Understanding the National Energy Code of Canada for Buildings, 2011
Introduction

- Manufacturer of fiberglass construction products
  - Fiberglass windows
  - Fiberglass doors
  - Fiberglass cladding support systems
- Manufacturing plant located in Langley, BC
- In operation since 2008
- Current client base:
  - BC, Alberta, Yukon, NWT, Washington, Oregon, Alaska
- Expanding to:
  - Saskatchewan, Manitoba, Ontario,
  - California, other central US States
Background – Maddy Parrott, EIT

- Grew up in cities around the world: Tokyo, Seattle, Ottawa, Vancouver, London, New Delhi

- Queen’s University Civil Engineering, Sci ’13
  - Oil and gas: not for me
  - Loved sustainable architecture, green engineering

- BCIT Masters of Applied Science in Building Science, 2014- now
  - Originally MEng, research project got too big
  - First thesis got dropped, started over

- Cascadia Windows– 2015 and onwards
  - Technical Representative - Cascadia Clip
Agenda

The NECB
  • What is it, why does it exist, and how is it structured?

NECB Provisions
  • What is covered, and how do you comply?

Building Envelope
  • Thermal Bridging, U-values, R-values, and nominal vs. effective
  • Requirements of the NECB, and how traditional wall compare to those requirements
  • Cascadia solution to NECB requirements

Building Example and Trade-Off Path Options
  • Edmonton example and how to meet the NECB requirements using prescriptive or trade-off options

How to meet the NECB
  • Using Cascadia products

NECB in Canada
  • Where it is currently in effect, where plans on adopting it, and other options
What is the NECB?

• National model code for energy standards
• Technical provisions to increase energy efficiency in the construction of buildings
• Replacement for the 1997 Model National Energy Code of Canada for buildings
• Offered as option to promote consistency among provincial codes
• Most recent NECB is 2015, most common is 2011
Why?

• Energy efficiency is one of the biggest concerns for design of new construction
• MNECB, published in 1997, was the Canadian pre-cursor
• No Canadian standards/guidelines
• Similar to ASHRAE 90.1
ASHRAE 90.1 vs NECB

• Energy consumption vs. energy cost
• Removes A/B/C from climate definitions, splits 7 into two (HDD)
• Space classification: semi-heated
• Mandatory provisions
Breakdown of the NECB

Division A- Compliance, Objectives, and Functional Statements
Division B- Acceptable Solutions
Division C- Administrative Provisions

Division B is more than 80% of the code, it provides all of the actual requirements, provisions, and design guidelines.
Division A- Compliance, Objectives, and Functional Statements

Provides the following basis for the code:

• Scope
• Definitions and terms
• Referenced documents
• Overall objective
• Functional statements to meet that objective

Environment ➔ Resources ➔ Excessive use of energy
Division B - Acceptable Solutions

Part 1: General
Part 3: Building Envelope
Part 4: Lighting
Part 5: Heating, Ventilating, and Air-conditioning Systems
Part 6: Service Water Heating Systems
Part 7: Electrical Power Systems and Motors
Part 8: Building Energy Performance Compliance Path
Division C- Administrative Provisions

- How to document and prove that all requirements are met
- Details on alternative solutions
- Descriptions of possible exemptions
Back to Division B

The important stuff: design requirements
Part 1- General

• Compliance paths
• Definitions & acronyms
• Referenced documents
• Calculation methods
Compliance Paths

Prescriptive Path
• Step by step instructions for compliance, requirements laid out

Trade-off Path
• Simple: Trading higher performance in one area with a lower performance in another
• Detailed: Requires energy modelling, can only trade within each section (building envelope only)
• Not available for Part 7: Electrical Power Systems

Performance Path
• Essentially another trade-off path, but can trade off higher/lower performances across sections
• Requires energy modelling
Part 3- Building Envelope

Prescriptive Path

• General: Protection and continuity of insulation, spaces heated to different temperatures, allowable areas

• Thermal requirements
  • Above-ground components
  • Below-ground components

• Air Leakage- continuity and effectiveness of air barrier
Part 3- Building Envelope

Trade-off Path: Simple

\[ \sum_{i=1}^{n} U_{ip} A_{ip} \leq \sum_{i=1}^{n} U_{ir} A_{ir} \]

where
- \( n \) = total number of above-ground assemblies,
- \( U_{ip} \) = overall thermal transmittance of assembly \( i \) of the proposed building,
- \( A_{ip} \) = area of assembly \( i \) of the proposed building,
- \( U_{ir} \) = overall thermal transmittance of assembly \( i \) of the reference building, and
- \( A_{ir} \) = area of assembly \( i \) of the reference building.

