



2020 National Codes Public Review

Key Proposed Changes

[Public review on proposed changes to Codes Canada publications - winter 2020](#)

Deadline for submission of comments - March 13, 2019 (4p.m. EST).

Contents

- What is this Document?..... 6**
 - Members Call to Action 6
 - BILD Alberta and CHBA National Advocacy..... 6
- What is the 2020 National Codes Public Review? 7**
- How do I Participate? 8**
 - Details 8
 - How to Submit Comments 8
 - What Happens to the Comments? 8
- Tips for Submitting Comments..... 9**
- National Building Code (NBC) – Part 9.36 Proposed Changes 10**
 - Measured Airtightness..... 10
 - Tiered Energy Performance Compliance 11
 - Alignment of Subsection 9.36.5. with the EnerGuide Rating System 12
 - Referencing the EnerGuide Rating System in Subsection 9.36.5..... 12
 - Prescriptive Requirements for Energy Performance Improvement..... 13
 - HVAC Equipment Performance Requirements 13
 - Service Water Heating Equipment Performance Requirements..... 14
- National Building Code (NBC) – Other Part 9 Proposed Changes 15**
 - Resistance to Lateral Loads 15
 - Open Risers in Public Stairs..... 15
 - Stairs, Ramps, Handrails and Guards — Fall Protection..... 15
 - Required Handrails for Stairs Serving a Single Dwelling Unit or a House with a Secondary Suite 16
 - Protection of Raised Walking Surfaces 16
 - In-Plane Loads on Guards..... 16
 - Open Stringers..... 16
 - Penetrations through Fire Separations 17
 - Combustible Piping Penetrations..... 17
 - Formula for Basic Footing Widths and Areas 17
 - Coatings of Connectors and Fasteners in Contact with Masonry..... 17
 - Coatings of Connectors and Fasteners in Contact with Pressure-treated Wood..... 18
 - Fasteners and Connectors for Wood-Frame Construction..... 18

Structural Analysis for Exemption from Anchorage of Building Frames	18
Roof Trusses.....	18
National Building Code (NBC) – Non-Part 9 Proposed Changes	19
Updates to Referenced Documents	19
Large Farm Buildings Technical Provisions.....	19
Seismic Hazard Values for the Design of Part 4 Buildings	20
Additional Performance Requirements for Post-disaster Buildings, High Importance Category Buildings, and a Subset of Normal Importance Category Buildings.....	20
Site Designation	20
Revisions to Higher Mode Factors, M_v , and Base Overturning Moment Reduction Factors, J_{21}	
National Building Code (NBC) – Non-Part 9 Proposed Changes – Fire Protection	22
Fire Separation Continuity	22
Required Rating for Fire Stop Systems	22
Rating of Fire Stops in Certain Conditions	22
Firestopping of Penetrations by Service Equipment.....	23
Penetrations by Single Conductor Metal Sheathed Cables with Combustible Jacketting	23
Firestopping of Combustible Outlet Boxes	23
Firestopping of Penetrations by Wires and Cables.....	24
Penetration by Outlet Boxes.....	24
Combustible Piping Penetrations.....	24
Integrity of Fire Blocks	24
National Building Code (NBC) – Accessibility Proposed Changes –Anthropometrics	25
Illumination Levels.....	25
Projection of Protruding Building Elements.....	25
Colour Contrast of Doors	25
Slope of Ramps Not Located in Accessible Paths of Travel	26
Accessibility Design Assumptions	26
Accessible Service Counters and Telephones	26
Designated Wheelchair Spaces and Adaptable Seating in Assembly Occupancies.....	26
Application of the Design Requirements for Accessible Controls and Drinking Fountains	27
Wheelchair-Turning Spaces in Long Narrow Barrier-Free Paths of Travel.....	27
Minimum Clear Width of Barrier-Free Path of Travel	27
Exterior Barrier-Free Path of Travel	28

Design of Exterior Barrier-Free Paths of Travel	28
Dimensions of Accessible Ramps	28
Manoeuvring Areas at Doorways.....	28
Minimum Dimensions of Cabins and Doors of Passenger-Elevating Devices in Barrier-Free Paths of Travel.....	29
National Building Code (NBC) – Accessibility Proposed Changes –Inclusive Plumbing Accommodation	30
Emergency Lighting in Universal Washrooms and Shower Rooms.....	30
Accessible Washrooms and Water-closet Stalls for Persons with Limited Mobility.....	30
Universal Private Dressing and Shower Rooms	30
Accessible Drinking Fountains and Water-Bottle Filling Stations	31
Adult Changing Space in Universal Washrooms	31
Accessible Plumbing Facilities	31
National Building Code (NBC) – Accessibility Proposed Changes – Inclusive Signage	32
Tactile Warning Surface Indicators.....	32
Accessible Signage.....	32
Assistive Listening Systems	32
National Building Code (NBC) – Non-Part 9 Proposed Changes – Accessibility – Inclusive Building Entrance	33
Accessible Entrances to Buildings.....	33
Power Door Operators.....	33
Controls that Provide Feedback.....	33
National Building Code (NBC) – Accessibility Proposed Changes – Inclusive Access to Floor Level	34
Deletion of Exemption on Provision of Barrier-Free Path of Travel	34
Expansion of Application of Requirement on Barrier-Free Paths of Travel	34
National Fire Code (NFC) – Proposed Changes.....	35
Application of Objectives.....	35
Technical Requirements for Large Farm Buildings in the NFC.....	35
Updates to Referenced Documents	35
National Plumbing Code (NPC) – Proposed Changes	36
Updates to Referenced Documents	36
National Energy Code for Buildings (NECB) – Proposed Changes.....	37

Whole Building Airtightness Testing..... 37

Tiered Energy Performance Compliance 37

Thermal Characteristics of Opaque Building Assemblies..... 38

Thermal Characteristics of Fenestration and Doors 38

Treatment of Exterior Applications Currently Not Covered in the NECB..... 38

Supply Air Systems..... 38

HVAC Equipment Performance Requirements 39

Deletion of Part 5 and Part 6 Trade-off Paths..... 39

LPD Improvement - Interior Lighting 39

Update to NECB Application Statements 39

Duct and Plenum Insulation..... 40

Piping Insulation 40

Updates to Referenced Documents 40

What is this Document?

BILD Alberta has provided a **summary of key proposed changes** included in the fall 2019 public consultation that would impact the industry. This document includes short summaries of the most impactful proposed changes to the National Building Code (NBC), the National Fire Code (NFC), the National Plumbing Code (NPC) and the National Energy Code for Buildings (NECB) provided by the National Research Council (NRC).

Members Call to Action

BILD Alberta members are encouraged to review the [proposed changes](#) and to provide formal comments to National Research Council before March 13, 2019.

Feedback is critical to ensuring that the full impact of any proposed change is fully considered prior to their inclusion in the National Codes. Members are asked to provide specific examples of how the proposed changes would impact their business and customers and for comments related to the accuracy of the cost implications that are given as part of the proposed changes.

If you are looking for guidance in preparing your comments please check out our [Tips for Submitting Comments](#) section.

