

**fenestration
canada**

**Clarifying the Fenestration Energy
Performance requirement in the
Ontario Building Code
Supplementary Standard SB12**

February 2012

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Clarifying OBC SB-12 Requirements

1. Introduction

The 2006 Ontario Building Code (OBC) was updated on January 1, 2012. These changes introduced the Supplementary Standard SB-12 which changed the energy performance requirements for Part 9 buildings in the 2006 OBC. SB-12 introduced three possible methods of proving compliance with the energy performance requirement of the 2006 OBC. The three methods include:

- Prescriptive Compliance Packages (Subsection 2.1.1),
- Performance Compliance (Subsection 2.1.2), and
- Other Acceptable Compliance Methods (Subsection 2.1.3).

These changes represent a significant change to the OBC. This document will help clarify the change for fenestration performance.

2. Compliance Methods

There are three methods for proving compliance with the OBC outlined in SB-12: conformance with one of the prescriptive compliance tables in Subsection 2.1.1, the performance method in Subsection 2.1.2 or ENERGY STAR requirements as specified in Subsection 2.1.3. The Natural Resources Canada EnerGuide program defines a method for evaluating the energy performance of a house in “EnerGuide for New Houses: Administrative and Technical Procedures”. The objective of SB-12 is to achieve the equivalent of an EnerGuide 80 performance level, but allowing a simple prescriptive method and a simplified performance method for proving compliance. The Figure 1 illustrates the compliance methods.

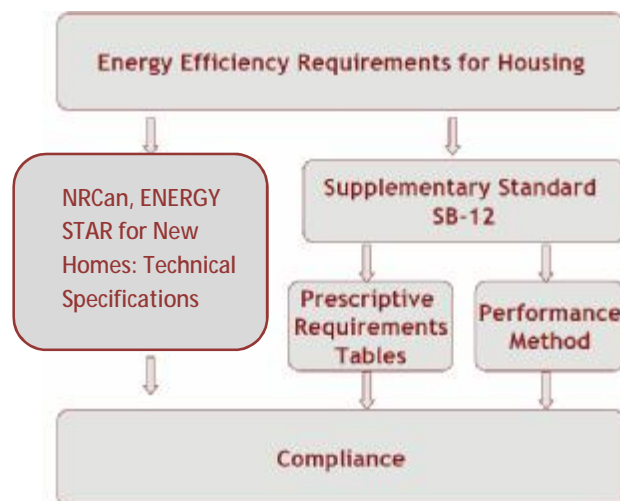


Figure 1 – Compliance Paths

2.1 Zones

The OBC had already divided the province into two zones for energy performance:

- Zone 1 - less than 5000 degree days, and
- Zone 2 - greater than or equal to 5000 degree days.

Figure 2 illustrates the approximate division of the province. The line runs from south of Sault Ste. Marie to Pembroke.



Figure 2 – Energy Performance Zones

2.2 Prescriptive Compliance

The prescriptive compliance packages include complete building envelope packages that are deemed to meet an equivalent energy performance of an NRCan EnerGuide 80 rating. The prescriptive compliance methods include 21 building envelope packages for Zone 1 and 16 packages for Zone 2. These packages vary based on heating source and furnace or heating equipment efficiency and are included in a series of table in SB-12 these tables have been included at the end of this document for easy reference.

Figure 3 shows a flowchart on how to determine the correct table to be looking at for the compliance packages. The flow chart starts with the number of heating degree days of more than 5000 or not, then the heating source electric or not, then the heating equipment efficiency level of greater than 78% and less than 90% or not, and then the heating equipment efficiency level of greater than or equal to 90% or not. The flow chart will lead the use to the correct table or performance method.

The Table 2.1.1.2A illustrates 13 of the compliance packages for Zone 1 with heating equipment efficiency $\geq 90\%$. It is important to note that the compliance package tables only show U-values for windows and sliding glass door, but Table 2.1.1.8, included below, defines the ER values that are deemed equivalent to the U-values. In this case windows and sliding doors can comply with the OBC with U-values of 1.6, 1.8 and 2.0, or ER numbers of 25, 21 and 17 depending on the other components used in the building envelope.

Table 2.1.1.2B has 6 compliance packages for Zone 1 with heating equipment efficiencies $\geq 78\%$ and $< 90\%$. In this case windows and sliding doors can comply with the OBC with U-values of 1.6 and 1.8, or ER numbers of 25 and 21 depending on the other components used in the building envelope.

