

WEBINAR SERIES

# Public Reviews for the 2025 National Construction Codes

Canadian  
Home Builders'  
Association



**Today!**

*Webinar #4: Alterations to Existing Buildings  
(Renovations) – Part 2*



**March 8th, 12:00-1:00 PM ET**



*Webinar #5: Code Change Overview – Winter And  
Spring 2024 Public Reviews*



**March 21st, 12:00-1:30 PM ET**



*Webinar #6: Energy Modelling and Airtightness Testing*



**April 12th, 12:00-1:30 PM ET**



*Webinar #7: Accessible Dwellings*



**April 26th, 12:00-1:00 PM ET**

## MISSED A WEBINAR IN THIS SERIES?

*Webinar #1: Proposed  
code changes - overview*

*Webinar #2: Introducing  
proposed code changes for  
renovation*

*Webinar #3: Deep dive into  
Part 9 energy efficiency and  
GHG requirements*

Check out the  
archive here



**RESERVE YOUR SEAT!**



# Introducing Renovation into the National Codes – Part 2

Frank Lohmann, March 8<sup>th</sup>, 2024

Canadian  
Home Builders'  
Association







# INTRODUCING RENOVATION INTO THE NATIONAL CODES PART 2

1. General Info & Recap
2. Review of Proposed Changes
  - Detailed Review of 2024 **Winter** Public Review
  - Preview of 2024 **Spring** Public Review
3. CHBA's Renovator's & Adaptiv Home Manuals



# 1. WHERE WE ARE IN THE CODE PROCESS



Codes Timelines	Public Review	
	Opens	Closes
Fall 2023	October 23, 2023	December 18, 2023
Winter 2024	February 27, 2024	April 29, 2024
Spring 2024 <small>NEW!</small>	May 22, 2024	July 27, 2024
Fall 2024 (Ref'd Docs)	October 21, 2024	December 16, 2024
Code Publication	Planned for <b>December 2025</b>	
P/T Code Adoptions	Planned for <b>18 months after</b> publication	



# NATIONAL PUBLIC REVIEWS



## 2023 Fall Public Review – General Requirements

- Application of Part 10 and Exemptions (PCF 1812, (1839 for NECB))
- Definitions (PCF 1813)
- Scope, Application and Principles for the New Part 10 (PCF1824)
- National Fire Code – Protection of Adjacent Buildings (PCF 1797)

## 2024 Winter Public Review – Technical Provisions

- Today's Focus
- NBC **10.9.36**
    - Service Water Heating Systems ([PCF 1825](#))
    - HVAC Systems Requirements ([PCF 1826](#))
    - Airtightness Requirements ([PCF 1827](#))
    - Fenestration, Doors and Skylights ([PCF 1828](#))
    - Above-ground Opaque Walls ([PCF 1829](#))
    - Below-ground Building Assemblies (PCF [1850](#))



## 2024 Spring Public Review – Non-Energy-Efficiency Provisions

- NBC **10.9.25** – Seal air barrier below-ground when improving airtightness (e.g. radon) (PCF 2032, 2051)
- NBC **10.9.32** – install ventilation when removing venting for heating appliances/chimneys (PCF 2033)

# CHBA PROCESS FOR PUBLIC REVIEW COMMENTS

Canadian  
Home Builders'  
Association




CHBA communicates Public Review to members



National staff reviews changes and drafts **proposed comments and holds webinars**



CHBA convenes **Working Group on Renovation Code changes** for detailed review of PCFs



Canadian Renovators Council – Management Committee reviews proposed comments and **may gather further provincial HBA feedback**



National staff **submit comments** (Local or Provincial HBAs may submit reinforcing comments)

**CHBA's aim is to ensure alignment of all three levels of the Association on comments.**



# RECAP – SCOPE & PRINCIPLES



## WHY?

- Consistent code requirements across Canada
- Renovation market is equal or bigger than new construction
- Bigger gains when improving existing buildings

## WHEN DO REQ'S APPLY?

- Code does not mandate renovations
- Requirements apply to voluntary renovations based on project scope