Members are also encouraged to forward feedback on the proposed changes to [Matthew Armstrong](#) to help inform the comments and advocacy that the association will provide on the proposed changes.

BILD Alberta and CHBA National Advocacy

CHBA National and BILD Alberta continuously monitor the National Codes development process. BILD Alberta has been working with CHBA National's Technical Research Committee (TRC) to draft comments on key proposed changes that will impact industry. BILD Alberta will also be submitting comments based on feedback from the Provincial Residential Technical Committee (PRTC) and its review of the proposed changes. We are also trying to make it easier for members to provide their feedback through this summary document.

This summary document is the part of an ongoing process to collect specific examples from members in order to advocate effectively on their behalf to limit the adverse impacts and unintended consequences that these proposed changes would have on industry, consumer choice and housing affordability.

What is the 2020 National Codes Public Review?

This national public review will run from January 13, 2020 to March 13, 2020.

The Canadian Commission on Building and Fire Codes (CCBFC) invites Code users and stakeholders to participate in the fall 2019 public review of proposed changes to Codes Canada publications:

- National Building Code of Canada 2015 (NBC)
- National Fire Code of Canada 2015 (NFC)
- National Plumbing Code of Canada 2015 (NPC)
- National Energy Code for Buildings 2017 (NECB)
- [Updates to the documents referenced in the 2015 and 2017 National Model Codes](#)

The purpose of this public review is to:

- provide Code users and stakeholders with a detailed look at proposed technical changes and;
- seek comment on each proposed technical change as to whether it should be approved, altered, or rejected.

The public review **closes at 4 pm PDT on March 13, 2020**, after which comments will no longer be accepted by the National Research Council. The relevant committees of the CCBFC will review every comment received. The committees will then either withdraw the proposed change; recommend that it be reviewed further for possible re-submission in revised form in a future public review; or recommend that it be approved by the CCBFC, with or without modification. If approved by the CCBFC, the technical changes will be published in the 2020 editions of Codes Canada publications.

How do I Participate?

Details

The Canadian Commission on Building and Fire Codes (CCBFC) has invited Code users and stakeholders to review the following publications:

- National Building Code of Canada 2015
 - [Proposed changes by Subject](#)
 - [Proposed changes by Code Provision](#)
- National Fire Code of Canada 2015
 - [Proposed changes by Subject](#)
 - [Proposed changes by Code Provision](#)
- National Plumbing Code of Canada 2015
 - [Proposed changes by Subject](#)
 - [Proposed changes by Code Provision](#)
- National Energy Code for Buildings of Canada 2017
 - [Proposed changes by Subject](#)
 - [Proposed changes by Code Provision](#)

[Click here](#) for the combined document of all changes.

How to Submit Comments

Before submitting comments please read:

- [Guidelines](#) for writing comments
- [Instructions](#) for submitting comments
- [Tips for Submitting Comments](#)
- [Proposed changes](#)

Providing feedback:

- To comment on a proposed change click the '*Submit Comment*' link located at the beginning of each proposed change to access the [online comment form](#).
- You must use a separate *Comment Form* for each proposed change.
- **Only online comment forms will be accepted.**

What Happens to the Comments?

A committee will review all comments on the proposed changes and take one of the following actions:

- Recommend that the CCBFC approve the change as originally proposed
- Make editorial changes that do not alter the technical content and then recommend approval by the CCBFC
- Revise the change and recommend it for approval, if, in the view of the Standing Committee, the action would not result in substantial adverse reaction from the public
- Withdraw the change but consider it for possible re-submission in revised form in a future public review, or
- Withdraw the change

Tips for Submitting Comments

Here are several tips on the type of feedback committees rely on to complete their work. Use these to help prepare your comments for submission:

- Describe how the proposed change(s) applies to you and your company
- Describe the anticipated impacts of the proposed change
- Describe what works, what doesn't with the proposed change
 - Some of the proposed changes have several different technical components and impacts contained within the same PCF
- Explain why you don't support the change
- Propose modifications or alternative approaches
 - Justify your proposed modifications
 - Support them with evidence, if possible
- Keep comments concise and precise
- If your comment gets long, help the committee to organize it by:
 - Number your ideas/issues or use titles
 - Separate different comments/suggestions – one per paragraph
- Supportive comments are also valuable
 - If there are proposed changes that will positively impact you and your business
 - Or why you support the proposed changes for other reasons

National Building Code (NBC) – Part 9.36 Proposed Changes

Measured Airtightness

PCF [1610](#)

This proposed change introduces requirements on the measurement of airtightness in buildings for the purpose of applying the provisions of Subsection 9.36.5., new Subsection 9.36.6. (PCF 1617), and new Article 9.36.6.8. (PCF 1611).

Table [9.36.6.3.-A] Air Leakage Rates for Zones Tested Using the Guarded or Unguarded Parameter and for Attached Zones Tested Using the Guarded Parameter					
Airtightness Level	Air Leakage Metric				
	ACH ₅₀	NLA ₁₀		NLR ₅₀	
		cm ²	in ² / 100 ft ²	L/s * m ²	cfm ₅₀ / ft ²
Air Leakage Rates					
1	2.5	1.20	1.73	0.89	0.17
2	2.0	0.96	1.38	0.71	0.14
3	1.5	0.72	1.04	0.53	0.10
4	1.0	0.48	0.69	0.35	0.070
5	0.6	0.29	0.42	0.21	0.042

Table [9.36.6.3.-A] Air Leakage Rates for Attached Zones Tested Using the Unguarded Parameter					
Airtightness Level	Air Leakage Metric				
	ACH ₅₀	NLA ₁₀		NLR ₅₀	
		cm ²	in ² / 100 ft ²	L/s * m ²	cfm ₅₀ / ft ²
Air Leakage Rates					
1	3.0	1.92	2.76	1.17	0.23
2	2.5	1.60	2.3	0.98	0.19
3	2.0	1.28	1.84	0.78	0.15
4	1.5	0.96	1.38	0.59	0.12
5	1.0	0.64	0.92	0.39	0.077
6	0.6	0.38	0.55	0.23	0.046

Impact: The proposed change itself will not have any material change on the design and construction of buildings however adhering to higher levels of airtightness will ultimately require changes in design and construction therefore increasing costs. The proposed change provides an additional compliance option and may reduce the cost, when compared to other options, of complying with Subsection 9.36.5. for some building types, although the savings are not expected to be significant.

Tiered Energy Performance Compliance

PCF [1617](#)

This proposed change introduces provisions on energy performance Tiers applicable to Part 9 residential buildings and associated compliance calculations. Tier 1 requirements are substantially similar to Section 9.36. of the National Building Code 2015; therefore, industry should expect minimal impacts on incremental costs and regulated energy use within Tier 1. Tiers 2-5 approximate the energy savings targets of ENERGY STAR, R2000, Net-Zero Energy Ready and Passive House programs.