Table 2.1.1.2C has 2 compliance packages for Zone 1 with electric heating equipment. In this case windows and sliding doors can comply with the OBC with U-value of 1.6 or an ER numbers of 25 regardless of the other components used in the building envelope.

Tables 2.1.1.3A – 2.1.1.3C define the compliance packages for Zone 2 based on the heating equipment type and efficiency.

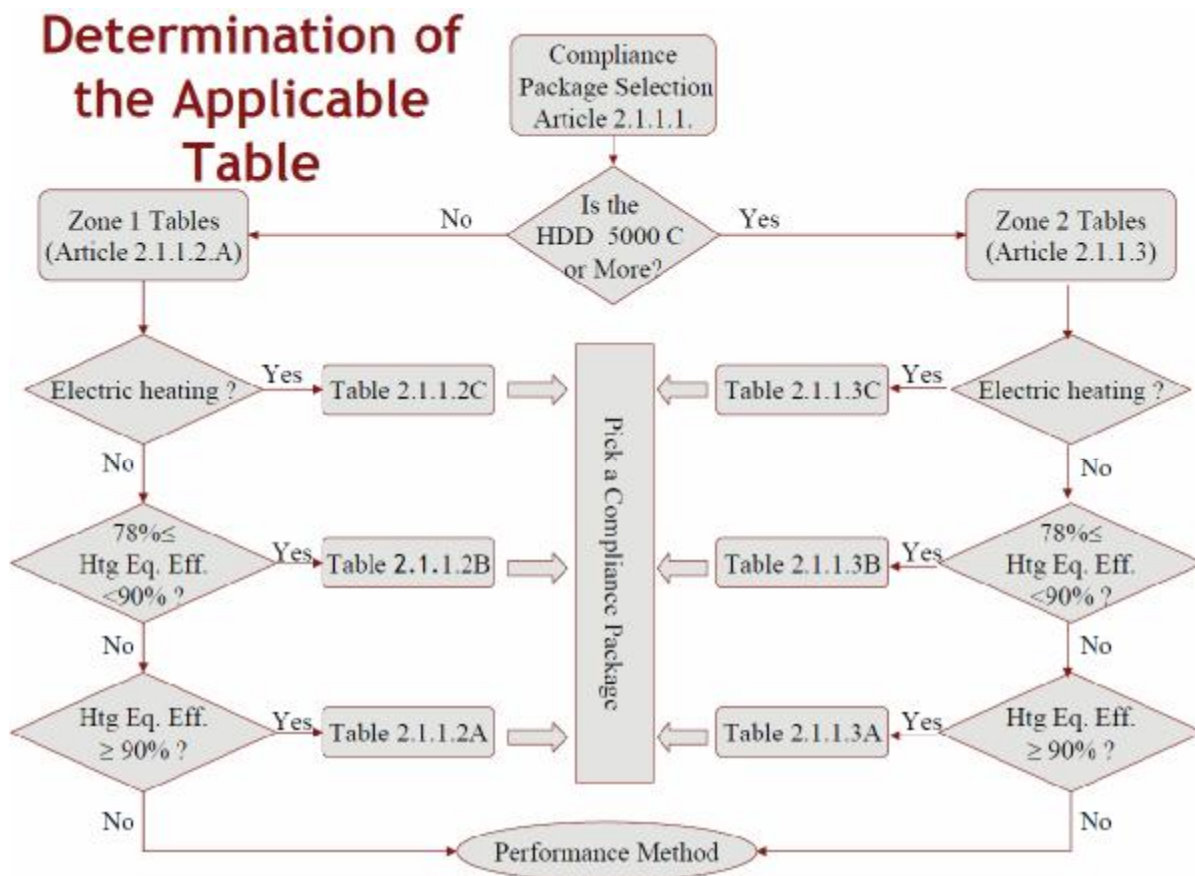


Figure 3 – Determination of Prescriptive Package

2.2.1 Fenestration Area Percentage

The amount of fenestration area used in a building will also have an impact on the performance. The prescriptive compliance method has restrictions on the amount of fenestration that can be used in a building. 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 (window to wall ratio or WWR) has to be determined for all buildings.

Under the prescriptive compliance method if the WWR is less than or equal to 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.

If the WWR is greater than 17% and less than or equal to 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 U-value and ER shall be upgraded to:

- (a) U=1.8 or ER=21 where the selected compliance package requires U=2.0 or ER=17,
- (b) U=1.6 or ER=25 where the selected compliance package requires U=1.8 or ER=21, and
- (c) U=1.4 or ER=29 where the selected compliance package requires U=1.6 or ER=25.