## WHAT?

- 2025 code will only have energy efficiency requirement for renovation
- Not all building types, yet (no farm buildings, no heritage buildings)
- Not all “alteration” types (no req's for change of occupancy)
- “existing building” = completed 5 years and older

## WHERE?

- New Part 10 in National Building Code

## HOW?

- 8 Principles



# OVERVIEW – RECAP



- Trigger:
  - Requirements apply where the alteration includes one of these **technical areas**
  - **No retroactive requirements**
- 10.9.1 General Requirements
  - Principles
  - Application & Exemptions (PCFs 1812, 1824)
  - Definitions (PCF 1813)
- 10.9.36. Technical Provisions (Energy Efficiency only)
  - Service Water Heating Systems ([PCF 1825](#))
  - HVAC Systems Requirements ([PCF 1826](#))
  - Airtightness Requirements (PCF 1827)
  - Fenestration, Doors and Skylights ([PCF 1828](#))
  - Above-ground Opaque Walls ([PCF 1829](#))
  - Below-ground Building Assemblies (PCF [1850](#))
- 10.9.X. Health and Safety Considerations (*under Discussion*)
  - Consider air barrier below ground when improving airtightness (e.g. radon) (PCF 2032)
  - Consider ventilation when removing old heating appliances/chimneys (PCF 2033)







# GENERAL REQUIREMENTS – RECAP



- **Additions/Extensions**

- Existing building portion 
  - comply with new Part 10 Renovation Requirements
- New, extended building portion 
  - comply with all codes requirements (as if new) !
  - **Including tiers and GHG levels**



- **Alterations**

- comply with new Part 10 Requirements
- overall building performance shall not be decreased
  - If decreased, shall be compensated elsewhere !

- **Definitions**

- *Existing building* means a building that was constructed more than five years before the effective date of this Code



# SERVICE WATER HEATING



## Service Water Heating Systems ([PCF 1825](#))

- Maintenance and repair exempt
- Replacement equipment shall conform to [Table 9.36.4.2](#). minimum efficiencies
- Insulate replaced or new piping to [Article 9.36.4.4](#)
- Temperature controls where required
- Explanatory Note for proper closure of chimney and make-up air vents



### 9.36.4.4 Piping

NBC 2020

- 1) Insulate first 2 meters downstream and upstream of the tank with min 12mm insulation
- 2) Insulate complete recirculating systems
- 3) Insulate all piping in unconditioned space

Table 9.36.4.2.  
Service Water Heating Equipment Performance Requirements  
Forming Part of Sentences 9.36.4.2.(1) and (2)

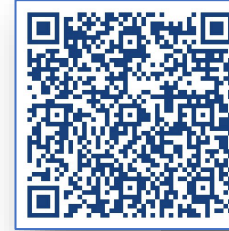
Type of Equipment	Input <sup>(1)</sup>	Performance Testing Standard	Performance Requirement <sup>(2)</sup>
Storage-Type Service Water Heaters			
	≤ 12 kW ( $V_r > 50$ L but ≤ 270 L)	CAN/CSA-C191	$SL \leq 35 + (0.20 V_r)$ (top inlet)
			$SL \leq 40 + (0.20 V_r)$ (bottom inlet)



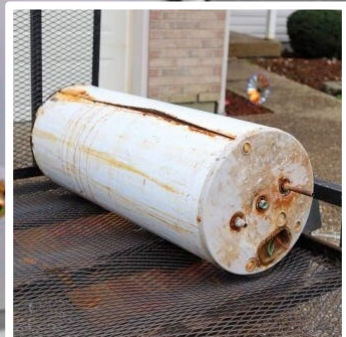
# SERVICE WATER HEATING



## Service Water Heating Systems ([PCF 1825](#))



- Incremental Construction Cost Impact
  - Equipment efficiency (\$)
    - = what is available on the market
    - = what is required by the Federal Energy Efficiency Regs
  - Pipe insulation
    - First 2 meter upstream/downstream (\$)





