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Table 3.1.2.1.
Specification for the Reference and Proposed Building Design
Forming Part of Sentence 3.1.2.1.(4)

Building Component	Reference Building Design	Proposed Building Design
Building Envelope	Dimensions and orientation: same as proposed design. *Fenestration* to wall ratio: same as proposed up to 22%, (where 17% < ratio ≤ 22%, U-Value is required to be upgraded as per 3.1.1.1.(8)) where the proposed *fenestration* to wall ratio exceeds 22%, the *fenestration* area of the reference *building* shall be reduced proportionally along each exposure until the 22% is met. RSI Values or U-Values and ER values: as per applicable compliance package required in Subsection 3.1.1.	As proposed (See Sentences 3.1.2.1.(5) to (8)).
Construction Type	Above Grade: Wood Frame spacing: 406 mm o.c. for wall studs, 406 mm o.c. for exposed floors joists, roof joists, and roof rafters, and 610 mm o.c. for roof trusses. Below Grade: Concrete with interior insulation.	As proposed.
Air Leakage Rate	Detached dwelling: 3.0 ACH, NLA 2.12 cm^2/m^2, or NLR 1.32 $L/s/m^2$ Attached dwellings: 3.5 ACH, NLA 2.27 cm^2/m^2, or NLR 1.44 $L/s/m^2$ (See Appendix A).	Same as reference, or tested air leakage rate, that is measured in accordance with Sentence 3.1.1.4.(2).
On-site Renewable Energy	None.(1)	As proposed.
Ventilation	HRV operating continuously at principle exhaust flow rate and with SRE as per applicable compliance package required in Subsection 3.1.1.	As proposed.
Drain Water Heat Recovery	Drain water heat recovery units as per Article 3.1.1.12.	As proposed.
Heating System and Service Water Heating	Fuel or energy type: Same as proposed(2) Equipment: Furnace and water tank. Efficiency: As per applicable compliance package required in Subsection 3.1.1. Where it is not specified, as per applicable provincial regulations.	As proposed.
Plumbing	Complies with Part 7 of the *Building Code*.	As proposed but must comply with Part 7 of the *Building Code* or exceed.
Cooling System, if proposed(3)	Energy type: Electric. Equipment: Same as proposed. Efficiency: As per applicable provincial regulations.	As proposed.
Column 1	2	3

e4

Table 3.1.2.1. (Cont'd)
Specification for the Reference and Proposed Building Design
Forming Part of Sentence 3.1.2.1.(4)

Building Component	Reference Building Design	Proposed Building Design
Operating Conditions / Default Values	Except as indicated in this Subsection and the *Building Code*, for the purpose of annual energy use simulations, the same operating conditions and default values shall be used for the reference *building* and the proposed *building.*(4)	
All Components, Inputs for assemblies, workmanship, etc.	For both the reference *building* and the proposed *building*, input methodologies shall be the same and consistent with each other, e.g. use • Either user defined or build-up inputs for *building* envelope assemblies, • The same insulation installation quality; and • The same air tightness for the ductwork.	
Internal gains, electrical loads, other components and characteristics that are not described in this Subsection and Subsection 3.1.1.	The same values or systems shall be used for both the reference *building* and the proposed *building*.	
Column 1	2	3

Notes to Table 3.1.2.1.:
(1) Except where principle heating fuel is wood or wood products.
(2) For the purpose of annual energy use simulations, where an air or water source heat pump, or an earth energy system is proposed, the fuel or energy source of the reference *building* system is permitted to be the same as the supplementary (back up) energy source of the proposed heat pump system.
(3) Where cooling is proposed, annual energy use simulations shall include cooling system.
e4 (4) Operating conditions consistent with Section 4.6 of NRCan's EnerGuide Rating System Version 15.1 may be used.

3.1.3. Other Acceptable Compliance Methods

3.1.3.1. Other Acceptable Compliance Methods (See Appendix A.)

(1) A *building* shall be deemed to be in compliance with the requirements of Subsection 3.1.1.
(a) Provided that the same performance level is achieved through the technical requirements of NRCan,"Energy Star for New Homes Standard Version 12.6." or,
(b) The *building* meets the NRCan,"2012 R2000 Standard".