If the WWR is greater than 22% the building shall comply with the performance method in Subsection 2.1.2.

Note that the glazing in the main entrance doors and adjacent sidelights to the main entrance doors does not have to be included in the calculation of the WWR.

2.3 Performance Compliance

The performance compliance method, defined in Subsection 2.1.2 of SB-12, requires that the proposed building design be simulated with a recognized building annual energy use simulation program and a second simulation be done on the building as if it met the performance level of one of the permitted compliance packages in the prescriptive compliance method in Subsection 2.1.1. The simulated annual energy use of the proposed building shall not be greater than the simulated energy use of the second simulation of the prescriptive compliant house.

2.4 ENERGY STAR Homes Compliance

The final option for proving compliance with the energy performance requirements in the OBC is for the building to be in compliance with the ENERGY STAR for New Homes program. Subsection 2.1.3 of SB-12 states that:

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 NRCan, "ENERGY STAR for New Homes: Technical Specifications – Ontario".

3. Fenestration Standards

The SB-12 document has referenced the CSA A440.2-09 or the NFRC 100-2010 and NFRC 200-2010 standards as the means of proving compliance with the fenestration U-value or ER requirements. These are the correct and most up-to-date standards, however in reality, due to test report validity cycles not matching standards cycles, it takes manufacturers some time to get all their products updated to the most current standards. There are many manufacturers still using data from the 2004 CSA and 2004 NFRC standards. Simulations done to the 2004 CSA and 2004 NFRC standards give essentially the same results as the 2009/2010 versions.

The previous versions of these standards, CSA A440.2-04, NFRC 100-2004, and NFRC 200-2004, are included in NRCAN ENERGY STAR program for fenestration as an acceptable alternative to the CSA A440-09, NFRC 100-2010, and NFRC 200-2010 standards. Fenestration Canada is working with building code officials to help them understand this standards issue.

4. Fenestration Exceptions

4.1 Glass Block

Glass block is considered to be part of the wall and must be accounted for in the calculation of the wall thermal performance. Clause 2.1.1.1(6) covers the requirements for glass block.

2.1.1.1(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.

4.2 Basement Windows

Basement windows that incorporate load bearing structural framing are exempt from the window thermal performance requirements. These basement windows must meet the requirements in Subsection 2.1.1.8(3).

2.1.1.8(3) A basement window that incorporates a loadbearing structural frame shall be double glazed with a low-E coating.

4.3 Existing buildings

Additions to an existing building, except sunrooms, must comply with the requirements in Subsections 2.1.1.2, 2.1.1.3, or Table 2.1.1.10. Table 2.1.1.10 includes three building envelope packages for additions to existing buildings.

2.1.1.10(1) Except as provided in Sentence (2), an addition to an existing building shall comply with
(a) one of the applicable compliance packages in Article 2.1.1.2. or 2.1.1.3., or
(b) the thermal performance requirements in Table 2.1.1.10.

The addition of a sunroom to an existing building will exceed the limits of the window-to-wall ratio in Subsections 2.1.1.2 and 2.1.1.3. Subsection 2.1.1.10 includes the requirements for sunroom additions.

- 2.1.1.10(2) 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) roof glazing and skylights has a maximum U-Value of 2.6.

5. Conclusion

Manufacturers using the 2004 energy performance standards will have to go to an extra effort to prove compliance with SB-12. NRCan already recognizes the CSA A440.2-04, NFRC 100-2010 and NFRC 200-2010 as equivalent to the CSA A440.2-09, NFRC 100-2004, and NFRC 200-2004. This should offer the justification for using the 2004 standards as an acceptable alternative means of complying with SB-12.

The changes included in SB-12 to the energy performance requirements in the OBC are significant and will have a large impact on fenestration manufacturers. All the tables relevant to fenestration from SB-12 have been included below for convenience with permission. Proving compliance with the performance requirements is complex and we trust that this document has provided some clarity.