Trade-off Path: Detailed

• Requires energy modeling
• Different from performance path in that energy used by all other sources are ignored
• Proposed building vs. reference building
Part 4 - Lighting

Prescriptive Path

• Lighting power requirements
• Two methods for calculating allowable lighting: building area method or space-by-space method
• Lighting control requirements
• Daylighting requirements for areas and controls
Part 4- Lighting

Trade-off Path

• Lighting energy allowance vs. installed lighting energy consumption
Part 5- Heating, ventilating and air-conditioning systems

Prescriptive Path

• Provides detailed requirements for:

<table>
<thead>
<tr>
<th>Equipment sizing</th>
<th>Air distribution</th>
<th>Piping for HVAC</th>
<th>Air intake and outlet dampers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment efficiency</td>
<td>Fan systems</td>
<td>Humidification</td>
<td>Temperature controls</td>
</tr>
<tr>
<td>Outdoor equipment</td>
<td>Pumping systems</td>
<td>Heat recovery</td>
<td>Shut-off and setback</td>
</tr>
</tbody>
</table>
Part 5- Heating, ventilating and air-conditioning systems

Trade-off Path

• If the “HVAC trade-off index” is greater than 0, building “compliant”

• Fairly specific criteria for trade-off path eligibility

• Detailed tables and calculations to determine variables in HVAC trade-off index calculations
Part 6- Service water heating systems

Prescriptive Requirements

• Overall system design according to plumbing code
• Gives specific requirements and parameters for:

<table>
<thead>
<tr>
<th>Water heating equipment and storage vessels</th>
<th>Controls</th>
<th>Hot service water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple use systems</td>
<td>Piping</td>
<td>Swimming pools</td>
</tr>
</tbody>
</table>
Part 6- Service water heating systems

Trade-off Path

• If the “Service Water Heating Trade-off Index” is greater than 0

• Specific criteria for trade-off path eligibility

• Detailed tables and calculations to determine variables in index calculations

\[
\text{SWH - TOI} = 2.813 \cdot \left\{ \begin{array}{c} \frac{2.813 \cdot \text{PDR}}{\text{ToV}_1} \cdot \left\{1 - 0.6514 \cdot \frac{\text{ToV}_6}{\text{ToV}_4} \cdot e^{-0.312 \cdot \text{ToV}_6}\right\} \\
+ 0.06153 \cdot \left( \frac{\text{A}_{\text{norm}}}{\text{ToV}_2} + \frac{26.180}{\text{ToV}_9} \right) + \frac{0.00677}{\text{ToV}_4 \cdot \text{ToV}_5} \\
- 2.813 \cdot \left( \frac{2.813}{\eta_{\text{ref}}} + 0.06153 \cdot \left( \frac{\text{A}_{\text{norm}}}{12.4} + 6.807 \right) + 0.0141 \right)^{-1} \end{array} \right\}
\]

where

- PDR = peak daily flow ratio, determined as per Article 6.3.2.2.
- ToV₁ = service water heating equipment efficiency, determined as per Article 6.3.2.5.
- ToV₂ = tank insulation value, determined as per Article 6.3.2.5.
- ToV₃ = piping insulation value, determined as per Article 6.3.2.5.
- ToV₄ = pump motor efficiency, determined as per Article 6.3.2.5.
- ToV₅ = pump efficiency, determined as per Article 6.3.2.5.
- ToV₆ = heat recovery ratio, determined as per Article 6.3.2.5.
- Aₙ₉₉₉ = normalized tank area, determined as per Article 6.3.2.3, and
- η₉₉₉ = reference heat generator efficiency, determined as per Article 6.3.2.6.
Part 7- Electrical power systems and motors

- Shortest part
- No trade-off path available

Prescriptive Path
- Electrical Distribution System
- Voltage Drop
- Transformers
- Electrical Motors
Part 8 - Building energy performance compliance path

• Requires energy modelling
• Annual energy consumption of proposed building
• Building energy target of the reference building
• Includes all five areas of energy use, gives detailed instructions on how to incorporate aspects into energy model
Appendix A- Explanatory Material

• Explains the code in plain terms
• Adds details where there might be misinterpretations or the scope falls outside the NECB
• Explains when methods described in NECB differ from other published codes/standards
• Provides clarification on statements within the code, via diagrams or examples
Back to Part 3- Building Envelope

A little bit of thermal review
Thermal transmittance: “U-value”

**Conduction:**
transfer of energy either through a solid or between touching materials

**Conductivity:**
rate of heat flow through materials

**Conductance:**
for specific materials, is conductivity/thickness
also known as “U-value”

For thermally efficient buildings, need to use low-conductivity materials to lower the overall conductance of the building assemblies
U-values and R-values

U-values are not additive, and are not user-friendly numbers.