Table 9.36.6.2.-A Energy Performance Tiers			
Energy Performance Tier	Overall Energy Performance Improvement of Building Compared to House Energy Target	Energy Performance Improvement of Building Envelope	
		Improvement of Energy Performance of Building Envelope Compared to Reference Building	Airtightness Level of Proposed Building
1	≥ 0	n/a	Test Only
2	≥ 10%	≥ 5%	1
3	≥ 20%	≥ 10%	1
4	≥ 40%	≥ 20%	3
5	≥ 70%	≥ 50%	3

Table 9.36.6.2.-A Energy Performance Tiers for Buildings Containing not more than 230 m ³ of Conditioned Space			
Energy Performance Tier	Overall Energy Performance Improvement of Building Compared to House Energy Target	Energy Performance Improvement of Building Envelope	
		Improvement of Energy Performance of Building Envelope Compared to Reference Building	Airtightness Level of Proposed Building
1	≥ 0%	n/a	Test Only
2	≥ 0%	≥ 0%	1
3	≥ 10%	≥ 5%	1
4	≥ 30%	≥ 15%	3
5	≥ 60%	≥ 35%	3

A separate table of performance requirements was created for buildings containing not more than 230 m³ of conditioned space.

Impact: Builders complying with the tiered energy requirements can expect cost impacts and energy savings similar to well-known voluntary housing programs. Compliance with Tiers 1-4 generally is feasible in contemporary housing using technologies and practices available to Canadian builders. A most contemporary housing can meet Tier 5, but as some of these homes

could not meet the highest tier without design changes. Homes located in colder climate zones and homes heated with natural gas are less likely to meet the Tier 5 requirements.

Estimated per-unit incremental costs relative to NBC 9.36 prescriptive requirements of Subsections 9.36.2. to 9.36.4. of the NBC 2015:

Electrically-heated homes (\$/unit)					
Archetype	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Single Attached	(\$400)	\$200	\$2,600	\$5,600	\$20,200
Single Detached	(\$800)	\$1,200	\$3,900	\$10,200	\$30,100
MURB Quad-plex	(\$500)	\$1,200	\$3,900	\$5,400	\$23,00
MURB 10-unit	(\$1,900)	\$1,600	\$2,100	\$3,500	\$14,700

Gas-heated homes (\$/unit)					
Archetype	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Single Attached	(\$200)	\$1,500	\$2,000	\$5,100	\$18,000
Single Detached	(\$600)	\$2,100	\$3,600	\$8,900	\$30,800
MURB Quad-plex	(\$600)	\$2,800	\$3,500	\$5,400	\$14,500
MURB 10-unit	(\$2,000)	\$900	\$2,400	\$3,200	\$13,900

Alignment of Subsection 9.36.5. with the EnerGuide Rating System

PCF [1608](#)

This proposed change revises certain provisions in Subsection 9.36.5. to align them with the EnerGuide Rating System. Alignment of Subsection 9.36.5. with the ERS will allow builders who are participating in one of NRCan’s voluntary programs, or who are using the ERS for labelling, to use the same modelling tools and techniques for these voluntary programs and code compliance with Subsection 9.36.5..

Impact: The ability to align labelling programs with code compliance may result in reduced compliance costs for the industry.

Referencing the EnerGuide Rating System in Subsection 9.36.5.

PCF [1620](#)

This proposed change introduces the EnerGuide Rating System as an alternative compliance path to Subsection 9.36.5.

Impact: Referencing ERS directly in Subsection 9.36.5. will reduce confusion and duplication for builders who voluntarily use ERS. This change will have no impact on builders who use the modelling requirements in Subsection 9.36.5. This may encourage more builders to use ERS for Code compliance, which would increase the number of new buildings with ERS ratings and labels for homeowners.

Prescriptive Requirements for Energy Performance Improvement

PCF [1611](#)

This proposed change introduces prescriptive requirements for compliance with the new energy prescriptive performance improvement tiers. Prescriptive requirements for Tier 5 were not developed. The “reserved” values are intended to allow for the future development of values that may achieve Tiers 3 and 4.

Table 9.36.6.2. Energy Performance Improvement Tiers		
Energy Performance Improvement Tier	Overall Energy Performance Improvement of Building Relative to Energy Performance Achieved through Compliance with Subsections 9.36.2. to 9.36.4.	Minimum Sum of Energy Conservation Points
1	≥ 0% (compliance with 9.36.2. to 9.36.4.)	0
2	10%	10
3	20%	Reserved
4	40%	Reserved

Additional charts related to the various energy conservation measures and the associated energy conservation points are also found in the PCF.

Impact: Tier 1 requirements are the same as the baseline performance of the prescriptive requirements of Section 9.36. of the NBC 2015. The incremental costs to achieve Tier 2 are estimated to have median costs of \$650 to \$1,860 when considering all climate zones. At the time of this writing this PCF some building systems had not been analyzed to determine appropriate available energy conservations points to enable buildings to practically achieve Tiers 3 and 4. As a result, Tiers 3 and 4 are reserved until further analysis and code development is completed.

HVAC Equipment Performance Requirements

PCF [1596](#)

This proposed change updates the HVAC equipment performance requirements by aligning Subsection 9.36.3. with current and anticipated standards for the performance of HVAC equipment.

Impact: This proposed change will have limited impact due to the fact that the equipment is already or soon to be regulated to these performance levels through regulations beyond the National Building Code. Alignment of the National Building Code requirements and regulations for manufacture and sale will reduce confusion and inconsistency in the market.

Service Water Heating Equipment Performance Requirements

PCF [1597](#)

This proposed change updates the service water heating equipment performance requirements by aligning Subsection 9.36.4. with current and anticipated standards for the performance of service water heating equipment.

Impact: The proposed change will have limited impact due to the fact that the equipment is already or soon to be regulated to these performance levels through regulations beyond the National Building Code. Alignment of the National Building Code requirements and regulations for manufacture and sale will reduce confusion and inconsistency in the market.

National Building Code (NBC) – Other Part 9 Proposed Changes

Resistance to Lateral Loads

PCF [1475](#)

The proposed change updates the Part 9 provisions for resistance to lateral loads due to earthquakes and wind. It responds to an increase in seismic hazard values for many locations in Canada by replacing $S_a(0.2)$ with the seismic design parameter, S_{max} , and by defining new wood-frame wall types.

Impact: The impact analysis found that, in general, there will be an increased cost in each of the locations analyzed and, similarly, the majority of locations in Canada when applying the full requirements in the proposed change. There is concern that if this PCF isn't accepted that increased seismic requirements may push many buildings with footprints more than twice as long as they are wide outside of part 9 requirements and into part 4 design.

Open Risers in Public Stairs

PCF [339](#)

This proposed change introduces a provision that proscribes stairs with open risers except in public stairs does and does not list garages, secondary suites, or exterior residential private stairs as exceptions.

Impact: The NRC impact analysis states that there is no-cost impact associated with this proposal as it is typically more expensive to build open riser stairs. If the listed stairs are not excepted then they would likely see cost increases related to their construction.

Stairs, Ramps, Handrails and Guards — Fall Protection

PCF [1425](#)

This proposed change introduces an explanatory note on the exemption from the requirement for a landing afforded by Sentence 9.8.6.2.(2). The new proposed appendix note will clarify that the floor at the top of a stair run serves as a landing.