Table 2.1.1.2A
 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	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% ⁽⁸⁾
HRV ^{(6), (7)} Minimum Efficiency	-	-	-	-	55%	60%	60%	70%	55%	60%	-	-	-
Domestic Hot 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 ⁽⁸⁾
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14

Notes to Table 2.1.1.2.A:

- (1) The values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values expressed in (m²·K)/W.
- (2) U-Value is the overall coefficient of heat transfer expressed in W/(m²·K).
- (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 insulation value of an ICF wall is the sum of the insulation value on both sides of the walls.
- (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 insulation value of an ICF wall is the sum of the insulation value on both sides of the walls.
- (5) Applies to a *building* with combined space heating and domestic hot water heating system.
- (6) Except as required in Subsection 9.32.3. of Division B in the *Building Code*, an HRV is only required as a part of the compliance package where a minimum efficiency level is specified.
- (7) The minimum efficiency of an HRV shall be based on a test temperature of 0EC. In addition, where an HRV is installed to meet the requirements of Subsection 9.32.3. of Division B in the *Building Code*, the energy efficiency of the HRV shall also meet the minimum efficiency requirements of Sentence 9.32.3.11.(2).
- (8) Combined space heating and domestic hot water heating equipment shall have minimum energy efficiency ratings specified 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 ⁽³⁾ Minimum Efficiency	55%	55%	70%	55%	70%	75%
Domestic Hot 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 expressed in (m²· K)/W.
- (2) U-Value is the overall coefficient of heat transfer expressed in W/(m²· K).
- (3) The minimum efficiency of an HRV shall be based on a test temperature of 0EC. In addition, where an HRV is installed to meet the requirements of Subsection 9.32.3. of Division B in the Building Code, the energy efficiency of the HRV shall also meet the minimum efficiency requirements of Sentence 9.32.3.11.(2).

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 ⁽³⁾ Minimum Efficiency	55%	75%
Domestic Hot 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 expressed in (m²· K)/W.
- (2) U-Value is the overall coefficient of heat transfer expressed in W/(m²· K).
- (3) The minimum efficiency of an HRV shall be based on a test temperature of 0EC. In addition, where an HRV is installed to meet the requirements of Subsection 9.32.3. of Division B in the *Building Code*, the energy efficiency of the HRV shall also meet the minimum efficiency requirements of Sentence 9.32.3.11.(2).

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% ⁽⁸⁾
HRV ^{(6),(7)} Minimum Efficiency	-	-	60%	-	-	60%	75%	-	60%	60%	-	-	55%
Domestic Hot 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 ⁽⁸⁾
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14

Notes to Table 2.1.1.3.A:

- (1) The values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values expressed in (m²· K)/W.
- (2) U-Value is the overall coefficient of heat transfer expressed in W/(m²· K).
- (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 insulation value of an ICF wall is the sum of the insulation value on both sides of the walls.
- (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 insulation value of an ICF wall is the sum of the insulation value on both sides of the walls.
- (5) Applies to a building with combined space heating and domestic hot water heating system.
- (6) Except as required in Subsection 9.32.3. of Division B in the Building Code, an HRV is only required as a part of the compliance package where a minimum efficiency level is specified.
- (7) The minimum efficiency of an HRV shall be based on a test temperature of 0EC. In addition, where an HRV is installed to meet the requirements of Subsection 9.32.3. of Division B in the Building Code, the energy efficiency of the HRV shall also meet the minimum efficiency requirements of Sentence 9.32.3.11.(2).
- (8) Combined space heating and domestic hot water heating equipment shall have minimum energy efficiency ratings specified or shall be of the condensing type.

Table 2.1.1.3.B
 ZONE 2 - Compliance Packages for Space Heating Equipment with AFUE \geq 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 ⁽³⁾ Minimum Efficiency	75%	60%
Domestic Hot 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 expressed in (m²· K)/W.
- (2) U-Value is the overall coefficient of heat transfer expressed in W/(m²· K).
- (3) The minimum efficiency of an HRV shall be based on a test temperature of 0EC. In addition, where an HRV is installed to meet the requirements of Subsection 9.32.3. of Division B in the *Building Code*, the energy efficiency of the HRV shall also meet the minimum efficiency requirements of Sentence 9.32.3.11.(2).

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 ⁽³⁾ Minimum Efficiency	75%
Domestic Hot 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 expressed in (m²· K)/W.
- (2) U-Value is the overall coefficient of heat transfer expressed in W/(m²· K).
- (3) The minimum efficiency of an HRV shall be based on a test temperature of OEC. In addition, where an HRV is installed to meet the requirements of Subsection 9.32.3. of Division B in the *Building Code*, the energy efficiency of the HRV shall also meet the minimum efficiency requirements of Sentence 9.32.3.11.(2).

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/m ² ·K)	U-Value (Btu/h·ft. ² ·°F)	ER
Skylights	2.8	0.50	1
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	4

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 expressed in (m²·K)/W.
- (2) U-Value is the overall coefficient of heat transfer expressed in W/(m²·K).
- (3) The *building* need not conform to minimum efficiency requirements for HRV's, domestic hot water heaters and space heating equipment required in Article 2.1.1.2. or 2.1.1.3.