# HVAC SYSTEMS AND EQUIPMENT



## HVAC Systems ([PCF 1828](#))

- Maintenance and repair exempt
- HVAC equipment and system shall conform to Subsection 9.36.3.
  - **!** Design of HVAC systems, insulation of ducts, air intakes outlets, piping, location of equipment, temperature/humidity controls, HRV/ERV, performance and minimum efficiencies (Table 9.36.3.2.)
- **Existing Systems**
  - Replaced and accessible ducts need to be sealed
- **Additions**
  - New ducts need to be sealed
  - Design for ventilation (9.32.) and HVAC (9.33.)
  - Exempt if existing system or equipment size can serve new space
  - **Energy tiers and GHG levels may apply**
- Proper closure of chimney and make-up air vents



CSA F280



# HVAC SYSTEMS AND EQUIPMENT



## HVAC Systems ([PCF 1828](#))

- Incremental Construction Cost Impact
  - sealing new and/or accessible ducts (\$)
  - conformance to entire Subsection 9.36.3. for existing buildings (\$)
  - minimum equipment efficiencies (\$)
    - = what is available on the market
    - = what is required by the Federal Energy Efficiency Regs
  - design/calculations for ventilation and heating, and air conditioning for additions (\$)





# FENESTRATION, DOORS AND SKYLIGHTS



## Replacement of windows, doors and skylights ([PCF 1826](#))

- Maintenance and repair! is exempt
- Energy performance\* of replacement windows, doors and skylights shall conform to [Article 9.36.2.7](#).
- Window/wall interface shall be airtight

\* Note A-10.1.1.5 requires that replacement not be lower performance than existing!



Components	Thermal Characteristics <sup>(1)</sup>	Heating Degree-Days of <i>Building Location</i> , <sup>(2)</sup> in Celsius Degree-Days					
		Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000
Fenestration <sup>(3)</sup> and doors	Max. U-value, W/(m <sup>2</sup> ×K)	1.84	1.84	1.61	1.61	1.44	1.44
	Min. Energy Rating	21	21	25	25	29	29
Skylights		2.92	2.92	2.75	2.75	2.41	2.41



# WINDOWS, DOORS AND SKYLIGHTS



## Replacement of Glazing ([PCF 1826](#))

- Glazing replacement shall conform to
  - should be equivalent to existing glazing
  - **Table 9.36.2.7.-C Compliance Options for Site-built Windows and Glazed Portion of Doors**
- Explanatory Note
  - supplier can determine characteristics of existing glazing
  - energy performance characteristics of existing fenestration could be in documentation retained by AHJ



Component	Description of Component	Compliance Options							
		Climate Zones 4 and 5 ≤ 3999 HDD			Climate Zones 6 and 7A 4000 to 5999 HDD			Climate Zones 7B and 8 ≥ 6000 HDD	
		1	2	3	1	2	3	1	2
Frame	non-metallic	✓	✓	—	✓	✓	—	✓	✓
	thermally broken metallic	—	—	✓	—	—	✓	—	—
Glazing	double	—	✓	—	—	—	—	—	—
	triple	✓	—	✓	✓	✓	✓	✓	✓
	argon-filled	—	✓	—	✓	—	✓	—	✓
Low-e coating	none	✓	—	—	—	—	—	—	—
	number of panes with ≤ 0.10	—	≥ 1	—	—	—	—	≥ 2	—
	number of panes with ≤ 0.20	—	—	2	≥ 1	2	≥ 2	—	≥ 2
Spacer	size, mm	12.7	—	12.7	≥ 12.7	12.7	≥ 12.7	≥ 12.7	≥ 12.7
	non-metallic	—	✓	—	—	—	—	—	—

# WINDOWS, DOORS AND SKYLIGHTS



## Windows Doors & Skylights ([PCF 1826](#))

- Incremental Construction Cost Impact
  - Wall/window interface shall be airtight (\$)
    - Current practice
  - Replacement of glazing (\$\$)
    - additional time and feasibility of determining U-value
  - Compliance with U values / ER ratings (\$??)
    - Lowest-performance, market-available product vs. code-compliant



COST

BENEFIT



# AIRTIGHTNESS



## Airtightness Requirements ([PCF 1827](#))

- Apply where:
  - “the alteration impacts the continuity of the air barrier system “
  - “no continuous air barrier system exists within the extent of the alteration”
- What is required:
  - seal any “discontinuous areas of the air barrier system” (according to the prescriptive requirements in 9.36.2.9.)
  - test the air barrier and achieve an airtightness level of
    - 2.5 ACH for detached homes
    - 3.0 ACH for attached homes