Impact: There is no cost associated with this change as it is a clarification. This requirement might allow builders to install sliding or pocket doors without an additional landing.

Required Handrails for Stairs Serving a Single Dwelling Unit or a House with a Secondary Suite

PCF [1432](#)

This proposed change harmonizes the number of handrails required for interior and exterior stairs and ramps serving a single dwelling unit or a house with a secondary suite. Exceptions for exterior handrails have been removed and harmonized with interior stairs. Therefore, increased requirements for exterior stairs for dwelling units and secondary suites.

Impact: NRC estimates that a 3-riser stair would require 2 brackets, at a cost of \$30 per bracket, for a simple handrail mounted to a wall. A wood handrail with a length of 915 mm would cost approximately \$90. Therefore, the total handrail cost for a 3-riser stair is expected to be \$150. These estimates appear to be low as according to industry feedback the cost of an exterior handrail with two posts is in the range of \$250-\$500 depending on materials and location.

Protection of Raised Walking Surfaces

PCF [1422](#)

This proposed change clarifies that raised walking surfaces need to be protected by a guard where the difference in elevation is more than 600 mm between the walking surface and the adjacent surface within 1.2m, but that a guard is not required at the leading edge at the top of a flight.

Impact: The purpose of this proposed change is to better capture the intent of the Code. It will not involve any additional labour or material costs.

In-Plane Loads on Guards

PCF [1421](#)

This proposed change introduces a requirement that limits the in-plane deflection of elements in guards.

Impact: There are no anticipated cost implications.

Open Stringers

PCF [356](#)

This proposed change sets a limit on the size of the triangular openings formed by stair risers, treads and the bottom element of a required guard.

Impact: There is no expected cost implications as a maximum 100 mm sphere opening is typically imposed on guards and is considered too stringent.

Penetrations through Fire Separations

PCF [1576](#)

This proposed change revises the Part 9 provisions on penetrations through fire separations to align them with the corresponding changes proposed for Part 3.

Impact: This proposal does not increase the requirements to achieve compliance, instead clarifies provisions and increases options to achieve compliance. There is the potential for increased cost, but they may be offset by the increase in options to achieve compliance.

Combustible Piping Penetrations

PCF [1501](#)

This proposed change removes the requirement for a pressure differential of 50 Pa for tests of firestopped combustible piping for buildings of 3 storeys or less in building height.

Impact: This proposed change should reduce the complexity and cost of constructing low-rise buildings. Fire stop systems that are successfully tested for a specific fire rating without a pressure differential are typically less expensive than similar systems successfully tested with a pressure differential.

Formula for Basic Footing Widths and Areas

PCF [1490](#)

This proposed change introduces an explanation of one of the variables in the formula used to determine footing widths to prevent undersized footings.

Impact: Clarification of the formula will reduce misinterpretation among Code users. If the had been previously misinterpreted then some builders may see an increase in costs to comply with the clarified definition.

Coatings of Connectors and Fasteners in Contact with Masonry

PCF [1463](#)

The proposed change revises Table 9.23.6.1. to increase the galvanized coating criteria for sheet connectors in contact with masonry and clarifies corrosion-resistance straps.

Impact: There will be a 0.85% increase in the total cost of the masonry veneer applied wall assembly resulting from the provision changes noted above. Zinc coatings have a linear mass loss for a given environment, which will give a 50% increased service life for newly specified masonry anchors over what is allowable in Part 9 now.

Coatings of Connectors and Fasteners in Contact with Pressure-treated Wood

PCF [1512](#)

This proposed change introduces minimum corrosion-resistance criteria for connectors and fasteners in contact with pressure-treated wood.

Impact: There will be a \$10/m² increase in cost in fasteners and connectors for galvanized products coated in accordance with ASTM A153 and A653 compared to fasteners and connectors that do not meet the criteria. Where the connectors and fasteners need to be replaced prior to the service life of the wood components being met and does not require the complete removal of the wood assembly, the cost of this replacement is in excess of \$50/m² for both removal and replacement.

Fasteners and Connectors for Wood-Frame Construction

PCF [1469](#)

This proposed change revises the title of Subsection 9.23.3. by adding a reference to connectors to better reflect the content addressed in that Subsection.

Impact: Clarification of the Subsection name will reduce misinterpretation among Code users.

Structural Analysis for Exemption from Anchorage of Building Frames

PCF [1399](#)

This proposed change adds lateral earth pressures to the list of loads to be considered in the structural analysis to determine whether building frames must be anchored to the foundation.

Impact: No cost implications are anticipated. The structural analysis will include one additional calculation component to determine whether building anchorage is required, which is not expected to significantly increase the designer's work or the cost.

Roof Trusses

PCF [1462](#)

This proposed change deletes the reference to CSA S307-M, so that only the TPIC guidelines are referenced, and revises the provisions on lateral bracing for roof trusses.

Impact: There should be a 10% reduction in the cost of wood truss production used for residences and small buildings due to the revision where a design of a truss component is controlled by deflection. This is due to deflection-controlled design being designed with less material, and analytical design procedures are significantly less expensive than testing.

National Building Code (NBC) – Non-Part 9 Proposed Changes

Updates to Referenced Documents

PCF [1640](#)

This proposed change updates the designated editions of approximately 300 documents referenced in the National Codes.

Impact: There are 3 documents that are of particular note:

- 1.) 2019 CSA 440.4 Window, Door and Skylight Installation Standard - which includes requirements for sloped sills and the use of membrane products that could be difficult to apply in colder temperatures.
- 2.) 2018 Canadian Electrical Code - which includes expanded requirements for AFCIs and was declared in force in Alberta on May 1, 2017.
- 3.) 2019 CGSB Airtightness Testing Standard – which is referenced in PCF 1610 and relates to the proposed airtightness testing for Part 9 of the NBC.

Large Farm Buildings Technical Provisions

PCFs [1416](#), [1417](#), [1418](#), & [1419](#)

These proposed changes introduce requirements for large farm buildings into Part 2 of Division B of the NBC and creates specific agricultural occupancy classifications for different types of buildings. The current National Farm Building Code (NFBC) is outdated and was last published in 1995. Since that time, the farming industry has evolved significantly and become more complex, and the provisions of the NFBC no longer reflect these modern, often more automated farming operations. The typical single storey, small area, timber-post and beam-framed farm buildings from a quarter century ago no longer represent the multi-storey, large area, modern structures being designed and built today to meet the farming industry's demands.

Impact: These proposed changes may affect the initial capital construction cost of new farm buildings. According to analysis included with the proposed changes the estimated total construction cost of the drive shed model farm building would increase by approximately 16%, while a dairy barn model farm building would increase by approximately 9%.

The proposed agricultural occupancy classifications allow distinctions to be made in the technical provisions for specific types of farm buildings. Designers will have the ability to design a farm building corresponding to the level of risk associated with a specific agricultural occupancy classification, rather than designing to the highest-risk agricultural occupancy classification. This translates into a benefit for farm buildings with a lower risk level throughout the technical requirements.