Appendix A

Explanatory Material for SB-12

Chapter 1: General

1.3.2.1.(2) Defined Terms

Effective RSI Value and U-Value Calculations

Effective RSI values and U values are to be calculated in accordance with good practice. Some sample effective R value *calculations* are provided below. *Overall thermal transmittance* (U values) can be calculated by taking the inverse of *the* effective R value (U=1/(e*ffective RSI value*)

Information on the calculation of effective thermal resistance of opaque assemblies can also be found at the following NRCan website http://www.nrcan.gc.ca/energy/efficiency/housing/new-homes/energy-star/14176 . The combined values for the stud and cavity insulation components used below are taken from the same website. Further details can be found under "Tables for Calculating Effective Thermal Resistance of Opaque Assemblies".

Sample effective RSI values:

e_4

Ceiling with Attic Space - RSI Nominal 8.80	
Details	Effective RSI
Roof sheathing (above vented air space, therefore excluded from calculation)	0
Vented roof air space	0.03
RSI 6.69 (R38) nominal of blown in cellulose	6.69
Roof truss bottom chord dimensional lumber - 38 mm x 89 mm (2" x 4"), 610 mm (24") on-centre, RSI 2.11 (R12) nominal cavity fill between bottom chords	1.76
Polyethylene vapour retarder (negligible contribution to effective thermal resistance)	0
12.7 mm (1/2") gypsum board	0.08
Air film interior, ceiling	0.11
Total	**8.67**

e_4

Above Grade Wall - RSI Nominal 3.87 + 0.88 ci (vinyl)	
Details	Effective RSI
Air film exterior	0.03
Exterior Finish* - Siding - vinyl, hollow-backed	0.11
RSI 0.88 (R5) XPS sheathing	0.88
Stud dimensional lumber – 38 mm x 140 mm (2" x 6") 406 mm (16") on-centre RSI 3.87 (R22) nominal cavity fill between studs	2.55
Polyethylene vapour retarder (negligible contribution to effective thermal resistance)	0
12.7 mm (1/2") gypsum board	0.08
Air film interior	0.12
Total	**3.77**

* Where exterior finish is brick, brick and air gap values are permitted to be substituted for siding.

e_4

Basement Wall* - RSI Nominal 3.52 ci	
Details	Effective RSI
Concrete foundation wall, 200 mm (8")	0.08
RSI 3.52 (R20) blanket	3.52
Air film interior	0.12
Total	**3.72**

* Where the basement is finished or drywall installed, drywall and other components that contribute to *effective RSI value* will be added.

e_4

Below Grade Slab - RSI Nominal 1.76	
Details	Effective RSI
Air film interior	0.16
Concrete slab, 100 mm (4")	0.04
RSI 1.76 (R10) XPS sheathing	1.76
Total	**1.96**

e_4

Exposed Floor - RSI Nominal 5.46 (carpet)	
Details	Effective RSI
Air film exterior	0.03
12.7 mm (1/2") gypsum board	0.08
Dimensional lumber joist - 38 mm x 235 mm (2" x 10"), 406 mm (16") on-centre, RSI 5.46 (R31) nominal cavity fill	4.46
Polyethylene vapour retarder (negligible contribution to effective thermal resistance)	0
15.5 mm (5/8") OSB	0.16
Carpet and underpad	0.36
Air film interior	0.16
Total	**5.25**

Continuous Insulation (ci)

Continuous insulation (ci) is intended to minimize the thermal bridges in an assembly. It is generally uninterrupted across all structural members. Exceptions to this include fasteners and service openings. Insulation may generally be installed on the interior or the exterior, or may be integral to any opaque surface of the *building* envelope. It may generally be made of various material such as board, blanket, sprayed or other types of insulation. Compressions such as blanket fasteners are permitted.

A-Table 1.4.1.2. National Fenestration Rating Council.

Name	Address	Contact
NFRC	National Fenestration Rating Council 6305 Ivy Lane, Suite 140 Greenbelt, MD 20770, USA	ph: 301-589-1776 fax: 301-589-3884 web site: www.nfrc.org
Column 1	2	3

Chapter 2: Acceptable Solutions for Achieving Energy Efficiency Compliance Before January 1, 2017.

