National Building Codes

Key changes and Northen Construction Considerations

Industry Education and Engagement Session

October 8, 2026 | Whitehorse, Yukon

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Module 04 – Part 09 Changes

Potential impacts to the Yukon

Information presented does not directly represent the opinions of the Yukon Government or City of Whitehorse.

This presentation is conceptual and for informal educational purposes only. Material presented must not be considered complete or exhaustive. Code provisions have been generally represented and may not reflect all provisions.

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NBC 2025 Part 9: Focus of this review

This review focuses on the history of **Part 9** and five **significant** changes along with their implications for Yukon's construction industry and occupants.

- **Radon and soil gas mitigation**
- **Lateral Design loads**
  - **climatic & seismic data information changes**
- **Wall studs**
- **Protection from precipitation of rough opening sills**
  - **other window related changes**
- **Technical changes in 9.36 including Energy Performance Tiers**

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How will we review the changes

When thinking about a change, we should try to frame it:

Question	Example
What is the Yukon doing now?	Current NBC 2020 vs Yukon practice.
What does the NBC 2025 introduce?	Specific new requirement or clarification?
Is Yukon already partially aligned?	Yes/No
What is the actual gap?	Training, design, supply, inspection, cost, administration
What transition support is needed?	Guidance, phased implementation, exemption

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Code Change Review Breakdown

1. Identify the change
Code edition, affected provisions and associated PCFs, where confirmed.

2. Explain the rationale
The problem addressed, the new approach and its practical significance.

3. Consider Yukon application
Local relevance, existing modifications and implementation considerations.

4. Assess potential impacts
Industry and occupants: minor, medium or high, with benefits and challenges.

5. Evaluate adoption options
Education, further review, Yukon modification or a national change request.

6. Recommend next steps
A preferred approach, supporting rationale and outstanding confirmations.

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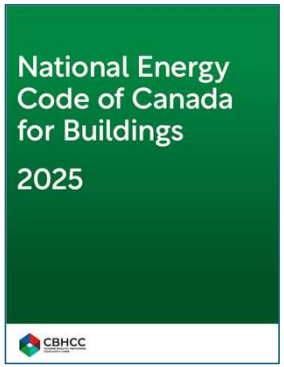
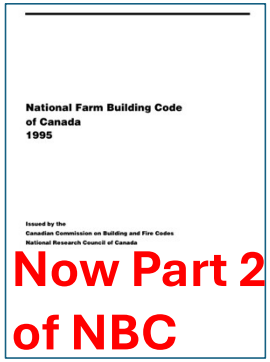
Primary Focus - Code Change Review

Main code reference

Parts 9





Referenced documents/standards

Look at Code development & Yukon Regulations
Public Code Reviews (PCFs) – Northern implementation

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Part 9: Background and evolution

History and code structure of Part 9

Housing guidance dates to 1950. Part 9 appears in NBC 1970. The objective-based NBC 2005 introduced the Division A/B/C structure. Part 9 now sits in Volume 02 - Division B.

Shared objectives, different scope

Part 9 and Part 3 share the NBC objective framework. Part 9 combines mostly prescriptive rules for housing and small buildings across subjects such as structure, health and energy performance.

Recent code cycles: selected examples

2020: Energy performance tiers, airtightness testing and window safety.
2025: Passive radon stacks, revised structural loads and another compliance path for foamed plastic coverings.

NBC is enforceable only after adoption by AHJ

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Part 9 - Housing and Small Buildings

The first formal adoption of the National Building Code in Yukon:

The first formal adoption, which was the 1980 National Building Code of Canada (NBC) (the Eighth Edition) on a territory-wide scale in Yukon occurred with the enactment of the Building Standards Act in 1983.

Yukon current code version

- NBC 2020 with territorial variations (April/23)

Current modification related to Part 9:

- Yukon – Building Code Modifications Regulations
  - 6 Mobile homes (Z240MH), 7 Modular homes, 7.01 Energy efficiency
- City of Whitehorse – Building Bylaw No.99-50 – to confirm

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Local requirements: Adoption clarifications

Yukon: Building Code Modifications Regulation, s. 7.01

- Clarify the small-home exemption (≤44.6 m^2), attic insulation provision (effective R-40) and crawl-space-floor exception against NBC 2025 Section 9.36.

Whitehorse: Building and Plumbing Bylaw 99-50

- Compare local insulation values, airtightness testing, HRV requirements and EnerGuide labelling with NBC 2025 compliance paths. Confirm nominal versus effective R-values and how crawl-space rules interact.

Confirmation before adoption

- Seek joint clarification from Yukon Building Safety and Whitehorse Building Services on applicable requirements, any amendments and transition rules. Document the agreed interpretation for industry education.

Items for confirmation, not established conflicts with NBC 2025

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Radon: 9.13.4. Soil Gas Control - Change rationale

Code references (NBC 2025) - Subsection 9.13.4.

Type of change: Modification and New to the NBC 2020

Existing Yukon modification: NA

Associated PCF - Yes – PCF 1713, "Passive Vertical Radon Stack,"

Change explantation

- A passive vertical radon stack in dwelling units and home-type care occupancies where a floor assembly separates conditioned space from the ground.
- Sealed overlapping air-barrier seams below concrete slabs, clarified ballast for exposed barriers in heated crawl spaces, and a reference to CAN/CGSB-149.11.

Why it matters

A vented pathway goes beyond a capped rough-in and helps reduce radon exposure. Testing after occupancy remains essential, with further mitigation where needed.

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Radon – 9.13.4 Soil Gas Control

New defined term added

9.13.4.1. Application and scope - (1) – *conditioned space*

Conditioned space means any space within a building, the temperature of which is controlled to limit variation in response to the exterior ambient temperature by the provision, either directly or indirectly, of heating or cooling over substantial portions of the year.

Changes in

9.13.4.2. Protection from Soil Gas Ingress

9.13.4.3. Rough-in for a Subfloor Depressurization System

9.13.4.4. Passive Vertical Radon Stack (required)

Introduction of CAN/CGSB-149.11

Government of Canada
Gouvernement du Canada
Canadian General Standards Board
Office des normes générales du Canada
CAN/CGSB-149.11-2024
Supersedes CAN/CGSB-149.11-2019

Radon control options for new buildings

Canadian General Standards Board CGSB

scc ccn

Canada

Experience and excellence
Expérience et excellence
CGSB ONGC

P29-149-011-2024-eng.pdf

How do current building practices work now and how will they need to change?
Will drawings need more detail?

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Radon: 9.13.4.2. Protection from Soil Gas Ingress

9.13.4.2. Protection from Soil Gas Ingress

Added

1) All wall, roof and floor assemblies separating a *conditioned space* from the ground shall be provided with an *air barrier system* conforming to Subsection 9.25.3. that provides a level of radon gas diffusion protection equivalent to that provided by 0.15 mm polyethylene sheet conforming to CAN/CGSB-51.34, "Polyethylene sheet for use in building construction – Material specification."

Rewritten

2) Except as provided in Sentence (4), *dwelling units* and *home-type care occupancies* where a floor assembly separates a *conditioned space* from the ground shall be provided with a passive vertical radon stack conforming to Article 9.13.4.4. that is made of components that are compatible with adjoining materials described in Articles 9.13.4.3. and 9.13.4.4.