Seismic Hazard Values for the Design of Part 4 Buildings

PCF [1405](#)

This proposed change updates the seismic hazard values for the design of buildings under Part 4 and replaces Table C-3 in Appendix C with a reference to a website listing the values. (PCF 1475 updates the seismic hazard values for the design of buildings under Part 9.)

Impact: The cost impact is divided into two parts: a) that for the Seismic Force Resisting System (SFRS), and b) that for the seismic restraint of operational and functional components (OFCs), which are also referred to as “non-structural components” or “parts and portions” of a building.

The cost impact for SFRSs and the restraint of OFCs for Part 3 buildings, for Alberta is estimated to be an increase of 0.556% (SFRSs 0.55% & OFCs 0.006%) of the total building cost of new Part 3 buildings.

Additional Performance Requirements for Post-disaster Buildings, High Importance Category Buildings, and a Subset of Normal Importance Category Buildings

PCF [1514](#)

This proposed change introduces additional performance requirements for post-disaster buildings, High Importance Category buildings, and a subset of Normal Importance Category buildings to improve their resistance to more frequent but less intense earthquakes (with a 5% or 10% probability of exceedance in 50 years).

Impact: The proposed change introduces additional requirements to consider more frequent but less intense earthquakes for certain buildings in certain Seismic Categories, which will add to the work of designers of such buildings. The same 3D computer models as developed for designing buildings for 1-in-2,475-year earthquakes can be used in checking compliance of the buildings with the new requirements.

Site Designation

PCF [1403](#)

This proposed change introduces new site designations in Article 4.1.8.4. for consistency with the proposed update to seismic hazard values (PCF 1405) and revises Articles 4.1.8.1. and 4.1.8.2. accordingly.

Impact: This approach is an improvement over that used in the NBC 2015 and is likely to be cost-neutral, as it reduces seismic hazard values in some cases and increases them in others. However, any increases in seismic hazard values resulting from the proposed approach are essential to prevent potentially unsafe situations that were not captured by the NBC 2015 approach.

Revisions to Higher Mode Factors, M_v , and Base Overturning Moment Reduction Factors, J

PCF [1430](#)

This proposed change updates the values of M_v and J in Table 4.1.8.11. to align them with the proposed new seismic hazard values (PCF 1405) and the proposed new performance requirements for higher-risk buildings (PCF 1514).

Impact: The updated values of M_v and J in this proposed change are similar to the current values in the NBC 2015. The M_v values are the same or have decreased for most buildings with a fundamental lateral period of 2.0 s or less (up to about 20 storeys high). As a result, the cost of such buildings is likely to decrease. The values of M_v have increased for higher buildings using walls, wall frame systems or coupled walls as the seismic force resisting system, but the resulting increase in cost is expected to be much less than 0.5% of the total construction cost of such buildings.

National Building Code (NBC) – Non-Part 9 Proposed Changes – Fire Protection

Fire Separation Continuity

PCF [1500](#)

This proposed change revises Note A-3.1.8.3.(4) to clarify that fire-resistance-rated joint systems are used to maintain the continuity of fire separations, and to confirm that these joint systems are covered by CAN/ULC-S115, "Fire Tests of Firestop Systems."

Impact: The proposed change simply revises the Note to clarify the associated Code provision and therefore, should not lead to any additional cost.

Required Rating for Fire Stop Systems

PCF [1361](#)

This proposed change revises the rating required for fire stops to no less than the fire-resistance rating of the penetrated assembly.

Impact: Because the installation practice throughout Canada is to install firestop systems with an F-rating equal to the penetrated assembly's fire-resistance rating, there are no anticipated cost implications.

Rating of Fire Stops in Certain Conditions

PCF [1523](#), & [1508](#)

These proposed changes introduce exemptions from the requirement for service equipment penetrations through horizontal fire separations to have T-rated fire stops under certain conditions.

Impact: These proposed changes would reduce the cost of construction as it would allow the requirement for fire stops to have a T-rating to be waived for service penetrations in certain locations.

Firestopping of Penetrations by Service Equipment

PCF [1499](#)

This proposed change adds the service equipment covered by Sentence 3.1.9.2.(1) to Sentence 3.1.9.3.(1) and introduces a condition on the permission to allow penetrations by service equipment. It also deletes Sentences 3.1.9.2.(1) and 3.1.9.3.(2).

Impact: This proposal will cause some added costs. Fire statistics have some data on fire spread but the data is not specifically related to fire spread due to failure of a penetration, and they do not include fire spread to adjacent floors through exterior cladding. Penetration by cables or cable bundles 25 mm in diameter or smaller would need to be firestopped. If this would be done using a firestop caulk the total cost to firestop the penetration would be around \$6.

Penetrations by Single Conductor Metal Sheathed Cables with Combustible Jacketting

PCF [1515](#)

This proposed change deletes Sentence 3.1.9.3.(3) to remove the permission for single conductor metal sheathed cables with combustible jacketting that are more than 25 mm in overall diameter to penetrate a fire separation required to have a fire-resistance rating without being incorporated in the assembly when tested.

Impact: By deleting Sentence 3.1.9.3.(3), the risk of fire and smoke spread associated with single conductor metal sheathed cables with combustible jacketting is eliminated. Numerous fire stop systems tested to CAN/ULC-S115 are currently available in Canada for penetrations of fire separations and are being applied in the industry. Therefore, this proposed change will result in no or little increase in cost.

Firestopping of Combustible Outlet Boxes

PCF [1517](#)

This proposed change introduces a condition for the firestopping of penetrations by combustible outlet boxes that resolves the conflict between Sentence 3.1.9.3.(5) and Article 3.1.9.4.

Impact: There would be some cost implications for the installation of the firestop for combustible outlet boxes. The total installed cost to prevent fire from passing through a rated wall due to the use of combustible outlet boxes would be up to \$22 each for large boxes, and up to \$16 each for smaller (more typical) boxes.

Firestopping of Penetrations by Wires and Cables

PCF [1526](#)

This proposed change introduces a condition for the firestopping of penetrations by noncombustible raceways containing wires or cables.

Impact: Noncombustible raceway penetrations were never meant to be excluded from firestopping requirements, but the wording could be interpreted as firestops not required. In these instances, the total cost to firestop the penetration would be around \$6.

Penetration by Outlet Boxes

PCF [1502](#)

This proposed change introduces fire stops tested to CAN/ULC-S115, "Fire Tests of Firestop Systems," as an option for the protection of outlet boxes on opposite sides of a fire-resistance-rated wall.

Impact: The proposed change adds an optional method of protecting outlet boxes. Therefore, the proposed change will not lead to any additional cost.

Combustible Piping Penetrations

PCF [1501](#)

This proposed change removes the requirement for a pressure differential of 50 Pa for tests of firestopped combustible piping for buildings of 3 storeys or less in building height.

Impact: This proposed change should reduce the complexity and cost of constructing low-rise buildings. Fire stop systems that are successfully tested for a specific fire rating without a pressure differential are typically less expensive than similar systems successfully tested with a pressure differential.

Integrity of Fire Blocks

PCF [1506](#)

This proposed change revises Note A-3.1.11.7.(6) to clarify that sealants forming part of a fire stop tested in accordance with CAN/ULC-S115, "Fire Tests of Firestop Systems," can be used to seal penetrations of fire blocks.