A-2.1.1. Compliance Packages.

Individual components of compliance packages found in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C are not permitted to be mixed with similar components of other compliance packages either found within the same Table or similar components of compliance packages found in other Tables.

A-2.1.1.1.(3) Mechanical Equipment.

Compliance package tables referred to in this Sentence contain energy efficiency requirements for some or all mechanical equipment. Where a compliance package includes an energy efficiency level for space heating equipment, domestic water heater or heat or energy recovery ventilator, conformance with the package can only be achieved if the *building* is equipped with the mechanical equipment specified in the compliance package.

A-2.1.1.1.(7), (8) and (10) Fenestration to Wall Ratio.

When the *fenestration* to wall ratio is calculated, all *fenestration* areas and the entire peripheral wall above grade is included. The peripheral wall area includes floor rim board areas and all above grade wall areas. It is essentially the sum of the above grade walls that separate conditioned spaces from unconditioned spaces, and adjacent units. In the case of an attached

garage, the walls that are common with the house and the garage are also included in the wall area calculations. For attached homes, the above grade portions of the walls that are common to other conditioned units are also included in the wall area. The *fenestration* area is based on the rough structural opening provided for windows, skylights, sliding glass doors, and for glazed portions in doors. For A–frame structures with steeply inclined roofs that also act as walls, the roof portion that serves as the interior wall area can be considered as the wall area in calculating the *fenestration* to wall ratio.

A-2.1.1.2.(6)(a), (8)(a), and (9)(a) RSI Reduction of Above Grade Walls in Conjunction with Upgrading U-Value of Glazing Zone 1.

Where the above grade wall insulation is permitted to be reduced to RSI 3.52, one of the required compensating measures is to upgrade the window U-Value in accordance with Clauses 2.1.1.1.(8)(a) to (c). This upgrade is independent of the glazing upgrade that may be required due to a *fenestration* ratio that is higher than 17%. In cases where the above grade insulation is reduced to RSI 3.52 and compensated for with a *fenestration* upgrade, and the *building* has more than 17% *fenestration*, the glazing would be required to be upgraded a second time.

A-2.1.1.3.(6)(a) and (7)(a) RSI Reduction of Above Grade Walls in Conjunction with Upgrading U-Value of Glazing - Zone 2.

Where the above grade wall insulation is permitted to be reduced to RSI 3.52, one of the required compensating measures is to upgrade the window U-Value in accordance with Clauses 2.1.1.1.(8)(a) to (c). This upgrade is independent of the glazing upgrade that may be required due to a *fenestration* ratio that is higher than 17%. In cases where the above grade insulation is reduced to RSI 3.52 and compensated for with a *fenestration* upgrade, and the *building* has more than 17% *fenestration*, the glazing would be required to be upgraded a second time.

A-2.1.1.6.(1) Permitted Basement Insulation Gap.

The provision refers to the gap between basement insulation and the floor level that might be left at the bottom of a foundation wall. Insulation can be extended from the underside of the subfloor to the floor level of the basement, or a gap may be left provided that the gap is not more than 200 mm when measured from floor level to where the insulation is terminated.

A-2.1.1.6.(5) and (6) Slab Insulation.

Except heated slabs and except where specifically required in a compliance package, the entire surface of the slab is only required to be insulated when the entire concrete slab is located completely within 600 mm of the exterior ground level. A typical example would be a slab on ground construction without a basement. If a slab is located partially at the exterior ground level (i.e. a walkout basement) or partially within 600 mm of the exterior surface, then only those sections are required to be insulated with perimeter insulation. The perimeter insulation could be horizontal or vertical. If the entire surface of the slab is insulated, or the perimeter insulation is horizontal, in both cases vertical insulation would not be mandatory.

Where a slab of a house is completely or partially within 600 mm of the exterior ground level, either the entire surface of the slab or the perimeter of the slab is required to be insulated but not at both locations.

A-2.1.1.10.(1) Additions to Existing Houses.

In Clause 2.1.1.10.(1)(a), the design and *construction* of an addition to an existing house can conform to the minimum *building* envelope and mechanical equipment requirements where an applicable compliance package is selected from Article 2.1.1.2. or 2.1.1.3.