3) Where *buildings* are used for *occupancies* other than those described in Sentence (2), protection from radon ingress and the means to address high radon concentrations in the future shall conform to

a) Article 9.13.4.3., or

b) Parts 5 and 6 (see Articles 5.4.1.1. and 6.2.1.1.).

(See Note A-9.13.4.2.(3).)

Introduction of required <u>passive vertical radon stack</u> for all dwelling units and home-type care occupancies

a stack which runs vertically up through the building and exhausts above the roofline.

New

4) Where an entrance at *grade* contains a floor assembly separating a *conditioned space* from the ground and provides direct access to a stairway leading up to a *dwelling unit* or *home-type care occupancy* located above another *dwelling unit* or *home-type care occupancy*, the entrance and space under the stairway need not comply with Sentence (2).

with exception of entrance at grade spaces

How do current building practices work now and how will they need to change?
Will drawings need more detail?

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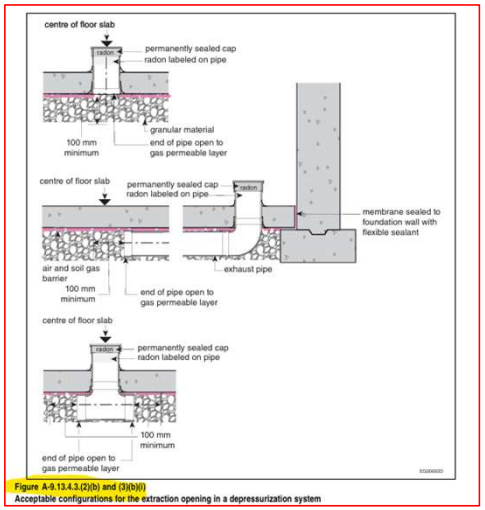
Radon: 9.13.4.3. Rough-in for a Subfloor Depressurization System

3) The rough-in referred to in Clause (1)(b) shall include

a) clean granular material installed below the floor-on-ground in accordance with Sentence 9.16.2.1.(1), and

b) a pipe not less than 100 mm in diameter installed through the floor, such that

- i) its bottom opening is located in the granular layer required in Clause (a) at or near the centre of the floor and not less than 100 mm of granular material projects beyond the bottom opening of the pipe measured along its axis (see Note A-9.13.4.3.(2)(b) and (3)(b)(i)), — **Modified**
- ii) its bottom opening is protected by a low-pressure-drop stainless steel mesh with 10 mm to 12.5 mm openings or by a product and fitting system that provide an equivalent level of air-flow performance and corrosion resistance, — **Modified**
- iii) its top opening permits connection to depressurization equipment and is provided with an airtight cap, unless a passive vertical radon stack conforming to Article 9.13.4.4. is connected to the rough-in, and — **Modified**
- iv) the pipe is clearly labeled near the cap and, if applicable, at every 1.8 m and at every change in direction to indicate that it is intended only for the removal of radon from below the floor-on-ground. — **New**



Note the capping of the pipe is incorrect for a passive system requirement.

How do current building practices work now and how will they need to change?
Will drawings need more detail?

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Radon: 9.13.4.4. Passive Vertical Radon Stack (required)

9.13.4.4. Passive Vertical Radon Stack **New Article**

(See Note A-9.13.4.4.)

1) The passive vertical radon stack required by Sentence 9.13.4.2.(2) shall be installed

a) in a *conditioned space* in accordance with Clauses 7.2.2.3 and 7.2.3.2 to 7.2.4.2 of CAN/CGSB-149.11, "Radon control options for new construction in low-rise residential buildings,"

b) except as provided in Sentence (2), in the vertical direction, and

c) such that its rooftop termination conforms to Table 9.13.4.4.-A.

Table 9.13.4.4.-A
Minimum Clearances for Rooftop Termination of Passive Vertical Radon Stacks
Forming Part of Clause 9.13.4.4.(1)(c)

Description	Minimum Clearance, m
Vertical clearance above the roof at the point of penetration	0.15
Vertical clearance above windows and doors	0.6
Vertical clearance above mechanical air intakes	0.9
Horizontal clearance from windows, doors and mechanical air intakes	3
Clearance horizontally from vertical walls that extend above the penetrated roof	3

Note only specific guide references

Government of Canada / Gouvernement du Canada
Canadian General Standards Board / Office des normes générales du Canada
CAN/CGSB-149.11-2024
Supersedes CAN/CGSB-149.11-2019
Radon control options for new buildings
Canadian General Standards Board CGSB
scc ccn
Canada

Refer also to sentences (2) through (6)

How do current building practices work now and how will they need to change?
Will drawings need more detail?

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Radon: CAN/CGSB-149.11

References to CAN/CGSB-149.11.

9.13.4.4. Passive Vertical Radon Stack

1) The passive vertical radon stack required by Sentence 9.13.4.2.(2) shall be installed

a)In a conditioned space in accordance with **Clauses 7.2.2.3 and 7.2.3.2 to 7.2.4.2 of CAN/CGSB 149.11,"Radon control options for new construction in low-rise residential** buildings,"

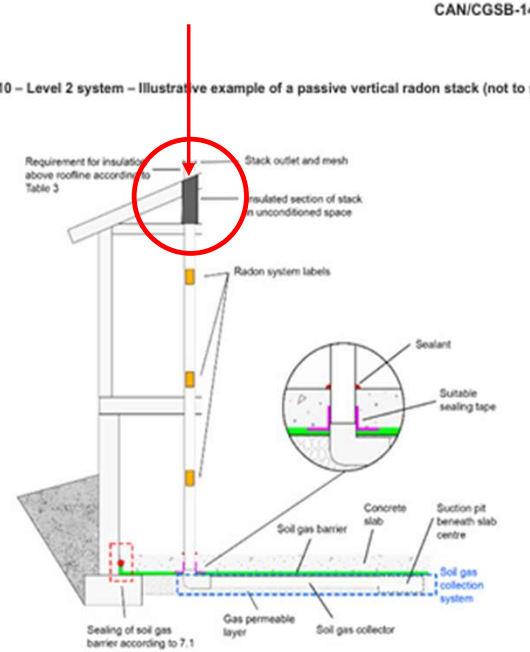
3) Piping and connections for the passive vertical radon stack

a) Shall conform to Clauses 7.1.3.1.1 to 7.1.3.1.3 and7.1.3.1.5 to 7.1.3.2.6 of **CAN/CGSB-149.11,"Radon control options for new construction in low-rise residential buildings,"**

7.1.3.1.1 Pipes shall have a nominal internal diameter of not less than 100 mm (4 in.) Should there be a review of nominal size running through the roof (unconditioned space) **– similar to Modification Regulation?**

CAN/CGSB-149.11-2024

Figure 10 – Level 2 system – Illustrative example of a passive vertical radon stack (not to scale)



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Radon: Yukon impacts

Preliminary qualitative assessment

Industry: Implementation demands

- Additional stack routing and roof penetration require early design coordination.
- Careful air-barrier sealing, flashing and inspection add work and training needs.
- Confirm cold-climate details for frost, condensation, snow and vent terminal sizing.
- Plan access for future activation if testing identifies elevated radon.