The inverse of conductance is thermal resistance, or R-value.

\[
1/U = R
\]

R-values are additive, but you cannot do more complicated math with them.

\[
1/R = U
\]
Thermal Bridging

Additional heat loss that occurs at areas of highly conductive materials passing through insulation, or when insulation is out of plane

Reduces overall thermal resistance of a building envelope (increases overall thermal transmittance)
R-values: not always straightforward

Nominal R-value: R-value of the material

Effective R-value: overall resistance of the assembly, including all components, air films, and effect of thermal bridging
Overall thermal transmittance

The “overall” thermal transmittance is the inverse of the effective R-value of the wall assembly.

Two ways to determine overall thermal transmittance:

• Thermal Modelling (most accurate)
• Area-weighted calculations
### NECB Requirements: Above-ground components

#### Table 3.2.2.2.
**Overall Thermal Transmittance of Above-ground Opaque Building Assemblies**
Forming Part of Sentences 3.2.2.2.(1) and (2)

<table>
<thead>
<tr>
<th>Above-ground Opaque Building Assembly</th>
<th>Heating Degree-Days of Building Location, (1) in Celsius Degree-Days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zone 4: (2) &lt; 3000</td>
</tr>
<tr>
<td>Walls</td>
<td>0.315</td>
</tr>
<tr>
<td>Roofs</td>
<td>0.227</td>
</tr>
<tr>
<td>Floors</td>
<td>0.227</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Heating Degree-Days of Building Location, (1) in Celsius Degree-Days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zone 4: (2) &lt; 3000</td>
</tr>
<tr>
<td>All fenestration</td>
<td>2.4</td>
</tr>
</tbody>
</table>
NECB Requirements: Conversions

**Conversion Factors:**

Metric U-value * 0.17611
Metric R-value * 5.678

\[
\frac{1}{0.210} = 4.762 \\
0.21 \times 0.17611 = 0.03698
\]

\[
4.762 \times 5.678 = 27.04 \\
\frac{1}{0.03698} = 27.04
\]

**Zone 7:** 0.210 W/m²K
### NECB Requirements: Effective R-values

<table>
<thead>
<tr>
<th>Component</th>
<th>Zone 4</th>
<th>Zone 5</th>
<th>Zone 6</th>
<th>Zone 7</th>
<th>Zone 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls</td>
<td>18.03</td>
<td>20.43</td>
<td>22.99</td>
<td>27.04</td>
<td>31.03</td>
</tr>
<tr>
<td>Roofs</td>
<td>25.01</td>
<td>31.03</td>
<td>31.03</td>
<td>35.05</td>
<td>39.99</td>
</tr>
<tr>
<td>Floors</td>
<td>25.01</td>
<td>31.03</td>
<td>31.03</td>
<td>35.05</td>
<td>39.99</td>
</tr>
<tr>
<td>Fenestration &amp; Doors</td>
<td>2.37</td>
<td>2.58</td>
<td>2.58</td>
<td>2.58</td>
<td>3.55</td>
</tr>
</tbody>
</table>
What are we doing now?

Are we meeting NECB prescriptive targets?
Conventional Assemblies

- **Stud Insulated**
  - R-6.3 ft²·°F·hr/Btu

- **Vertical Z-Girts**
  - R-7.4 ft²·°F·hr/Btu

- **Horizontal Z-Girts**
  - R-7.8 ft²·°F·hr/Btu

- **Galvanized Clips**
  - R-11.6 ft²·°F·hr/Btu
Single Continuous Z-girt

- Multiple Simulations:
  - 3.5” insulation
  - 4” insulation
  - 8” insulation
Single Continuous Z-girt