Alternatively, Clause 2.1.1.10.(1)(b) provides a simpler approach and permits an addition to an existing *building* to comply with the appropriate column in Table 2.1.1.10. since the design and *construction* of an existing *building* is unlikely to be determined and matched against an applicable compliance package from Article 2.1.1.2. or 2.1.1.3. However, the addition is required to comply with Sentences 2.1.1.1.(7) to (10). Glazing upgrade of the addition is required if it falls within the scope of Sentence 2.1.1.1.(8). Table 2.1.1.10. further exempts both an addition and an existing *building* from conforming to minimum efficiency requirements for HRV's, domestic water heaters and space heating equipment required in Article 2.1.1.2. or 2.1.1.3. This would permit existing mechanical equipment to serve the entire *building* provided that it has the necessary capacity.

A-2.1.1.10.(2) Treatment of Additions.

Where the *fenestration* to wall ratio of an addition is calculated or the annual energy use of an addition is modeled for the purpose of demonstrating compliance, calculations can be done for only the addition or the for entire house including the existing part of the house. Regardless, the thermal characteristics of the existing *building*, existing window and wall areas can be used in the *fenestration* ratio calculations. Similarly, in the case of modeling, existing *building* components that have not been altered can be used as they are for the reference house and for the proposed design.

A-2.1.1.10.(3) Sunroom Additions to Existing Houses.

A sunroom addition to an existing house referred in this Sentence applies to a one-storey structure built substantially with wall/roof *fenestration* and glass doors but which sometimes contain unglazed low wall panels that support wall glazing above it. Since the glazing percentage of sunrooms exceeds the limits permitted for compliance packages in Articles 2.1.1.2. and 2.1.1.3. and performance compliance methods may not be possible, these sunrooms are exempt from compliance package requirements, provided that the thermal performance of the glazing is enhanced further than what is required for non-sunroom additions.

The maximum U-Values for doors, sliding glass doors, wall glazing and supporting wall panels for sunroom additions in Clause 2.1.1.10.(3)(a) have been derived from the maximum U-Values for window and sliding glass doors in additions to existing *buildings* in Table 2.1.1.10. and then upgraded in accordance with Sentence 2.1.1.1.(8).

The maximum U-Value of 2.6 for roofs and skylights for sunroom additions in Clause 2.1.1.10.(3)(b) has been derived from upgrading the maximum U-Value of 2.8 for skylights in additions to existing *buildings* in Table 2.1.1.10. consistent with the methodology used in Sentence 2.1.1.1.(8).

A-2.1.1.11.(4)(a) Drain Water Heat Recovery Units for Showers.

For the purpose of the prescriptive trade off provisions in Subsection 2.1.1., the term "all showers" includes the case where there is only one shower in a dwelling unit. If there is only one shower, that shower is required to be connected to a drain water heat recovery unit. Where there are two or more showers, drain water from at least two showers are required to be connected to a single drain water heat recovery unit or to two individual drain water heat recovery units.

A-2.1.2.1. Application of Performance Compliance Path.

This Article requires two annual energy use simulations. These simulations compare the simulated annual energy use of the proposed *building* with the simulated annual energy use of an applicable compliance package. The simulated annual energy use of the proposed *building* cannot exceed the simulated annual energy use of an applicable compliance package.

Where a performance compliance path is selected, it is the intent of Sentence 2.1.2.1.(2) that the performance level of the compliance package takes into account the requirements listed in Subsection 2.1.1. that are applicable to that compliance package. Similarly, the annual energy use calculation for a compliance package referenced in Clause 2.1.2.1.(3)(b) shall take into account the requirements listed in Subsection 2.1.1. that are applicable to that compliance package.

For the purpose of calculating the annual energy use of a proposed design and a design based on a selected compliance package, the following software may be used:

- HOT2000 version 9.34c or later versions
- Other software referenced by the EnerGuide Rating System
- Passive house software such as
  - WUFI Passive
  - Passive House Planning Package
- RESNET accredited Home Energy Rating System (HERS) software, such as:
  - OptiMiser
  - EnergyGauge
  - EnergyInsights
  - REM/Rate

A-2.1.3.1. Other Acceptable Compliance Methods.