Industry impact: MEDIUM (mixed)

Occupants: Health protection

- Potential to reduce long-term exposure to a gas associated with lung cancer.
- Protection starts with construction rather than relying only on later retrofits.
- Performance depends on correct installation and follow-up testing.
- Provide owners with testing guidance and next steps if levels remain elevated.

Occupant impact: HIGH (positive potential)

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Radon: Adoption and roof-terminal review

Recommended: Education before adoption

- Prepare installation and inspection guidance, plus owner testing information.

Roof-terminal details: Confirmation required

- **Confirm radon sizing, frost protection, clearances and condensate management with Yukon and Whitehorse officials. Check whether Yukon's section 3 plumbing vent provision applies.**

Other options considered

- Further review: Confirm cold-climate radon stack and roof-terminal details.
- Yukon modification or delay: Only for a confirmed gap in radon requirements.
- National Code Change Request: Only for a verified radon design or performance issue.
- No concern for adoption: Support with training and clarified installation details.

Option moving forward: **Support adoption** with radon guidance and owner testing information. Escalate only confirmed technical or implementation gaps.

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Wall studs : Change rationale

Code references (NBC 2025) – **9.23.**

Type of change: Modification to the NBC 2020

Existing Yukon modification: NA

Associated PCF 1677

Related CCR 1302

Change explanation

- Revises **Table 9.23.10.1.,** Size and Spacing of Studs, to clarify that 38 mm × 140 mm studs spaced at 400 mm can be used in exterior walls supporting a roof or a roof plus one floor.

Why it matters

This is primarily a clarification of an already common and structurally conservative framing practice, not a new structural requirement. The change removes an apparent gap in Table 9.23.10.1. by expressly recognizing 38 mm × 140 mm studs at 400 mm o.c. in exterior walls supporting:

- a roof, with or without attic storage; or a roof plus one floor.

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Wall studs : Change & Recommendation option

NBC 2025

9.23.10.2. **Division B**

Table 9.23.10.1. (Continued)

Type of Wall	Supported Loads (including *dead loads*)	Minimum Stud Size, mm	Maximum Stud Spacing, mm	Maximum Unsupported Height, m
Exterior	Roof with or without attic storage	38 x 64	400	2.4
		38 x 89	600	3.0
		38 x 140	600	3.0
		38 x 140	400	3.6
	Roof with or without attic storage plus one floor	38 x 89	400	3.0
		38 x 140	600	3.0
		38 x 140	400	3.6
	Roof with or without attic storage plus 2 floors	38 x 89	300	3.0
		64 x 89	400	3.0
		38 x 140	400	3.6
	Roof with or without attic storage plus 3 floors	38 x 140	300	1.8

Notes to Table 9.23.10.1.:
(1) See Article 9.23.10.3.

NBC 2020

Exterior	Roof with or without attic storage	38 x 64	400	2.4
		38 x 89	600	3.0
	Roof with or without attic storage plus one floor	38 x 89	400	3.0
		38 x 140	600	3.0
	Roof with or without attic storage plus 2 floors	38 x 89	300	3.0
		64 x 89	400	3.0
		38 x 140	400	3.6
	Roof with or without attic storage plus 3 floors	38 x 140	300	1.8

Notes to Table 9.23.10.1.:
(1) See Article 9.23.10.3.

The clarification benefits designer, builders and building officials.

Option moving forward
LOW IMPACT — ADOPT WITH EDUCATION – potential cost benefit.

Note - This table addresses stud size, spacing, supported load and height. Confirm lateral bracing, point loads, openings, connections and the complete wall assembly separately.
Designer and inspector checklist update
Cross-reference to Subsection 9.23.13., without implying that stud size establishes braced-wall-panel compliance.

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Protection from precipitation of rough opening sills

Code references (NBC 2025) – **9.27.2.3 & 9.27.3.**

Type of change: Modification & New to the NBC 2020

Existing Yukon modification: NA

Associated PCF - 1950 Protection from Precipitation of the Rough Opening Sills for Windows and Doors

Change explanation

- Clarifies the requirements for protection from precipitation of rough opening sills for windows and doors to improve alignment with established building science principles and standards.

Why it matters

- Improves durability for proper drainage
- Enhances energy efficiency & supports climate change resilience
- Aligns with building science principles

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Rough opening sills – change and recommendation

9.27.2.3 (1) First and Second Planes of Protection (NBC 2025)

Modified to add rough openings

ii) effectively dissipate any rain or snow to the exterior, and
c) the protection provided by the first and second planes of protection shall be maintained
  i) at the rough opening sills of windows and doors,
  ii) at wall penetrations for components and services such as ventilation ducts, piping, wiring and electrical outlets, and
  iii) at the interface with other wall assemblies.

9.27.3 (1) Second Plane of Protection (NBC 2025)

Modified to add rough openings

3) The second plane of protection shall be maintained
a) at the rough opening sills of windows and doors in conformance with Sentence (4),
b) at wall penetrations for components and services such as ventilation ducts, piping, wiring and electrical outlets, and
c) at the interface with other wall assemblies.

Expanded

4) The protection of rough opening sills required by Clause (3)(a) shall
a) conform to Article 9.7.6.1.,
b) extend to the interior face of the rough opening sill of the window or door assembly, and
c) be constructed of water-impermeable material that
  i) is liquid-applied or self-adhered, extends up each side of the sill by at least 150 mm, and is securely adhered to the rough opening jambs, or
  ii) is non-adhesive, where the sheathing membrane of the second plane of protection on the wall face extends into the rough opening to the interior face of the rough opening and down over the non-adhesive sill protection to create a drainage path to the sill.

The clarification benefits designer, builders and owner/occupants for improved detailing around openings.

Questions related to drawing requirements and if to be added in inspections as building envelopes are currently not part of typical inspection requirements.

Option moving forward

LOW IMPACT — ADOPT WITH EDUCATION – long term benefits to owner/occupants with more durable and energy efficient window and door installations.