# AIRTIGHTNESS



## Detailed Appendix Note on Airtightness ([PCF 1827](#))

- Consider house-as-a-system
  - many possible air barrier materials
  - many materials have multiple (envelope) functions
  - *simple cases* (few or easy-to-handle 'systems' implications)
    - single room/space – maintain, restore, improve air barrier (seal holes and cuts)
    - deep energy retrofits – replace entire air barrier system (with all other systems)
  -  *more complex cases* (known 'systems' implications)
    - additions or half-house renovations
    - watch for condensation, thermal comfort issues
  - Reference to CHBA's Renovators' Manual →
- Effect of improving airtightness on other building systems
  - Less (unintended) air flow
    - watch for HVAC systems performance
    - watch for indoor air quality issues (e.g. radon)



# AIRTIGHTNESS



- Airtightness ([PCF 1827](#))
  - Incremental Construction Cost Impact
    - seal any “discontinuous areas of the air barrier system” (\$)
      - current practice
    - installing continuous air barrier products where none are present within the extent of the alteration (\$)
      - current practice
    - test the air barrier and achieve an airtightness level of (\$)
      - more costly in addition to labour of sealing, but current practice, where project is also being assessed under Energuide



# THERMAL RESISTANCE (ABOVE-GROUND)



- RSI-values of walls, attics, floors over unheated spaces, and cathedral ceilings ([PCF 1829](#))
  - Maintenance and repair are exempt



General Rule

- Where above-grade assemblies are being altered within a project:
  - assess existing R-value
  - bring up to RSI values in Table 9.36.2.6.
  - follow all Part 9 requirements for installation of insulation

Exceptions

- Exception: Sentence (7) – improve insulation levels “*where practical*”
  - improve ‘*to the extent possible*’
  - construction limitations, structural constraints, loss of space functionality, or other requirements of Part 9
  - explanatory note: ‘*to the extent possible*’ may mean ‘not at all’
- Can use prescriptive trade-off calculation (A/R method)





# THERMAL RESISTANCE (**BELOW**-GROUND)



- RSI-values of building assemblies below-grade or in contact with the ground ([PCF 1850](#))

- Maintenance and repair are exempt

General Rule

- Where above-grade assemblies are being altered within a project:
  - follow all Part 9 requirements for installation of insulation
  - assess existing R-value
  - bring up to RSI values in [Table 9.36.2.8](#).

Exceptions

- Exception: Sentence (7) – improve insulation levels “*where practical*”
  - improve ‘*to the extent possible*’
  - construction limitations, structural constraints, loss of space functionality, or other requirements of Part 9
  - explanatory note: ‘*to the extent possible*’ may mean ‘not at all’