Compliance with the technical requirements of the Energy Star Program may be achieved using either the prescriptive path or the performance path required by NRCan,"Energy Star for New Homes: Technical Specifications – Ontario".

Clause 2.1.1.1 of NRCan,"Energy Star for New Homes: Technical Specifications – Ontario" allows the designer to use an NRCan-approved compliance option described in NRCan, "Energy Star for New Homes: Compliance Options" (Ontario).

Only the technical provisions contained in NRCan,"Energy Star for New Homes: Technical Specifications – Ontario" and other Energy Star documents it references are mandatory under this Supplementary Standard. However, in addition to the technical requirements, the administrative requirements of the Energy Star documents may be used to demonstrate compliance with Sentence 2.1.3.1.(1) by obtaining an Energy Star label for the *building*.

Chapter 3: Acceptable Solutions for Achieving Energy Efficiency Compliance After December 31, 2016.

A-3.1.1. Compliance Packages.

Individual components of compliance packages found in Tables 3.1.1.2.A to 3.1.1.2.C and Tables 3.1.1.3.A to 3.1.1.3.C are not permitted to be mixed with similar components of other compliance packages either found within the same Table or similar components of compliance packages found in other Tables.

A-3.1.1.1.(3) Mechanical Equipment.

Compliance package tables referred to in this Sentence contain energy efficiency requirements for some or all mechanical equipment. Where a compliance package includes an energy efficiency level for space heating equipment, domestic water heater or heat or energy recovery ventilator, conformance with the package can only be achieved if the *building* is equipped with the mechanical equipment specified in the compliance package.

A-3.1.1.1.(7), (8) and (9) Fenestration to Wall Ratio.

When the *fenestration* to wall ratio is calculated, all *fenestration* areas and the entire peripheral wall above grade is included. The peripheral wall area includes floor rim board areas and all above grade wall areas. It is essentially the sum of the above grade walls that separate conditioned spaces from unconditioned spaces, and adjacent units. In the case of an attached garage, the walls that are common with the house and the garage are also included in the wall area calculations. For attached homes, the above grade portions of the walls that are common to other conditioned units are also included in the wall area. The *fenestration* area is based on the rough structural opening provided for windows, skylights, sliding glass doors, and for glazed portions in doors. For A–frame structures with steeply inclined roofs that also act as walls, the roof portion that serves as the interior wall area can be considered as the wall area in calculating the *fenestration* to wall ratio.

Where the window performance needs to be upgraded in accordance with Sentence 3.1.1.1.(8), upgrading can be done based on ER values in conjunction with Table 3.1.1.9.

A-3.1.1.1. (16) Heat or Energy Recovery Ventilators

Heat or energy recovery ventilators are required regardless of the type of heating system and not restricted to forced air heating systems only.

A-3.1.1.2. (5) and (6) ICF Walls

The use of ICF walls are not limited to the packages identified in these Sentences. Where U value or *effective RSI value* of a ICF wall assembly is the same or better than the U value or *effective RSI value* required for a wall assembly in any of the Tables, the ICF wall can be used in lieu of that assembly.

A-3.1.1.3. (5) and (6) ICF Walls

The use of ICF walls are not limited to the packages identified in these Sentences. Where U value or *effective RSI value* of a ICF wall assembly is the same or better than the U value or *effective RSI value* required for a wall assembly in any of the Tables, the ICF wall can be used in lieu of that assembly.

A-3.1.1.4. Airtightness

This provision is a voluntary provision. It only applies if credit for airtightness is claimed. Credit for air tightness allows the designer to substitute the requirements of compliance packages as set out in Table 3.1.1.4.B or 3.1.1.4.C. Neither the air leakage test nor compliance with airtightness targets given in Table 3.1.1.4.A are required, unless credit for airtightness is claimed. Table 3.1.1.4.A provides airtightness targets in three different metrics; ACH, NLA, NLR. Where credit for substitution is claimed, any one of these metrics can be used; the *building* need not meet all targets in different metrics.

A-3.1.1.7.(1) Permitted Basement Insulation Gap.