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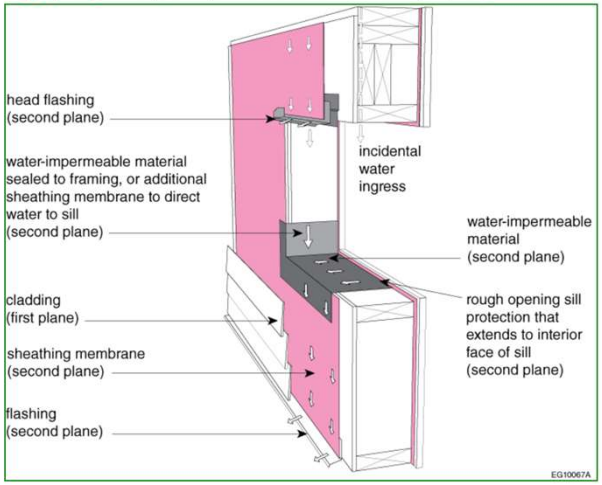
Rough opening sills – change and recommendation

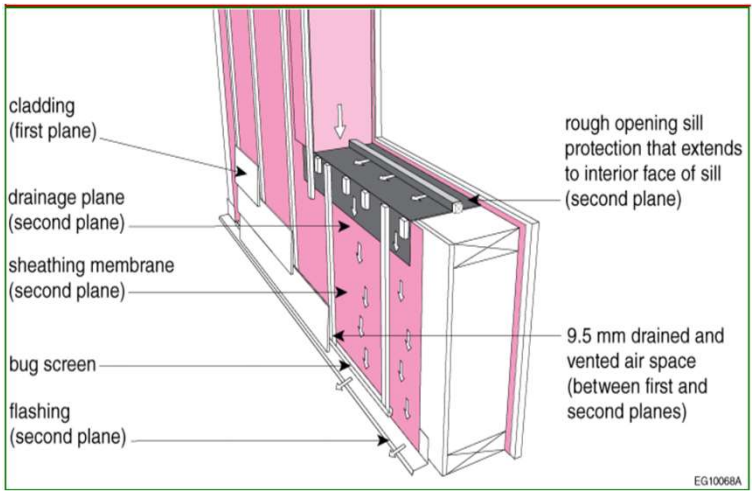
Second Planes of Protection (PCF 1950)

Figure [A-9.27.2.-A]

~~Rough opening s~~Second plane of protection maintained into the rough opening



Face sealed assembly



Rain-screen assembly

Improper detailing can lead to significant building envelope issues, which can be increased by thicker walls assemblies – see 9.36 outline

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Other window/door code changes

Section 9.6 Glass

9.6.1.3. Structural Sufficiency of Glass

Modifications to - Tables 9.6.1.3.-A to 9.6.1.3.-E

- Maximum Glass Area for Windows in Areas for Which the Reference Hourly Wind Pressure (RHWP)

Section 9.7. Windows, Doors and Skylights

9.7.6. Installation

9.7.6.1. Installation of Windows, Doors and Skylights

1) The installation of windows, doors and skylights referred to in Subsections 9.7.4. and 9.7.5. shall conform to CSA A440.4, "Window, door, and skylight installation." **Added**

2) The field assembly of manufactured window and door combination units and the field glazing of windows and doors shall conform to the manufacturer's instructions. **Modified**

3) For protection from precipitation, the *building* envelope at rough openings shall
a) allow drainage at sills to prevent damage,
b) include protection of sill components, and
c) include other details of sill protection that conform to Section 9.27. **New**

4) Windows, doors and skylights shall be sealed to air barriers.

Article 9.36.2.5. Continuity of Insulation

New

12) The rough opening gap around windows and doors, excluding the sill, shall have an effective thermal resistance (RSI value) not less than 0.56 ($m^2 \times K$)/W. (See Note A-9.36.2.5.(12).)

Refer also to changes in 9.36.2.7. later in Module 4.

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Lateral Design Loads

Code references (NBC 2025) – **9.4, 9.23.13, Appendix C climatic and seismic information**

Type of change: Modifications and additions to the NBC 2020

Existing Yukon modification: NA

Associated PCFs – 1475 (ver 1) Resistance to Lateral Loads

Change explanation

- Updates the seismic design parameter used in Part 9 from Sa(0.2) to Smax, adds new prescriptive framing types options for braced wall panels, and extends requirements for bracing to resist lateral loads to locations with low seismic and wind loads.

Why it matters

- The changes to Part 9 lateral design in the NBC are crucial for northern communities due to the increased seismicity and wind loads experienced in these regions. The new requirements aim to enhance the structural resilience of buildings against these environmental hazards, which can lead to significant structural damage or even collapse during extreme events.

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Lateral Design Loads

9.4 Structural Requirements

9.4.2.2. Specified Snow Loads (See Note A-9.4.2.1. and 9.4.2.2.)

Modified - NBC 2025

1) Except as provided in Sentences (2) to (5), specified snow loads shall be not less than those calculated using the following formula:

$$S = \frac{C_b S_{s,1/1\,000}}{1.5} + \frac{S_{r,1/1\,000}}{1.5}$$

where

S = specified snow load,
C_b = basic snow load roof factor, which is 0.45 where the entire width of the roof does not exceed 4.3 m and 0.55 for all other roofs,
$S_{s,1/1\,000}$ = 1-in-1 000 annual probability ground snow load in kPa, determined according to Subsection 1.1.3., and
$S_{r,1/1\,000}$ = associated 1-in-1 000 annual probability rain load in kPa, determined according to Subsection 1.1.3.

9.4.2.2. Specified Snow Loads (See Note A-9.4.2.1. and 9.4.2.2.)

NBC 2020

1) Except as provided in Sentences (2) to (4), specified snow loads shall be not less than those calculated using the following formula:

$$S = C_b S_s + S_r$$

where

S = specified snow load,
C_b = basic snow load roof factor, which is 0.45 where the entire width of the roof does not exceed 4.3 m and 0.55 for all other roofs,
S_s = 1-in-50-year ground snow load in kPa, determined according to Subsection 1.1.3., and
S_r = associated 1-in-50-year rain load in kPa, determined according to Subsection 1.1.3.

9.4.2.3. Reference Hourly Wind Pressure

New - NBC 2025

1) The reference hourly wind pressure (RHWP) referred to in this Part shall be calculated as follows:

$$RHWP = \frac{q_{1/500}}{1.4}$$

NBC 2025 – new reference to wind not previously mentioned in NBC 2020

where

$q_{1/500}$ = 1-in-500 annual probability wind pressure, in kPa, determined in accordance with Subsection 1.1.3.

2) Where the RHWP, as calculated in Sentence (1), is used to design structural members and their connections in accordance with Part 4 and Subclause 9.4.1.1.(1)(c)(i), it shall be multiplied by a factor of 1.4.

9.4.2.6. Seismic Design Parameter (See Note A-9.4.2.6.)

New - NBC 2025

1) Except as provided in Sentence (2) and unless otherwise indicated, the value of the seismic design parameter, S_{max}, at a location listed in Table C-3 of Appendix C shall be taken as S_{max} for unknown Site Class. (See Note A-9.4.2.6.(1).)

2) Where the Site Class is determined in accordance with Sentence 4.1.8.4.(3), the value of the seismic design parameter, S_{max}, at a location listed in Table C-3 of Appendix C, is permitted to be taken as S_{max} for the determined Site Class. (See Note A-9.4.2.6.(2).)

3) Where the specified snow load, S, as calculated in Sentence (1) is used to design structural members and their connections in accordance with Part 4 and Subclause 9.4.1.1.(1)(c)(i), it shall be multiplied by a factor of 1.5.

NBC 2025 – note there is a factor error currently being reviewed.

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Lateral Design Loads

9.4 Structural Requirements

The introduction of new structural design requirements for snow and wind in the NBC 2025 is a response to the increasing intensity of extreme weather events and the need to ensure the safety and resilience of buildings. The updated code reflects the changing climate patterns, which include increased wind speeds, heavier snowfalls, and more intense thermal loads. These changes are necessary to protect buildings designed to outdated codes (historical data collection) that did not account for these evolving conditions. The new "uniform risk" model for wind and snow loads aims to provide a consistent level of safety across different geographical regions and hazard types, ensuring that structures can withstand the impacts of climate change for the next 75 to 100 years.