Impact: This proposed change corrects Note A-3.1.11.7.(6) and provides further clarifications. It may reduce the cost of construction if the sealants forming part of a fire stop tested to CAN/ULC-S115 are less expensive than the materials currently listed in the Note.

National Building Code (NBC) – Accessibility Proposed Changes –Anthropometrics

Illumination Levels

PCF [1591](#)

This proposed change introduces minimum illumination levels over escalators and moving walkways, and at controls and signs in public areas. The lighting levels being proposed are consistent with lighting levels already required in the NBC for lighting of certain rooms or spaces in public areas.

Impact: It is estimated that the costs required to implement task specific lighting at the levels required by this change would represent less than 10% of the overall cost for lighting and branch wiring, representing less than 1% of the overall building costs.

Projection of Protruding Building Elements

PCF [1532](#)

This proposed change extends the requirement in Article 3.3.1.9. on the projection of protruding building elements in corridors to most paths of travel. The current Code requirements only address the risks presented by protruding building elements in corridors. However, protruding elements in other locations can also present a safety issue for persons with low vision.

Impact: This proposed change would not increase construction costs as it could be addressed at the design stage.

Colour Contrast of Doors

PCF [1588](#)

This proposed change introduces a requirement for doors serving public corridors, corridors used by the public, and washrooms to be visually contrasting with adjacent surfaces so they are accessible to people with low vision. This change would help people with low vision to easily identify doors and exits which are critical locations for occupants to be able to identify quickly in the event of an emergency.

Impact: There would be no additional costs or only minor ones imposed by this proposed change. The requirement can be met by choosing a different colour of paint for doors or door frames to distinguish them from adjacent walls and be minimized if addressed at the design stage.

Slope of Ramps Not Located in Accessible Paths of Travel

PCF [1503](#)

This proposed change modifies the slopes of ramps that are not located in accessible paths of travel so they are safer to use. A slope of 1:12 was determined to be the international best practice in universal design

Impact: NRC suggests that this proposed change would not impose any additional costs if addressed at the design stage. While design may help mitigate some of the associated costs the proposed change the lower maximum allowable slope of ramp could result in the use of additional material in its construction and would require additional space dedicated to the required ramps.

Accessibility Design Assumptions

PCF [1593](#)

This proposed change clarifies the accessibility design assumptions described in explanatory Note A-3.8.

Impact: This proposed change simply modifies an explanatory note to clarify the accessible design principles used in the NBC.

Accessible Service Counters and Telephones

PCF [1534](#)

This proposed change clarifies the application and design requirements for accessible service counters and telephones.

Impact: The proposed changes affecting public phones simply clarify current practice. The proposed changes affecting counters would not impose any additional costs if addressed at the design stage.

Designated Wheelchair Spaces and Adaptable Seating in Assembly Occupancies

PCF [1535](#)

This proposed change introduces new requirements on designated wheelchair spaces in waiting rooms and on adaptable seating in assembly occupancies.

Impact: The cost impact related to spaces for wheelchairs should be minimal, as the only increases are for rooms with 2,000 or more seats. The cost impact related to adaptable seats should also be minimal, as the difference in cost between an adaptable seat and a standard seat is negligible. However, additional spaces for mobility device storage would be required.

Application of the Design Requirements for Accessible Controls and Drinking Fountains

PCF [1533](#)

This proposed change clarifies that the design requirements in Section 3.8. relating to controls and drinking fountains apply to all controls and drinking fountains, not only to those provided for wheelchair users.

Impact: Controls and drinking fountains that are located in storeys not required to be accessible to wheelchair users do not need to be accessible to other users, including those with limited dexterity. There is the potential for increased costs related to ensuring all controls and drinking fountains are accessible.

Wheelchair-Turning Spaces in Long Narrow Barrier-Free Paths of Travel

PCF [1504](#)

In a narrow barrier-free path of travel that is long or that leads to a dead-end or to a non-barrier-free means of access to other areas (e.g., stairs), it might be difficult for a person using a wheelchair to back up over a long distance. This proposed change requires that sufficient space to turn a wheelchair around be provided at the end of long narrow sections of barrier-free paths of travel with no barrier-free way out.

Impact: There is the potential for cost increases related to additional space required to provide sufficient space to ensure a wheelchair can turn around. These costs can be minimized at the design stage.

Minimum Clear Width of Barrier-Free Path of Travel

PCF [1563](#)

This proposed change allows a reduction in the minimum clear width of a barrier-free path of travel based on recent anthropometric data.

Impact: The clear width of 1,000 mm proposed in Sentence 3.8.3.2.(1) is less than the minimum width of 1,100 mm required for corridors. For other locations, the proposed width is 80 mm wider. However, the proposed width reduction will facilitate the design of barrier-free paths of travel. It is important to note that this proposed change would not apply to dwelling units that have not been designated accessible by the authority having jurisdiction.

Exterior Barrier-Free Path of Travel

PCF [1531](#)

This proposed change describes the locations where exterior barrier-free paths of travel are required so that buildings are accessible by persons of all abilities.

Impact: This proposed change would have no impact as it simply clarifies the intent of the Code and current practice.

Design of Exterior Barrier-Free Paths of Travel

PCF [1577](#)

This proposed change revises the requirements for exterior walks that form part of a barrier-free path of travel. This proposal increases the minimum width of an exterior walk forming part of an accessible path of travel to accommodate at least 90% of all wheelchairs.

Impact: The increase in unit cost for the additional 500 mm width of an exterior walk is estimated to be approximately \$40 to \$90 per linear meter of exterior walk for a precast concrete paver walk surface. There is no cost associated with reduced useable space within the building, since it is assumed that the exterior walk would be contained within a landscaped area.

Dimensions of Accessible Ramps

PCF [1580](#)

This proposed change revises the minimum dimensions of accessible ramps, based on the findings of recent studies, into the minimum dimensions that would allow at least 90% of all sizes of wheelchairs to be used in buildings.

Impact: There will be additional costs associated with this change as the dimensions of the accessible ramps are larger than previous. The labour and material costs will be increased. In addition, there is a loss of usable indoor space which may be quantified in monetary terms.

Manoeuvring Areas at Doorways

PCF [1565](#)

This proposed change revises the dimensions of manoeuvring areas at doorways based on recent anthropometric data.

Impact: There is the potential for cost increases related to additional space required. The impact of this proposed change would be minimal as the new dimensions can be implemented at the design stage.

Minimum Dimensions of Cabins and Doors of Passenger-Elevating Devices in Barrier-Free Paths of Travel

PCF [1624](#)

This proposed change introduces minimum dimensions for cabin doors and floors of passenger-elevating devices in barrier-free paths of travel so they are accessible to wheelchair users.

Impact: This proposed change will not impose any additional costs. The dimension requirements being introduced in Article 3.8.3.7. are already implied in other provisions in Section 3.8.

National Building Code (NBC) – Accessibility Proposed Changes –Inclusive Plumbing Accommodation

Emergency Lighting in Universal Washrooms and Shower Rooms

PCF [1553](#)

This proposed change requires that emergency lighting be installed in universal washrooms and shower rooms to provide the same level of safety as in other washrooms.