Effective R-values

<table>
<thead>
<tr>
<th>Exterior Insulation</th>
<th>Galvanized Z-Girt</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 ½” Mineral Fiber (R-14.7)</td>
<td>7.4</td>
</tr>
<tr>
<td>4” Mineral Fiber (R-16.9)</td>
<td>7.8</td>
</tr>
<tr>
<td>8” Mineral Fiber (R-33.6)</td>
<td>?</td>
</tr>
</tbody>
</table>
Thermal Weight of Girts

Heat takes the path of least resistance

- Nominal U-value: $1/33.6 = 0.030$
- Effective U-value: $1/9.8 = 0.102$
- Effect of presence of girt: $0.102 - 0.030 = 0.0723$
- Thermal weight of girt: $0.0723/0.102 = 71$

$71\%$ of heat loss through steel girt
Crossing Z-girts

- Multiple Simulations
  - 4” insulation
  - 4” insulation with thermal shim
  - 6” spray foam insulation
## Crossing Z-girts

<table>
<thead>
<tr>
<th>Clip Assembly, Exterior Insulation</th>
<th>Purchased Insulation R-value</th>
<th>Effective Insulation R-value</th>
<th>% Effectiveness of Insulation</th>
<th>Effective Wall R-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4” Mineral Fiber (R-16.9), Crossing Z-Girt</td>
<td>16.9</td>
<td>8.2</td>
<td>49%</td>
<td>11.4</td>
</tr>
<tr>
<td>4” Mineral Fiber (R-16.9), Crossing Z-Girt (w/ ¼ thermal shim between girts)</td>
<td>16.9</td>
<td>10.0</td>
<td>59%</td>
<td>13.1</td>
</tr>
<tr>
<td>6” Sprayfoam* (~R-36), Crossing Z-Girt</td>
<td>36.0</td>
<td>12.5</td>
<td>35%</td>
<td>15.6</td>
</tr>
</tbody>
</table>
Galvanized Steel Clips

- Multiple Simulations
  - 3.5” insulation
  - 4” insulation
  - 6” insulation
## Galvanized Steel Clips

<table>
<thead>
<tr>
<th>Exterior Insulation</th>
<th>Galvanized Steel Clip</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 (\frac{1}{2}'') Mineral Fiber (R-14.7)</td>
<td>11.3</td>
</tr>
<tr>
<td>4'' Mineral Fiber (R-16.9)</td>
<td>12.4</td>
</tr>
<tr>
<td>6'' Mineral Fiber (R-25.1)</td>
<td>15.6 *</td>
</tr>
</tbody>
</table>
Before there were solutions...
The Solution

Improve material selection

• Lower conductivity materials
• Can’t sacrifice building performance
  • Acceptable in non-combustible
  • Appropriate for cladding
  • Won’t rot, creep, expand, or deform over time
  • Easy to construct
  • Cost effective
The Cascadia Clip

- Fiberglass thermal spacer
- Award-winning
- 8 different sizes (2”-8”)
- Acceptable in non-combustible
- Achieves up to R35.5 effective
- Vertical or horizontal application
- Cost-effective
- Red-list free materials and processes
The Cascadia Clip

**FAST INSTALLATION**

**STEP 1**
Attach clips to steel girt

**STEP 2**
Fasten girts and clips to the wall with screws

**STEP 3**
Install insulation and fasten next girt
Cascadia Clips vs. conventional girts

R-7.8
Continuous Z-girts, 3.5” insulation

R-15.7
Cascadia Clips
The Cascadia Clip
NECB Requirements: Fenestration

Effective R-values:

<table>
<thead>
<tr>
<th>Component</th>
<th>Zone 4</th>
<th>Zone 5</th>
<th>Zone 6</th>
<th>Zone 7</th>
<th>Zone 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fenestration &amp; Doors</td>
<td>2.37</td>
<td>2.58</td>
<td>2.58</td>
<td>2.58</td>
<td>3.55</td>
</tr>
</tbody>
</table>

Fenestration and door to wall ratio (FDWR):

FDWR = 0.40 for HDD < 4000,
FDWR ≤ (2000 − 0.2 · HDD)/3000 for 4000 ≤ HDD ≤ 7000 , and
FDWR = 0.20 for HDD > 7000.