For more information review PCF 1475, Appendix C notes, and New 2025 National Building Code uses future climate data for first time – ClimateData.ca

Freezing Degree Days | Canada | Climate Atlas of Canada

Lateral Design Loads

Appendix C – Table C-2 Climatic Information

Change Explanation

Updates the climatic design data in Table C-2 by taking into consideration projected future changes over a 50-year time horizon.

National Building Code of Canada 2025 Volume 1

Table C-2
Climatic Design Data for Selected Locations in Canada

Division B

Province and Location	Elev., m	Design Temperature						Degree-Days Below 18°C	Degree-Days Below 15°C	15 Min. Rain, mm	One Day Rain, 1/50, mm	Ann. Rain, mm	Moist. Index	Ann. Tot. Ppn., mm	Driving Rain Wind Pres-sures, Pa, 1/5	Snow Load, kPa, 1/50		Snow Load, kPa, 1/1000		Hourly Wind Pressures, kPa			Winter Average	
		January		July 2.5%																			Temp., °C	Wind Speed, m/s
				Historical(1)		Future																		
		2.5% °C	1% °C	Dry °C	Wet °C	Dry °C	Wet °C									S_s	S_r	S_s	S_r	1/10	1/50	1/500	T_{ws}	V_{ws}
Yukon																								
Aishihik	920	-44	-46	23	15	27	19	7500	6500	10	56	270	0.6	340	60	2.0	0.1	3	0.2	0.28	0.40	0.6	-14	2.2
Dawson	330	-50	-51	26	16	30	19	8120	7100	13	65	270	0.6	440	50	3.0	0.1	4.4	0.2	0.23	0.33	0.48	-17	2
Destruction Bay	815	-43	-45	23	14	27	18	7800	6790	10	64	290	0.6	380	140	2.0	0.1	3	0.2	0.44	0.63	0.96	-14	2.3
Faro	670	-46	-47	25	16	29	20	7300	6310	13	43	300	0.6	380	50	2.4	0.1	3.6	0.2	0.27	0.37	0.55	-14	2.3
Haines Junction	600	-45	-47	24	14	29	18	7100	6120	10	66	230	0.6	400	310	2.3	0.1	3.3	0.2	0.25	0.36	0.54	-11	2.5
Snag	595	-51	-53	23	16	27	19	8300	7280	10	77	390	0.6	440	50	2.3	0.1	3.4	0.2	0.23	0.33	0.48	-17	2.2
Teslin	690	-42	-44	24	15	28	19	6770	5800	13	49	300	0.5	400	50	3.2	0.1	4.6	0.2	0.27	0.36	0.49	-12	2.2
Watson Lake	685	-46	-48	26	16	30	20	7470	6470	13	69	360	0.6	510	70	3.4	0.1	4.9	0.2	0.27	0.37	0.55	-15	2
Whitehorse	655	-41	-43	25	15	30	19	6580	5610	10	56	260	0.5	340	60	2.1	0.1	3.2	0.2	0.30	0.40	0.56	-11	3.7

NBC 2025

Province and Location	Elev., m	Design Temperature				Degree-Days Below 18°C	15 Min. Rain, mm	One Day Rain, 1/50, mm	Ann. Rain, mm	Moist. Index	Ann. Tot. Ppn., mm	Driv-ing Rain Wind Pres-sures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa	
		January		July 2.5%												
		2.5% °C	1% °C	Dry °C	Wet °C								S_s	S_r	1/10	1/50
Yukon																
Aishihik	920	-44	-46	23	15	7500	8	43	190	0.6	275	40	1.9	0.1	0.27	0.38
Dawson	330	-50	-51	26	16	8120	10	49	200	0.6	350	40	2.9	0.1	0.22	0.31
Destruction Bay	815	-43	-45	23	14	7800	8	49	190	0.6	300	80	1.9	0.1	0.42	0.60
Faro	670	-46	-47	25	16	7300	10	33	215	0.6	315	40	2.3	0.1	0.26	0.35
Haines Junction	600	-45	-47	24	14	7100	8	51	145	0.6	315	180	2.2	0.1	0.24	0.34
Snag	595	-51	-53	23	16	8300	8	59	290	0.6	350	40	2.2	0.1	0.22	0.31
Teslin	690	-42	-44	24	15	6770	10	38	200	0.5	340	40	3.0	0.1	0.26	0.34
Watson Lake	685	-46	-48	26	16	7470	10	54	250	0.6	410	60	3.2	0.1	0.26	0.35
Whitehorse	655	-41	-43	25	15	6580	8	43	170	0.5	275	40	2.0	0.1	0.29	0.38

NBC 2020

NBC 2025

Lateral Design Loads

Appendix C – Table C-3 Seismic Information

Change Explanation

Updates the seismic design data in Table C-3 used in Part 9 from Sa(0.2) to Smax

Table C-3
Seismic Design Parameter, S_{max}, for Selected Locations in Canada

Province and Location	S_{max} for Unknown Site Class	S_{max} According to Site Class				
		A	B	C	D	E
Yukon						
Aishihik	0.906	0.235	0.303	0.564	0.821	0.906
Dawson	0.787	0.245	0.311	0.513	0.721	0.787
Destruction Bay	2.69	1.47	1.89	2.69	2.69	2.08
Faro	0.515	0.141	0.18	0.294	0.452	0.515
Haines Junction	1.3	0.54	0.693	1.06	1.28	1.3
Snag	1.1	0.329	0.427	0.766	1.03	1.1
Teslin	0.567	0.148	0.19	0.322	0.498	0.567
Watson Lake	0.529	0.147	0.189	0.3	0.463	0.529
Whitehorse	0.701	0.171	0.219	0.404	0.619	0.701

NBC 2025

Table C-3
Seismic Design Data for Selected Locations in Canada for Part 9 Design

Province and Location	$S_a(0.2)$ for Seismic Design in Part 9
Yukon	
Aishihik	0.446
Dawson	0.396
Destruction Bay	1.54
Faro	0.271
Haines Junction	0.973
Snag	0.502
Teslin	0.284
Watson Lake	0.304
Whitehorse	0.334

NBC 2020

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Lateral Design Loads

Appendix C – Table C-3 Seismic Information

The seismic data in Part 9 of the NBC 2025 was changed from Sa(0.2) to Smax to align with the updated seismic hazard values used for design of Part 4 buildings. This change ensures that a single set of seismic hazard values is used for **both Part 4 and Part 9 buildings**, which is crucial for maintaining structural safety and sufficiency. The seismic design parameter, Smax, is derived from the 2020 seismic hazard values and is used to design buildings under Part 4 of the NBC 2020.

This update is part of the broader effort to improve design methodologies within Part 9 to address earthquake resistance of housing and small buildings in locations with high seismic hazard values

For those areas not identified in Table C-3 – go to: 2025 - 2020 National Building Code of Canada Seismic Hazard Tool

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Lateral Design Loads

Section 9.23. Wood-Frame Construction

The following is a reference point for changes/additions made within the **NBC 2025** related to lateral design requirements. A more in-depth discussion will be provided later in 2026.