The provision refers to the gap between basement insulation and the floor level that might be left at the bottom of a foundation wall. Insulation can be extended from the underside of the subfloor to the floor level of the basement, or a gap may be left provided that the gap is not more than 200 mm when measured from floor level to where the insulation is terminated.

A-3.1.1.7.(5) and (6) Slab Insulation.

Except heated slabs and except where specifically required in a compliance package, the entire surface of the slab is only required to be insulated when the entire concrete slab is located completely within 600 mm of the exterior ground level. A typical example would be a slab on ground construction without a basement. If a slab is located partially at the exterior ground level (i.e. a walkout basement) or partially within 600 mm of the exterior surface, then only those sections are required to be insulated with perimeter insulation. The perimeter insulation could be horizontal or vertical. If the entire surface of the slab is insulated, or the perimeter insulation is horizontal, in both cases vertical insulation would not be mandatory.

A-3.1.1.11.(1) Additions to Existing Houses.

In Clause 3.1.1.11.(1)(a), the design and *construction* of an addition to an existing house can conform to the minimum *building* envelope and mechanical equipment requirements where an applicable compliance package is selected from Article 3.1.1.2. or 3.1.1.3.

Alternatively, Clause 3.1.1.11.(1)(b) provides a simpler approach and permits an addition to an existing *building* to comply with the appropriate column in Table 3.1.1.11. since the design and *construction* of an existing *building* is unlikely to be determined and matched against an applicable compliance package from Article 3.1.1.2. or 3.1.1.3. However, the addition is required to comply with Sentences 3.1.1.1.(7) to (10). Glazing upgrade of the addition is required if it falls within the scope of Sentence 3.1.1.1.(8). Table 3.1.1.11. further exempts both an addition and an existing *building* from conforming to minimum efficiency requirements for HRV's, domestic water heaters and space heating equipment required in Article 3.1.1.2. or 3.1.1.3. This would permit existing mechanical equipment to serve the entire *building* provided that it has the necessary capacity.

A-3.1.1.11.(2) Treatment of Additions.

Where the *fenestration* to wall ratio of an addition is calculated or the annual energy use of an addition is modeled for the purpose of demonstrating compliance, calculations can be done for only the addition or the for entire house including the existing part of the house. Regardless, the thermal characteristics of the existing *building*, existing window and wall areas can be used in the *fenestration* ratio calculations. Similarly, in the case of modeling, existing *building* components that have not been altered can be used as they are for the reference house and for the proposed design.

A-3.1.1.11.(3) Sunroom Additions to Existing Houses.

A sunroom addition to an existing house referred in this Sentence applies to a one-storey structure built substantially with wall/roof *fenestration* and glass doors but which sometimes contain unglazed low wall panels that support wall glazing above it. Since the glazing percentage of sunrooms exceeds the limits permitted for compliance packages in Articles 3.1.1.2. and 3.1.1.3. and performance compliance methods may not be possible, these sunrooms are exempt from compliance package requirements, provided that the thermal performance of the glazing is enhanced further than what is required for non-sunroom additions.

The maximum U-Values for doors, sliding glass doors, wall glazing and supporting wall panels for sunroom additions in Clause 3.1.1.11.(3)(a) have been derived from the maximum U-Values for window and sliding glass doors in additions to existing *building*s in Table 3.1.1.11. and then upgraded in accordance with Sentence 3.1.1.1.(8).

The maximum U-Value of 2.6 for roofs and skylights for sunroom additions in Clause 3.1.1.11.(3)(b) has been derived from upgrading the maximum U-Value of 2.8 for skylights in additions to existing *building*s in Table 3.1.1.11. consistent with the methodology used in Sentence 3.1.1.1.(8).

A-3.1.1.12.(1) Shower Drainage Installation.

The term "all showers" includes the case where there is only one shower in a dwelling unit. If there is only one shower, that shower is required to be connected to a drain water heat recovery unit. Where there are two or more showers, drain water from at least two showers are required to be connected to a single drain water heat recovery unit or to two individual drain water heat recovery units.

A-3.1.2.1. Application of Performance Compliance Path.

This Article requires two annual energy use simulations. These simulations compare the simulated annual energy use of the proposed *building* with the simulated annual energy use of an applicable compliance package. The simulated annual energy use of the proposed *building* cannot exceed the simulated annual energy use of an applicable compliance package.