Impact: The cost associated with the supply and installation of a twin head emergency battery unit, including receptacle, mounting bracket and installation is estimated to be between \$800 to \$1,200 per unit. In a building where an emergency power system is installed, and the emergency lighting can be wired into the emergency power system, the cost to supply and install the emergency lighting heads (without the battery pack) is estimated to be between \$120 to \$160 per unit.

Accessible Washrooms and Water-closet Stalls for Persons with Limited Mobility

PCF [1552](#)

This proposed change introduces criteria on which to base the number of accessible washrooms to be provided. It also introduces requirements on water-closet stalls for persons with limited mobility. The proposed change requires at least 10% of regular stalls and urinals to be designed to be used by people with limited mobility.

Impact: This change will reduce construction costs for smaller buildings, as smaller washrooms with a few fixtures will be exempted from the accessibility requirements. For larger buildings there will be an increase in construction costs to accommodate more accessible fixtures in washrooms. These costs will be related to the additional space required and additional accessibility features.

Universal Private Dressing and Shower Rooms

PCF [1558](#)

This proposed change introduces requirements on the provision of a universal private dressing and shower room where public showering facilities are provided.

Impact: The NBC does not require showers. However, where showers are provided, this proposed change requires at least one universal shower room be provided. This change may require additional space, compared to an accessible shower currently required in the NBC.

Accessible Drinking Fountains and Water-Bottle Filling Stations

PCF [1551](#)

This proposed change clarifies that, where drinking fountains are provided, at least one must be accessible, and introduces requirements on accessible water-bottle filling stations.

Impact: There is the potential for increased costs related to providing additional accessible drinking fountains and water-bottle filling stations and space requirements. Some of these costs can be minimized if planned for at the design.

Adult Changing Space in Universal Washrooms

PCF [1554](#)

This proposed change introduces requirements on the provision of an adult changing space in universal washrooms to accommodate persons who need assistance from an attendant.

Impact: This change will require less than an additional 1.5 m² in one universal washroom in large buildings. As these facilities are permitted to be located within a universal washroom, the overall impact will be minimal.

Accessible Plumbing Facilities

PCF [1595](#)

This proposed change updates certain dimensions of accessible plumbing facilities so that they can accommodate 90% of all wheelchair sizes.

Impact: There will be additional costs associated with this change as the dimensions of accessible plumbing facilities are larger than before. The labour and material costs will be increased. In addition, there is a loss of usable indoor space which may be quantified in monetary terms.

National Building Code (NBC) – Accessibility Proposed Changes – Inclusive Signage

Tactile Warning Surface Indicators

PCF [1570](#)

This proposed change introduces requirements on the provision of tactile warning surface indicators at certain changes in elevation. Tactile warning surface indicators are detectable underfoot or by cane and allow persons with low vision or blindness to detect the top of a flight of stairs or an unprotected drop-off edge.

Impact: The cost of installing tactile warning surface indicators in buildings is estimated:

- Surface applied: \$670 - \$860 / m² (\$60 - \$80 / ft²) depending on the system and material selected
- Cast in-place: \$1,075 - \$1,290 / m² (\$100 - \$120 / ft²) depending on the system and material selected

Accessible Signage

PCF [1561](#) & [1569](#)

These proposed changes introduce requirements on the provision of visual and tactile information signs and where signs with visual and tactile information are required. These signs limit the probability that a person with low or no vision would be unacceptably impeded from using the building's facilities or circulating within it.

Impact: In locations where a sign with visual information is already required it is expected that the increase in cost to make the same sign with tactile information is negligible (<1% increase in the cost of the sign). In locations where an additional sign with tactile information is required, the cost of the additional sign is estimated to be approximately \$50 to \$80 per sign for a 150 mm x 150 mm engraved panel interior sign with adhesive back and braille lettering and tactile characters.

Assistive Listening Systems

PCF [1590](#)

This proposed change introduces requirements on the provision of assistive listening and amplification systems at service counters.

Impact: The cost of an assistive listening system at a service counter can start at \$300, depending on the type of system installed. Allowing other systems (adaptive technologies) may reduce the cost associated with upcoming technology. Providing assistive listening systems or adaptive technologies will allow persons with hearing loss to access building services.

National Building Code (NBC) – Non-Part 9 Proposed Changes – Accessibility – Inclusive Building Entrance

Accessible Entrances to Buildings

PCF [1473](#)

This proposed change expands the requirement for barrier-free pedestrian entrances. Currently, the NBC only requires 50% of pedestrian entrances of a building to be accessible, this change expands the requirement to all pedestrian entrances. However, entrances for service purposes and for residential suites that are not designated to be accessible are exempted.

Impact: The impact of this proposed change, when addressed at the design stage, is minimal. In new buildings, most entrances are accessible.

Power Door Operators

PCF [1474](#)

This proposed change specifies that power door operators must be installed at building entrances and at doors in barrier-free paths of travel.

Impact: The installation of a power door operator is about \$3,000 per door. However, designers may choose other options, such as using a doorway without doors or a door with a hold-open device, to avoid the installation of a power door operator.

Controls that Provide Feedback

PCF [1594](#)

This proposed change introduces a requirement on the visibility and audibility of feedback signals from controls.

Impact: Minimal, when addressed at the design stage of the control.

National Building Code (NBC) – Accessibility Proposed Changes – Inclusive Access to Floor Level

Deletion of Exemption on Provision of Barrier-Free Path of Travel

PCF [1481](#)

This proposed change deletes a Clause that exempts parts of floor areas that are not at the same level as the entry level to a building from having to provide a barrier-free path of travel.

Impact: There may be a cost increase if a ramp or other accessible path of travel is provided to access a raised or sunken level. NRC also states that there will be a cost decrease if raised or sunken levels are eliminated in order to provide an accessible path of travel. This assessment does not take into consideration costs related to site design and grading when the space connects to the exterior through exits, garages, etc.

Expansion of Application of Requirement on Barrier-Free Paths of Travel

PCF [1482](#)

This proposed change broadens the application of the requirement on the provision of barrier-free paths of travel by eliminating the exemption from being accessible that some floor levels receive on the basis that they are not served by a passenger elevator, a platform-equipped passenger-elevating device, an escalator, an inclined moving walk, or a ramp. This proposed change requires floor levels other than the entrance level be accessible on the basis of the occupancy and the floor area.

Impact: Alberta has already amended our building codes to require the installation of elevators in some buildings, which will minimize the impact provincially. Adding a regular elevator might cost around \$100,000 while a Limited Application (LULA) elevator might cost \$50,000.

National Fire Code (NFC) – Proposed Changes

Application of Objectives

PCF [1516](#)

This proposed change excludes farm buildings from the application of property protection objectives in the NFC.

Impact: No cost is associated with limiting the application of property protection objectives in the NFC for consistency with the NBC.

Technical Requirements for Large Farm Buildings in the NFC

PCF [1420](#)

This proposed change introduces technical requirements for large farm buildings into Parts 2 and 4 of Division B of the NFC.