- ~~Can use prescriptive trade-off calculation (A/R method)~~



# THERMAL RESISTANCE (ABOVE-GROUND AND **BELOW**-GROUND)





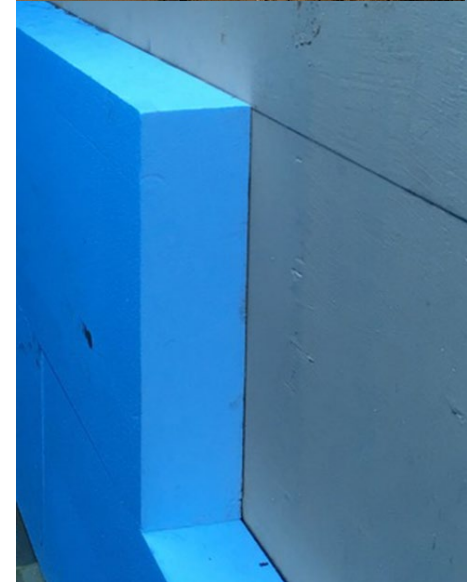
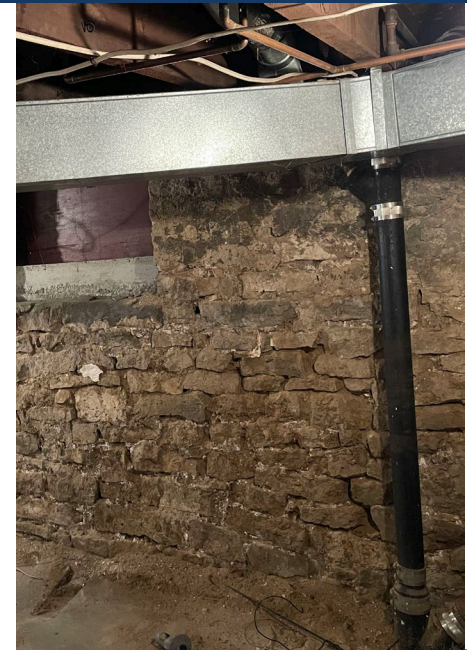
- Explanatory information ([PCF 1829](#), [PCF 1850](#))
  - **Installing insulation**
    - inspect insulation in existing assemblies
    - typical failure modes (gaps, settlement, deterioration)
    - guidance document references
  - **Other Part 9 requirements affecting insulation**
    - 9.10.3., Fire and Sound Ratings,
    - 9.10.14./15, Spatial Separation Between Buildings/Houses,
    - 9.10.17.10., Protection of Foamed Plastics,
    - 9.19., Roof Spaces,
    - 9.25., Heat Transfer, Air Leakage and Condensation Control,
    - 9.25.5., Properties and Position of Materials in the Building Envelope,
    - 9.27.3.8., Flashing Installation, or
    - 9.29., Interior Wall and Ceiling Finishes



# THERMAL RESISTANCE (ABOVE-GROUND AND **BELOW-GROUND**)



- Explanatory information ([PCF 1829](#), [PCF 1850](#))
    - **Explaining '*to the extent possible*'**
      - Provides flexibility for in difficult situations
        - existing mechanical and electrical elements not changed in the alteration
        - existing structural components obstructing the installation of insulation,
        - stairwells located against an existing exterior wall,
        - existing doors framed close to the existing wall changed in the alteration,
        - very small rooms in very old houses, where adding 100 mm (4 in.) of insulation on the interior of exterior walls would make the room unusable (e.g., as a small bedroom or washroom) without rerouting building services or substantially reconstructing walls or structural supports.
-  it is an acceptable outcome for specific locations that installing additional insulation may not be possible
- In those cases: need to manage the risk of undesirable consequences:
    -  • condensation
    - degradation of masonry





# THERMAL RESISTANCE (**BELOW**-GROUND)



- Explanatory Note on for RSI values below ground ([PCF 1850](#))
  - NBC 9.36.2.8. does not require insulation under basement slabs
  - Where unheated floors on ground (basement floors) are being replaced in whole or in parts, adding insulation is beneficial



# THERMAL RESISTANCE



- Incremental Construction cost ([PCF 1829](#), [PCF 1850](#))
  - Where above-grade assemblies are being altered within a project, all Part 9 requirements for insulation apply and R-values need to be brought up to values in Table 9.36.2.6.
    - Potentially very costly (e.g. siding replacement) (\$\$\$)

This was one of the “opportunity” changes the policy makers wanted to see: if you open a wall or floor, add some insulation





# 2024 SPRING PUBLIC REVIEW (MAY 22- JUL 27)



## Two Non-Energy-Efficiency Changes

### 1. Minimum Ventilation 10.9.32.(?) (PCF 2033)

- What is required?
  - **Make sure code-required ventilation is provided**
    - Principal Ventilation Fan
    - Ventilation Systems integrated with Forced-air Heating
    - Independent Ventilation Systems
    - Newly installing exhaust-only ventilation is not permitted
  - Exception: bath & kitchen exhaust-only solutions are exempt
- When would that apply?
  - A. When airtightness has significantly improved**
  - B. When vents for heating appliance or water heaters are being sealed**





# 2024 SPRING PUBLIC REVIEW (MAY 22-JUL 27)



## Two Non-Energy-Efficiency Changes

### 2. Airtightness below-ground 10.9.25 (?) (PCFs 2032, 2051)

- What is required?
  - **Seal all accessible/exposed areas within the extent of the alteration:**
    - all penetrations of a floor-on-ground
    - access hatches and sump pits
    - penetrations of the air barrier system
    - any cracks in the floors-on-ground
    - any cracks in masonry walls and concrete walls
- When would that apply?
  - **When airtightness is *significantly* improved**

Radon!