Where a performance compliance path is selected, it is the intent of Sentence 3.1.2.1.(2) that the performance level of the compliance package takes into account the requirements listed in Subsection 3.1.1. that are applicable to that compliance package. Similarly, the annual energy use calculation for a compliance package referenced in Sentence 3.1.2.1.(3) shall take into account the requirements listed in Subsection 3.1.1. that are applicable to that compliance package. In addition to Subsection 3.1.2., the proposed *building* is still required to meet Part 12 and other applicable parts of the code.

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 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*.

Annual Energy Use Software: For the purpose of calculating the annual energy use of a proposed design and a design based on a selected compliance package, the following software may be used:

- HOT2000 version 10.51 or later versions
- other software referenced by the EnerGuide Rating System
- Passive house software such as
  - WUFI Passive
  - Passive House Planning Package
- RESNET accredited Home Energy Rating System (HERS) software, such as:
  - ICF International Beacon Residential Version 2-80-3
  - Ekotrope, HERS Module v2.0
  - EnergyGauge® USA Version 5.0
  - REM/Rate v14.6.2

Operating Conditions:
The following operation conditions may be used:
(Courtesy of NRCan- Section 4.6 of NRCan's EnerGuide Rating System Version 15.2)

4.6. Operating conditions
4.6.1. General
The EnerGuide Rating System applies two sets of operating conditions to provide EnerGuide Rating System services: standard operating conditions and household operating conditions.
Standard operating conditions are used as the basis for the calculation of the EnerGuide rating in order to provide an estimate of the home's energy performance independent of occupant behaviour. Houses that reach a zero rating have access to reduced operating conditions for their rating calculations.

Optionally provided by homeowners, household operating conditions are intended to provide customized operating conditions in order to generate an estimated annual energy use based on actual occupancy.
The rated annual energy consumption of a house is based on a number of standard assumptions as specified in **section 4.6.3**.

4.6.2. Standard operating conditions

4.6.2.1. Number of occupants
The EnerGuide rating is calculated assuming an occupant load of two adults and one child at home 50% of the time.

4.6.2.2. Temperature set points for space heating and cooling
The EnerGuide rating is calculated assuming standard thermostat settings (set points) for space heating and cooling as per **Table 2.**

Table 2 - Temperature set points

Area of house	Type of set point	Temperature
Main and upper floors	heating daytime (16 hours)	21°C (70°F)
	heating nighttime (8 hours)	18°C (64°F)
	cooling	25°C (77°F) if air conditioning present
Basement / walkout	heating	19°C (66°F)
	cooling	25°C (77°F) if air conditioning ducted to basement
Heated crawl space	heating	15°C (59°F)

Notes to Table 2:
(1) A constant weighted average of 20 degrees Celsius is used to simulate the effect of the heating setback temperature.
(2) Air conditioning can include heat pump space cooling systems.
(3) If air conditioning is not ducted to the basement, the approved compliance software will allow the basement temperature to vary.

4.6.2.3. Hot water load
The EnerGuide rating is calculated assuming that the occupants collectively use approximately 190 litres (50 U.S. gal) of hot water per day (for showers, clothes washing, dishwashing and faucets) and that the water is heated to 55°C (131°F). Shower temperature is held constant at 41°C (106°F) leading to some variability in the shower hot water load due to variations in regional cold water inlet temperatures. The shower hot water load ranges from 89 L/day (24 U.S. gal/day) in the warmest region to 100 L/day (26 U.S. gal/day) in the coldest. The 97 L/day (26 U.S. gal/day) of hot water usage applied to activities other than showering is constant across all weather locations. In total, the hot water usage will range from 178 L/day (47 U.S. gal/day) to 199 L/day (53 U.S. gal/day).

4.6.2.4. Electrical base loads
The EnerGuide rating is calculated assuming that a standard amount of electricity (electrical base loads) is used as defined in **Table 3** and **Table 4**.

It is always assumed that the house has an electric range and electric clothes dryer. It is also assumed that the clothes dryer exhausts to the outside and operates at a flow rate of 38 L/s (158 cfm), 45 minutes a day, 365 days per year.