- Modified – 9.20.1 General and 9.20.2. Earthquake Reinforcement
- New – 9.23.2.6. Notation for Reference Framing Types
- New – 9.23.2.7. Weight of Construction and Cladding
- New & Modified – 9.23.3. Fasteners and Connectors
- Modified – 9.23.6. Anchorage
- Modified – 9.23.11 Wall Plates
- **Major revisions and New – 9.23.13. Bracing to Resist Lateral Loads Due to Wind and Earthquake.**
  - 9.23.13.1. Requirements for Low to Moderate Wind and Seismic Forces
  - 9.23.13.2. Requirements for High Wind and Seismic Forces
  - 9.23.13.3. Requirements for Extreme Wind and Seismic Forces
  - Note 9.23.13.7. Simplified Method for Determining Minimum Length of Bracing

Recommend full industry consultation and design review, especially for current unique Yukon building practices

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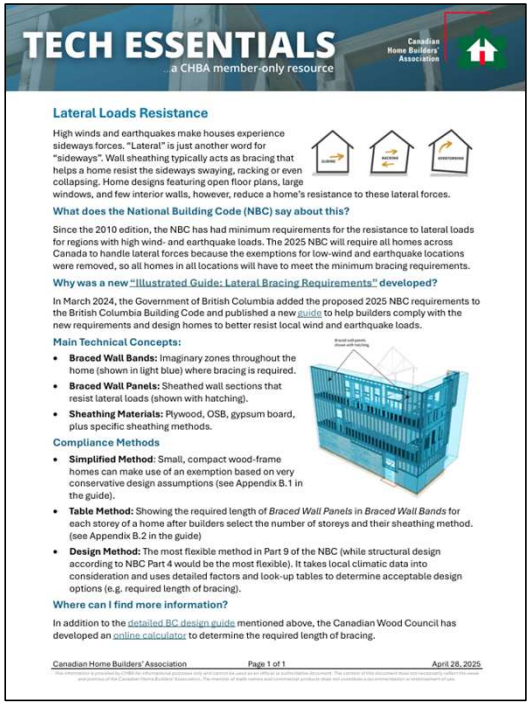
Lateral Design loads : Resources



TECH ESSENTIALS

...a CHBA member-only resource

Canadian Home Builders' Association

Lateral Loads Resistance

High winds and earthquakes make houses experience sideways forces. "Lateral" is just another word for "sideways". Wall sheathing typically acts as bracing that helps a home resist the sideways swaying, racking or even collapsing. Home designs featuring open floor plans, large windows, and few interior walls, however, reduce a home's resistance to these lateral forces.

What does the National Building Code (NBC) say about this?

Since the 2010 edition, the NBC has had minimum requirements for the resistance to lateral loads for regions with high wind- and earthquake loads. The 2025 NBC will require all homes across Canada to handle lateral forces because the exemptions for low-wind and earthquake locations were removed, so all homes in all locations will have to meet the minimum bracing requirements.

Why was a new "Illustrated Guide: Lateral Bracing Requirements" developed?

In March 2024, the Government of British Columbia added the proposed 2025 NBC requirements to the British Columbia Building Code and published a new guide to help builders comply with the new requirements and design homes to better resist local wind and earthquake loads.

Main Technical Concepts:

- **Braced Wall Bands:** Imaginary zones throughout the home (shown in light blue) where bracing is required.
- **Braced Wall Panels:** Sheathed wall sections that resist lateral loads (shown with hatching).
- **Sheathing Materials:** Plywood, OSB, gypsum board, plus specific sheathing methods.

Compliance Methods

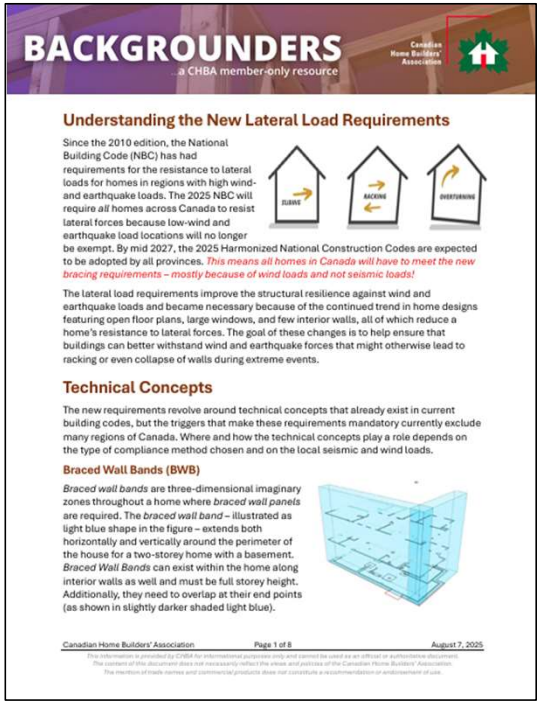
- **Simplified Method:** Small, compact wood-frame homes can make use of an exemption based on very conservative design assumptions (see Appendix B.1 in the guide).
- **Table Method:** Showing the required length of *Braced Wall Panels* in *Braced Wall Bands* for each storey of a home after builders select the number of storeys and their sheathing method. (see Appendix B.2 in the guide)
- **Design Method:** The most flexible method in Part 9 of the NBC (while structural design according to NBC Part 4 would be the most flexible). It takes local climatic data into consideration and uses detailed factors and look-up tables to determine acceptable design options (e.g. required length of bracing).

Where can I find more information?

In addition to the detailed BC design guide mentioned above, the Canadian Wood Council has developed an online calculator to determine the required length of bracing.

Canadian Home Builders' Association Page 1 of 1 April 28, 2025

CHBA Tech Essentials



BACKGROUNDERS

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Canadian Home Builders' Association

Understanding the New Lateral Load Requirements

Since the 2010 edition, the National Building Code (NBC) has had requirements for the resistance to lateral loads for homes in regions with high wind- and earthquake loads. The 2025 NBC will require *all* homes across Canada to resist lateral forces because low-wind and earthquake load locations will no longer be exempt. By mid 2027, the 2025 Harmonized National Construction Codes are expected to be adopted by all provinces. *This means all homes in Canada will have to meet the new bracing requirements – mostly because of wind loads and not seismic loads!*

The lateral load requirements improve the structural resilience against wind and earthquake loads and became necessary because of the continued trend in home designs featuring open floor plans, large windows, and few interior walls, all of which reduce a home's resistance to lateral forces. The goal of these changes is to help ensure that buildings can better withstand wind and earthquake forces that might otherwise lead to racking or even collapse of walls during extreme events.

Technical Concepts

The new requirements revolve around technical concepts that already exist in current building codes, but the triggers that make these requirements mandatory currently exclude many regions of Canada. Where and how the technical concepts play a role depends on the type of compliance method chosen and on the local seismic and wind loads.

Braced Wall Bands (BWB)

Braced wall bands are three-dimensional imaginary zones throughout a home where *braced wall panels* are required. The *braced wall band* – illustrated as light blue shape in the figure – extends both horizontally and vertically around the perimeter of the house for a two-storey home with a basement. *Braced Wall Bands* can exist within the home along interior walls as well and must be full storey height. Additionally, they need to overlap at their end points (as shown in slightly darker shaded light blue).