Impact: The proposed changes to the NFC relating to farm buildings are consistent with the scope of the NFBC and the proposed changes to the NBC. Where existing buildings contain prohibited occupancy combinations, costs may be incurred to remove or change an occupancy. The electrical and mechanical inspections and record retention mandated in Section 2.14.1. may marginally increase the operational costs for building owners. Depending on the complexity and size of the facility additional inspections may be required. Each inspection by a contractor or specialist is estimated to cost \$200 to \$1,000.

Updates to Referenced Documents

PCF [1640](#)

This proposed change updates the designated editions of approximately 300 documents referenced in the National Codes.

Impact: The cost impact varies depending on the referenced standard.

National Plumbing Code (NPC) – Proposed Changes

Updates to Referenced Documents

PCF [1640](#)

This proposed change updates the designated editions of approximately 300 documents referenced in the National Codes.

Impact: The cost impact varies depending on the referenced standard.

National Energy Code for Buildings (NECB) – Proposed Changes

Whole Building Airtightness Testing

PCF [1414](#)

This proposed change reduces air infiltration rate through the building envelope resulting in reduced energy consumption.

Impact: Air Barrier System - For commercial buildings, over 50% of the buildings are 3 stories or less, and the price of the test is in the range of \$500 to \$5,000 depending on complexity. For very large complicated buildings, the cost can range from \$5,000 to \$50,000.

Doors - Reducing the allowable air leakage rate for doors may increase construction costs.

Fireplace Doors - No impact to the overall industry as this is a harmonization between Sentence 3.2.4.6.(1) in the NECB and Sentence 9.36.2.9.(5) in the NBC.

Tiered Energy Performance Compliance

PCF [1527](#)

This proposed change introduces provisions on energy performance tiers and associated compliance calculations.

Table [9.1.2.1.] Energy Performance Tiers	
Energy Performance Tier	Energy Performance of Proposed Building Relative to Energy Performance of Reference Building, % building energy target
1	≤ 100%
2	≤ 75%
3	≤ 50%
4	≤ 40%

Impact: As Tier 1 requirements are the same as the balance of the NECB there is no cost impact or energy savings attributed to this Tier. For Tier 4, five locations were fully costed, and the results presented below, as the total cost (envelope, lighting, and HVAC) in \$/m² floor area.

Tier 4 Area Normalized Total Cost (\$/m ² floor area) – 5 locations.					
Archetype	Victoria	Windsor	Montreal	Edmonton	Yellowknife
Secondary School	\$767	\$775	\$763	\$816	\$936
Medium Office	\$738	\$731	\$694	\$755	\$902
Large Office	\$450	\$446	\$495	\$502	\$560
Warehouse	\$1,076	\$1,158	\$1,057	\$1,156	\$1,366
Retail Strip mall	\$1,235	\$1,177	\$1,188	\$1,310	\$1,462
Highrise MURB	\$661	\$633	\$594	\$685	\$726

Thermal Characteristics of Opaque Building Assemblies

PCF [1537](#)

This proposed change reduces the maximum U-values for above-ground opaque building assemblies.

Impact: The envelope cost increments were estimated to be a maximum 0.9% increase when averaged across the six climate zones, depending on building type.

Thermal Characteristics of Fenestration and Doors

PCF [1536](#)

This proposed change reduces the maximum U-values for fenestration and doors.

Impact: The proposed reduction in window thermal transmittance results in reduced heating but increased cooling. The better insulated windows reduce heat loss during the winter but prevent cooling during cool summer nights/mornings. The envelope cost increments were estimated to be a maximum 2.1% increase when averaged across the six climate zones, depending on building type.

Treatment of Exterior Applications Currently Not Covered in the NECB

PCF [1458](#)

This proposed change introduces provisions on the lighting power allowances to be used for building exterior applications that are not covered by existing provisions.

Impact: The reduced energy costs resulting from the proposed lighting power allowances combined with the reduced lighting system maintenance requirements and the reduced initial costs of luminaires mean that lighting system costs would be lower than the NECB 2017 baseline values, resulting in a simple payback of 0 years.

Supply Air Systems

PCF [1549](#)

This proposed change harmonizes the requirements on HVAC system controls in Parts 5 and 8 with respect to the minimum airflow rate in temperature-control zones to significantly reduce the energy required for reheating and recooling.

Impact: This proposed change will not impose any additional costs. It simply addresses controls that require programming.

HVAC Equipment Performance Requirements

PCF [1621](#)

This proposed change updates the minimum performance requirements stated in Tables 5.2.12.1. and 5.2.12.2. to align them with ASHRAE 90.1-2019 requirements and Canada's Energy Efficiency Regulations, and introduces requirements for new types of equipment.

Impact: The proposed change is about reflecting the current industry/market practice and, as such, there will be no material cost implications to the prescriptive path. A small impact on the reference building in the performance path may be expected and the cost impact is not material.

Deletion of Part 5 and Part 6 Trade-off Paths

PCF [1460](#)

This proposed change deletes the trade-off paths for heating, ventilating and air-conditioning systems (Part 5) and service water heating systems (Part 6).

Impact: The proposed changes delete a compliance path that is not used in practice. There will be no impact on the cost of design and construction of buildings.

LPD Improvement - Interior Lighting

PCF [1456](#)

This proposed change updates the lighting power density (LPD) values to better align them with the efficacy of lighting products available in the North American marketplace.

Impact: The proposed LPD values are lower than the NECB 2017 values by an average of 17% across the NECB archetypes, with a range of 1-34% depending on the archetype. The reduced energy costs resulting from the proposed LPD values combined with the reduced lighting system maintenance requirements and the reduced initial costs of luminaires mean that lighting system costs would be lower than the NECB 2017 baseline values, resulting in a simple payback of 0 years.

Update to NECB Application Statements

PCF [1409](#)

This proposed change updates the NECB application statements in Article 1.1.1.1. of Division A to cover subsequent alterations to and within buildings. The change closes a loophole to ensure that interior improvements and tenant fit-up comply with the NECB.

Impact: The costs and benefits of alteration work are unique to each project and are, therefore, difficult to predict. However, no additional costs are expected to be incurred as a result of the proposed change, which reflects the original intent of Article 1.1.1.1.

Duct and Plenum Insulation

PCF [1438](#)

This proposed change adds supply ducts to the list of ducts that do not need to be thermally insulated.

Impact: Additional costs incurred due to the thermal gains/losses from ducts are expected to be offset by savings on installation costs.

Piping Insulation

PCF [1436](#) & [1435](#)

These proposed changes prohibit the alteration of manufactured insulation thicknesses for piping in HVAC systems and for service water systems.

Impact: Assuming that the current practice is to split a 50-mm-thick section of insulation to make two 25-mm-thick sections, it is expected that the increase in material costs associated with installing thicker sections of insulation over large surfaces will be offset by a decrease in labour costs (labour required to split the insulation in sections), a reduction in thermal losses, and increased longevity of the installed insulation.

Updates to Referenced Documents

PCF [1640](#)

This proposed change updates the designated editions of approximately 300 documents referenced in the National Codes.

Impact: The cost impact varies depending on the referenced standard.