# ***IF TIME ALLOWS:*** **WRITING PUBLIC REVIEW COMMENTS**

Canadian  
Home Builders'  
Association



**Your comments can make a difference!**

*Well-written comments help codes committees make good decisions!*

- Describe how the proposed change(s) applies to your situation
- Describe what works, what doesn't with the proposed change
- Explain why you can't support the change
- Propose modifications or alternative approaches
- Justify your proposed modifications
- Support them with evidence, if possible
- Make your comments concise and precise
- If your comment gets long, help the committee by numbering your ideas/issues or by using headings
- Separate different comments/suggestions, stick to one per paragraph



- Winter and Spring Public Review
  - 10.9.36. Technical Provisions (Energy Efficiency only)
    - Service Water Heating Systems ([PCF 1825](#))
    - HVAC Systems Requirements ([PCF 1826](#))
    - Airtightness Requirements ([PCF 1827](#))
    - Fenestration, Doors and Skylights ([PCF 1828](#))
    - Above-grade Opaque Walls ([PCF 1829](#))
    - Below Grade Building Assemblies ([PCF 1850](#))
  - 10.9.X. Health and Safety Considerations (*under Discussion*)
    - Consider air barrier below ground when improving airtightness (e.g. radon) (PCF 2032)
    - Consider ventilation when removing old heating appliances/chimneys (PCF 2033)



**CBHCC**  
Canadian Board for Harmonized  
Construction Codes

**CCHCC**  
Comité canadien de l'harmonisation  
des codes de construction



Go to CBHCC's  
Public Review Site





**The CHBA Renovators' Manual takes a deep dive into applying building science to renovating for a wide variety of circumstances:**

- Building science fundamentals
- House as a system
- How houses fail
- Building hazards – asbestos, mould, radon & pests
- Disasters – fire, floods & wind
- Renovating for energy efficiency
- Renovator contracts and checklists



**THE DEFINITIVE GUIDE FOR  
HOME RENOVATION IN CANADA**



## The definitive training on accessible renovations in Canada

Developed for renovators, contractors, architects, designers, and other professionals who want to learn about the aging-in-place market and the growing business opportunities across the country. Includes:

- up-to-date information on Canadian building codes and standards with an emphasis on improving design with safety, security, ease of use, comfort, accessibility, and occupant health.
- specific building knowledge on ramps and slopes, zero-step thresholds, curbless showers, accessibility equipment, and home automation solutions.
- training in client communication, empathy, privacy, insurance, and legal considerations.

## Adaptiv Home Opportunity



8 million Canadians age 15+ living with a disability



10 million Canadian age 60+



~75% of Canadians 60+ want to live at home for the rest of their lives

# QUALIFIED ADAPTIV HOME SPECIALIST

Canadian  
Home Builders'  
Association



The Adaptiv Home Renovation Course is the first step in becoming part of a network of professionals who offer services to homeowners who want to live in their home safely and comfortably for as long as possible.

Upon successful completion of the course, participants will be recognized on the CHBA Qualified Adaptiv Home Specialist directory. CHBA has a full suite of resources to help promote this prestigious designation.

✓ Logo

✓ Brochure

✓ Press release

✓ Social media assets



# CHBA MANUALS: ORDER NOW!



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# Questions?

[alex.bols@chba.ca](mailto:alex.bols@chba.ca)

[jack.mantyla@chba.ca](mailto:jack.mantyla@chba.ca)

[frank.lohmann@chba.ca](mailto:frank.lohmann@chba.ca)

Canadian Home Builders' Association  
Suite 500, 141 Laurier Ave W, ON K1P 5J3  
[chba.ca](http://chba.ca) | [chba.ca](http://chba.ca) | 613-230-3060