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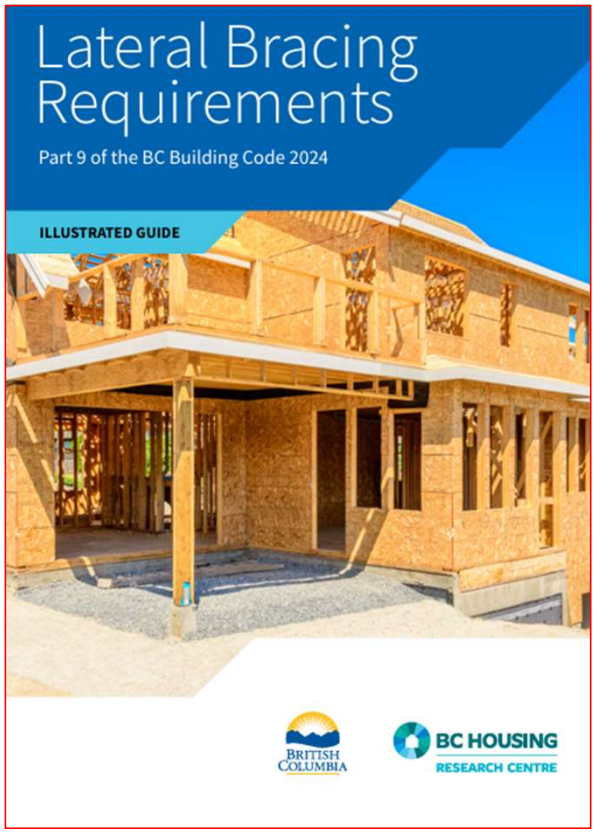
CHBA Backgrounder



Based on NBC 2025 with modifications

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Part 9 – Lateral Design

Challenges/Industry Impacts

- Significant modifications and additions for industry to review.
- Impacts to communities outside of Whitehorse with additional snow loads.
- Anchorage for buildings on permafrost without traditional foundations
- Additional concerns with current building practices (double frame walls and S406 PWF, and external insulation.
- Some areas within 9.23.13. under review.

Benefits to the Communities/Occupants

- Improved safety for occupants.
- Opportunity for increased consistency in design, construction and permitting processes.

Moving forward: Consider full industry review prior to adoption. Escalate if major gaps identified.

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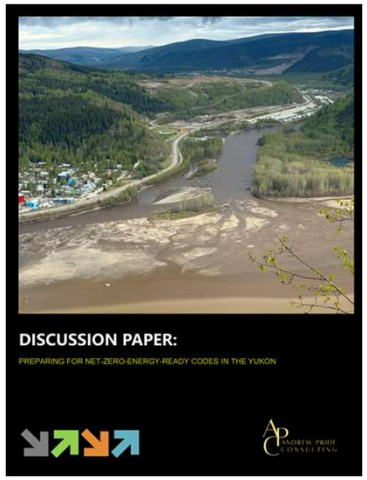
9.36 Energy Efficiency

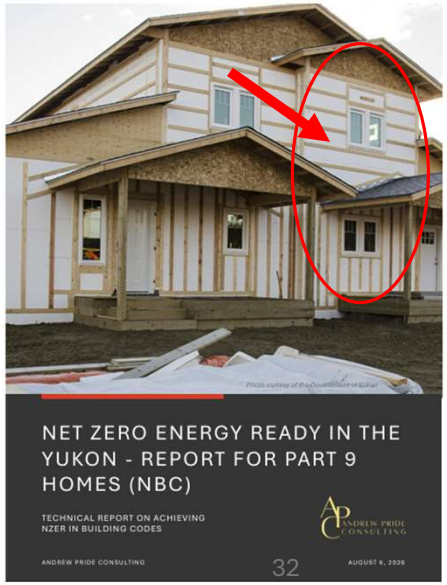
Today's code change session on Energy Efficiency will mainly revolve on discussing technical changes and possible impacts to the building industry and Yukon community.

Additional time can be provided today to expand on the issues related the questions on which energy tier should the Yukon select.

We encourage you to participate in the engagement process and ensure you read the reports prepared by Andrew Pride Consulting.

See https://engageyukon.ca/national-building-code-engagement





9.36.1.3. Compliance Options - Energy Efficiency

9.36.1.3. Compliance

1) Except as provided in Article 9.36.1.4. and Sentences (3) and (4), *buildings* shall comply with

a) the prescriptive or trade-off requirements in Subsections 9.36.2. to 9.36.4.,

b) the performance requirements in Subsection 9.36.6.,

c) the NECB, or

d) for compliance with Energy Performance Tiers 1 to 5,

i) the tiered performance requirements in Subsection 9.36.7.,

ii) the tiered energy use intensity requirements in Subsection 9.36.8.,

iii) the tiered points-based prescriptive trade-off requirements in Subsection 9.36.9.,

iv) the tiered prescriptive path requirements in Subsections 9.36.10. to 9.36.14., or

v) the NECB.

2) Except as provided in Article 9.36.1.4. and Sentences (3) to (5), *buildings* shall comply with

a) the tiered operational GHG emissions performance requirements in Subsection 9.36.15.,

b) the tiered operational GHG emissions prescriptive requirements in Subsection 9.36.16., or

c) the NECB.

5) Extensions added to *existing buildings* that have a *floor area* not greater than 60% of the original gross *floor area* of the *existing building* are exempted from the requirements of Subsections 9.36.15. and 9.36.16.

9.36.1.2. Definitions - New

9) For the purposes of this Section, the term "house" shall mean all houses, with or without a *secondary suite*, that

a) have HVAC systems that serve only the house, only the *secondary suite*, or both the house and the *secondary suite*,

b) have service water heating systems that serve only the house, only the *secondary suite*, or both the house and the *secondary suite*, and

c) do not share common spaces intended for occupancy with other *dwelling units* or houses, except for a *secondary suite*.

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9.36 - 1. Thermal characteristics of fenestration and doors

Code references (NBC 2025) – **9.36.2.7.**

Type of change: Modification to the NBC 2020

Existing Yukon modification: NA

Associated PCF 1823

Change explanation

Places an upper limit on the solar heat gain coefficient for fenestration and doors that depends on the fenestration and door area to gross wall area ratio (FDWR) and the climate zone of the building location.

Why it matters to the North

- Encourages better management of overheating from large window areas
- Balance winter solar gains with summer comfort (is this a problem here?)

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9.36 - 1.Thermal characteristics of fenestration and doors

Challenges/Industry Impacts

- More coordination between designers and window suppliers – how will this be enforced?
- Less flexibility to use large areas of high-solar gain glazing.
- Additional design calculations may be required.

Benefits to the Communities/Occupants

- Reduced overheating risk.
- Improved occupant comfort.
- Potentially lower cooling demand.

Observation – even though the Yukon does not experience extreme summer temperatures, prolonged sun exposure throughout the ay during the summer months may have a negative impact to occupants

Moving forward: Consider adoption with ongoing education and review within larger 9.36 discussions. Escalate if major gaps identified.