Table 3 - Standard electrical base loads

Electrical load	Standard value (kWh/day)
Interior lighting	2.6
Appliances (refer to Table 4)	6.3
Other electrical	9.7
Exterior use (exterior lighting and miscellaneous outdoor use)	0.9
Daily total	**19.5**
Annual total	**25.6 GJ/year**
Electrical load	**Standard value (kWh/day)**

Table 4 - Standard appliance loads

Appliance	Standard value (kWh/yr)
Refrigerator	639
Electric range	565
Clothes washer	148
Dishwasher	260
Clothes dryer	687
Annual total for above 5 appliances	**2299**
Daily total for above 5 appliances	**6.3 kWh/day**

Notes to Table 4:
(1) Standard appliance ratings assume four occupants while the EnerGuide Rating System for homes assumes three occupants. Therefore, the loads for clothes washers and clothes dryers have been reduced by 25% to remain consistent with the rating system standard operating conditions.
(2) Freezer and microwave electrical consumptions are included in the “Other electrical” category.

4.6.2.5. Reduced operating conditions for zero-rated homes
For homes with superior energy performance, there is provision for reducing some of the standard operating conditions. These reduced operating conditions are considered to be a variation of the standard operating conditions. To be eligible for these reductions, the builder or homeowner must provide the energy advisor with proof that the required conditions, as specified below, are met and the EnerGuide rating for the house must be zero when modelled with the reduced values.

a) Allowable hot water reductions
Zero-rated homes may reduce their hot water load by the specified amount for each of the conditions they meet in **Table 5**. The four categories may be applied on an individual basis.

Table 5 - Allowable hot water reductions for zero-rated homes

Category	Specification	Approximate reduction L/day (U.S. gal/day)
Low-flow showerheads	7.6 L/min (2.0 U.S. gpm) or less	19 (5.0)
Low-flow bathroom faucets	5.7 L/min (1.5 U.S. gpm) or less	10 (2.6)
Clothes washer	ENERGY STAR certified	18 (4.8)
Dishwasher	ENERGY STAR certified	3 (0.8)
Approximate total potential reduction		**50 (13.2)**

Notes to Table 5:
(1) Showerhead water reductions are calculated by the approved compliance software based on incoming water temperature, flow rate and a shower length of seven minutes. Therefore, the 19 L/day (5.0 U.S. gal/day) for showerheads and the total potential reduction are approximate numbers.

b) Allowable electrical base loads reductions
Zero-rated homes may reduce their electrical base loads for interior lighting and appliances as detailed in **Table 6**. The "Other electrical" and "Exterior use" categories may not be reduced.

Table 6 - Allowable electrical base loads for zero-rated homes

Category	Conditions	Allowable reduced base load
Interior Lighting	25% to 75% of fixtures with compact fluorescent light bulbs or light emitting diodes	1.6 kWh/day
	> 75% of fixtures with compact fluorescent light bulbs or light emitting diodes	0.6 kWh/day
Appliances	The actual EnerGuide appliance rating must be lower than the following standard values: • Refrigerator: 639 kWh/yr • Electric range: 565 kWh/yr • Dishwasher: 260 kWh/yr • Clothes washer: 197 kWh/yr • Clothes dryer: 916 kWh/yr	Use the actual EnerGuide appliance rating If an appliance is not present, default values must be used

Notes to Table 6:
(1) Gas appliances will not be considered as a reduction to electrical base loads.

A-3.1.3.1. Other Acceptable Compliance Methods.

Compliance with this Supplementary Standard may be achieved using either the prescriptive path or the performance path required by NRCan,"Energy Star for New Homes Standard Version 12.6", provided that the same performance level is achieved through its technical requirements. Compliance with the technical requirements of NRCan, "2012 R-2000 Standard" also achieves compliance with this Supplementary Standard.

Only the technical provisions contained in NRCan, "2012 R-2000 Standard" or NRCan, "Energy Star for New Homes Standard Version 12.6" and other Energy Star documents it references are mandatory under this Supplementary Standard. However, in addition to the technical requirements, the administrative requirements of the Energy Star or R-2000 documents may be used to demonstrate compliance with Sentence 3.1.3.1.(1) by obtaining an Energy Star or R-2000 label for the *building*.