Edmonton: average HDD of 5,025; FDWR = 33%
Calgary: average HDD of 4,928; FDWR = 34%
Aluminum vs. Vinyl vs. Fiberglass
## Building Envelope Example: Edmonton

<table>
<thead>
<tr>
<th>Component</th>
<th>U-Value (metric)</th>
<th>R-Value (imperial)</th>
<th>FDWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls</td>
<td>0.21</td>
<td>27</td>
<td>67%</td>
</tr>
<tr>
<td>Windows &amp; Doors</td>
<td>2.2</td>
<td>2.58</td>
<td>33%</td>
</tr>
<tr>
<td>Floors</td>
<td>0.162</td>
<td>35</td>
<td>-</td>
</tr>
<tr>
<td>Roofs</td>
<td>0.162</td>
<td>35</td>
<td>-</td>
</tr>
</tbody>
</table>
Building Envelope Example: Edmonton

- 100 ft\(^2\) of floor and ceiling (4.5%)
- 2000 ft\(^2\) of gross wall area
  - 1340 ft\(^2\) of wall (61%)
  - 660 ft\(^2\) of window (30%)

\[
U_{\text{overall}} = U_{\text{wall}} A_{\text{wall}} + U_{\text{window}} A_{\text{window}} + U_{\text{floor}} A_{\text{floor}} + U_{\text{roof}} A_{\text{roof}}
\]

\[
U_{\text{overall}} = (0.21)(0.61) + (2.2)(0.30) + 2(0.162)(0.045)
\]

\[
U_{\text{overall}} = 0.803
\]

Effective R-value: 7.07
Remember the Trade-Off Path

\[
\sum_{i=1}^{n} U_{ip} A_{ip} \leq \sum_{i=1}^{n} U_{ir} A_{ir}
\]

where

- \( n \) = total number of above-ground assemblies,
- \( U_{ip} \) = overall thermal transmittance of assembly \( i \) of the proposed building,
- \( A_{ip} \) = area of assembly \( i \) of the proposed building,
- \( U_{ir} \) = overall thermal transmittance of assembly \( i \) of the reference building, and
- \( A_{ir} \) = area of assembly \( i \) of the reference building.
Trade-off path: must meet R-7.07 effective

Run trade-off path using Cascadia Windows:
• Keep floors and roofs the same
• Double glazed lowest R-value: 3.7
• Triple glazed lowest R-value: 4.75

Using better windows results in three separate outcomes
Trade-off path: higher effective R-values

Use better windows to get higher overall building R-value

- Keep window and door area the same (67% wall, 33% windows)
- Compare final effective R-values to prescriptive path requirement (R-7.07)

<table>
<thead>
<tr>
<th>Window R-value</th>
<th>Effective Building R-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.58</td>
<td>7.07</td>
</tr>
<tr>
<td>3.7</td>
<td>9.41</td>
</tr>
<tr>
<td>4.75</td>
<td>11.32</td>
</tr>
</tbody>
</table>
Trade-off path: higher window/door area

Use better windows to get higher allowable window areas

• Keep final effective R-value the same (R-7.07)
• Compare to prescriptive path area requirements (67% wall, 33% windows)

<table>
<thead>
<tr>
<th>Window R-value</th>
<th>Window Area</th>
<th>Wall Area</th>
<th>Effective Building R-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.58</td>
<td>33%</td>
<td>67%</td>
<td>7.07</td>
</tr>
<tr>
<td>3.7</td>
<td>49%</td>
<td>51%</td>
<td>7.10</td>
</tr>
<tr>
<td>4.75</td>
<td>66%</td>
<td>34%</td>
<td>7.11</td>
</tr>
</tbody>
</table>
Trade-off path: lower wall requirements

Use better windows to get lower requirements for wall areas

• Keep window and door area the same (67% wall, 33% windows)
• Keep final effective R-value the same (R-7.07)
• Compare wall value R-values to prescriptive path requirements

<table>
<thead>
<tr>
<th>Window R-value</th>
<th>Effective wall R-value</th>
<th>Effective Building R-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.58</td>
<td>27</td>
<td>7.07</td>
</tr>
<tr>
<td>3.7</td>
<td>10.6</td>
<td>7.08</td>
</tr>
<tr>
<td>4.75</td>
<td>8.1</td>
<td>7.09</td>
</tr>
</tbody>
</table>
Ways to meet NECB 2011

Prescriptively, using Cascadia products
Exterior Walls- Climate Zone 7

• How to get R27 (nominally):
  • 4.5” of polyiso - combustible
  • 4.5” of spray foam - combustible
  • 5.5” of XPS- combustible
  • 6.5” of mineral wool