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9.36 - 2. Tiered Energy Compliance: Energy Use Intensity Path

Code references (NBC 2025) **– 9.36.8.**

Type of change: NEW to the NBC 2020

Existing Yukon modification: to confirm

Associated PCF 1869

Change explanation

Introduces an optional energy use intensity path in which compliance with the energy performance tiers is demonstrated by meeting an annual energy consumption target, an annual gross space heat loss target, and a design cooling load budget and that recognizes the inherent energy savings of smaller and more compact housing forms.

Why it matters for North

- Recognizes the efficiency advantages of compact housing forms
- Provides an alternative to the traditional reference-house approach.

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9.36 - 2. Energy use intensity path

Challenges/Industry Impacts

- Requires energy modelling expertise.
- New compliance process for builder and permit reviewers.
- Additional documentation requirements.

Benefits to Communities/Occupants

- Encourages lower-energy homes.
- Supports more housing design flexibility
- May reduce long-term operating costs.

Moving forward: Consider adoption as an optional compliance pathway.

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9.36 - 3. Tiered Energy Compliance: Points-based Prescriptive Trade-off Path

Code references (NBC 2025) – **9.36.9.**

Type of change: Modification to the NBC 2020

Existing Yukon modification: NA

Associated PCF 1838 along with 1923, 2000, 2001

Change explanation

- Revises the optional energy conservation measures, and corresponding points, available in the prescriptive trade-off path for demonstrating compliance with the energy performance tiers, including updates related to drain-water heat-recovery units, oil- and gas-fired furnaces, air-source heat pumps, heat/energy recovery ventilators, the building envelope, airtightness, and fenestration and doors.
- Sets the minimum sums of energy conservation points required for compliance with Energy Performance Tiers 3, 4 and 5.

Why it matters for the north

- Expands options for meeting energy targets.
- Recognizes newer technologies and equipment.

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9.36 - 3. Points-based prescriptive trade-off path

Challenges/Industry Impacts

- Learning curve for revised points systems.
- More product comparisons and design decisions.
- Additional permit reviewer training required.

Benefits to Communities/Occupants

- More efficient equipment choices
- Better building performance.
- Opportunity for innovation without one prescribed solution.

Moving forward: Likely option to adopt.

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9.36 - 4. Tiered Energy Compliance: Tier 01 & Tier 05

Code references (NBC 2025) – **9.36.10 to 9.36.14.**

Type of change: New to NBC 2020

Existing Yukon modification: unsure

Associated PCF 2042 - Tier 1 PCF 1830, Tier 5 PCF 2043

Change explanation

Provides an optional simple set of prescriptive energy efficiency requirements for demonstrating compliance with Energy Performance Tiers 1 and 5.

Why it matters to the north

- Provides a straightforward “recipe-book” compliance option
- May be attractive where modelling resources are limited.

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9.36 – 4.Prescriptive compliance for Energy Performance Tiers

Challenges/Industry Impacts

- Less design flexibility.
- Prescriptive packages may not suite every project type.
- Higher tiers may increase material and equipment costs

Benefits to Communities/Occupants

- Easier compliance process.
- Greater consistency from project to project. (this may be good for modular)
- Better certainty regarding expected performance

Moving forward: could be strong candidate for Yukon implementation.

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9.36 - 5. Operational greenhouse gas emissions

Code references (NBC 2025) – 9.36

Type of change: New to NBC 2020

Existing Yukon modification: NA

Associated PCF 2004 & 2026

Change explanation

Introduces both performance and prescriptive requirements, within a framework of gradually increasing reduction levels, to establish limits for operational greenhouse gas emissions resulting from the supply and consumption of energy used by the building, as determined at the time of design.

Why it matters to the north

- Introduces carbon-emissions considerations in addition to energy efficiency.
- May influence future decisions on heating systems and fuel choices.

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9.36 - 5. Operational greenhouse gas emissions

Challenges/Industry Impacts

- New compliance concepts and metrics.
- Potential impacts on equipment selection.
- Regional energy-supply differences may affect implementation.

Benefits to Communities/Occupants

- Supports climate objectives
- Encourages lower-emission buildings
- May improve long-term sustainability of the housing stock.

Moving forward: Conduct Yukon specific evaluation before adoption.

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9.36 Yukon Implementation Lens

The changes create three distinct implementation questions to discuss during the ongoing engagement process:

- **Technical:** Are the new paths and prescribed measures appropriate for northern climate and construction?
  - **Are there other related code requirements that should be considered, such building envelopes (9.27) and lateral design (9.23)**
- **Capacity:** Are energy advisors, designers, suppliers, builders and officials prepared to apply and verify them?
- **Policy:** Which energy and GHG tiers should Yukon adopt, and on what transition schedule?

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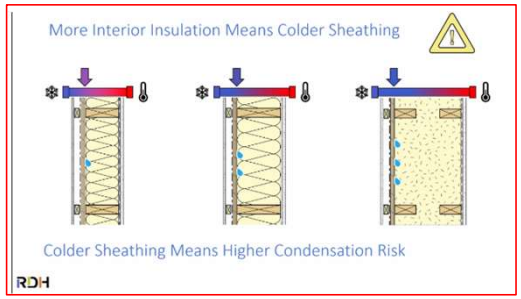
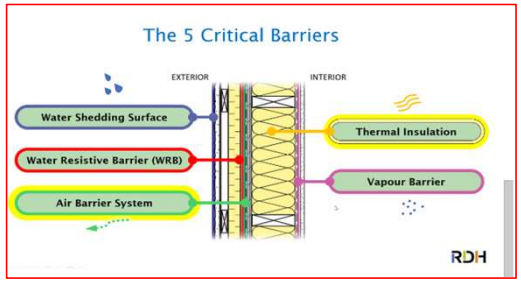
9.36 Building Envelope Concerns

With the increased use of higher energy efficiency assemblies (thicker walls), there is a growing concern related cooler exterior faces of walls that can be negatively impacted by deficient cladding details allowing moisture to enter and the thicker assemblies are not able to “dry” as with older assemblies - leading to potential for rot. Here are some examples provided by RDH deep wall case study.





9.36 Yukon Implementation Lens

The main shift in thinking in the Yukon as we discuss this important topic, is the main shift is not simply toward "more insulation". It is toward more:

- compliance options,
- more explicit performance targets,
- and a stronger evidence trail connecting design assumptions to the completed building.

Connecting plans, energy reports and field application through an integrated design and consultation process.

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Part 9 summary and next steps

Topics reviewed

- Radon and soil gas mitigation
- Lateral loads
- Wall studs
- Protection from precipitation of rough opening sills
- Energy Performance Tiers - technical changes in 9.36

Possible next steps

- Confirm code references, unresolved PCFs and Yukon application.
- Prepare targeted education and worked examples.
- Test Yukon designs and gather community and industry feedback.
- Document technical gaps before proposing code modifications.

Webinar sessions – October 20th and 27th.

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Question or Comments

Contact Us

If you have questions about process, or want to share your feedback directly, contact us.

Contact Information

Email **nbc.engagement@yukon.ca**

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