But remember effective R-values of standard wall assemblies:

<table>
<thead>
<tr>
<th>Assembly</th>
<th>Continuous Girt</th>
<th>Crossing Girt</th>
<th>Galvanized Clips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation</td>
<td>8” mineral wool</td>
<td>6” sprayfoam</td>
<td>6” mineral wool</td>
</tr>
<tr>
<td>Effective R-value</td>
<td>9.8</td>
<td>15.6</td>
<td>15.6</td>
</tr>
</tbody>
</table>
Exterior Walls: the solution

8” Cascadia Clip

Stainless Steel Screws
Exterior Walls- Climate Zone 7

• Backup Structure: 18 gauge steel studs, 16” o.c.
• Insulation: mineral wool (R4.2/inch, nominal)
• No batts in cavity
• Fastener type: galvanized steel

8” Cascadia Clip; 36” vertically: R28.5 effective
8” Cascadia Clip; 48” vertically: R30.3 effective
Exterior Walls- Climate Zone 7

• Backup Structure: 18 gauge steel studs, 32” o.c. (every other stud)
• Insulation: mineral wool (R4.2/inch, nominal)
• No batts in cavity
• Fastener type: stainless steel

6” Cascadia Clip; 36” vertically: R27.3 effective
6” Cascadia Clip; 48” vertically: R27.7 effective
Exterior Walls - Climate Zone 7

• Backup Structure: concrete or CMU
• Insulation: mineral wool (R4.2/inch, nominal)
• Fastener type: galvanized steel
• Clips spaced 24” horizontally

8” Cascadia Clip; 26” vertically: R27.6 effective
8” Cascadia Clip; 48” vertically: R30.9 effective
Exterior Walls - Climate Zone 8

• Backup Structure: 16 gauge steel studs, 16” o.c.
• Insulation: mineral wool (R4.2/inch, nominal)
• No batts in cavity
• Fastener type: stainless steel

8” Cascadia Clip; 26” vertically: R31.3 effective
8” Cascadia Clip; 48” vertically: R33.9 effective
Exterior Walls- Climate Zone 8

- Backup Structure: concrete or CMU
- Insulation: mineral wool (R4.2/inch, nominal)
- Fastener type: stainless steel
- Clips spaced 24” horizontally

8” Cascadia Clip; 26” vertically: R31.6 effective
8” Cascadia Clip; 36” vertically: R32.7 effective
Fixed: R-3.57
Operable: R-3.85
Fixed: R-3.57
Operable: R-3.85
R 5.88- includes structural reinforcing and stainless steel sunshades
Fixed: R-6.25
Operable: R-4.76
Where does the NECB apply?

• NBC requirements do not refer to a specific energy code
• Provincial building codes modify the NBC to suit their needs
• Many provinces don’t have energy requirements
• Only five (arguably six) provinces have specific energy requirements
NECB adoption: BC

Revision 3 to 2012 building code
  • adopted April 2013
  • effective December 2013
  • Allows ASHRAE 90.1 OR NRCC 54435 (NECB 2011)
NECB adoption: Manitoba

Adopted by regulation entitled “Manitoba Energy Code for Buildings”

- Adopted December 2013
- Effective December 2014
- Modified to include several changes to the NECB, lowering fenestration U-values
NECB adoption: Ontario

Adopted by regulation entitled “SB-10 Energy Efficiency Supplement”

- Adopted June 2011,
- Effective July 2011
- Allows ASHRAE 90.1 (with some modifications) or NECB 2011
NECB adoption: Nova Scotia

Adopted by regulation by a revision to the Nova Scotia Building Code

- Adopted December 2013
- Effective December 2014
What about the rest of Canada?

- Quebec has a 30 year old outdated energy standard
- Saskatchewan considering implementing NECB since 2013
- Northwest Territories includes a vague reference to the NECB
- New Brunswick, Newfoundland, PEI, Nunavut and the Yukon have no standards for energy
NECB adoption: Alberta

Adopted by regulation in the 2014 Alberta Building Code, which references the NECB directly as the energy standard

- Adopted November 2015
- Effective May 2016- postponed
- Effective November 2016
Contacts and More Information:

Maddy Parrott
Technical Representative - Cascadia Clip
604 992 2280
mparrott@cascadiawindows.com

Michael Bousfield
Technical Director
604 857 4600
mbousfield@cascadiawindows.com