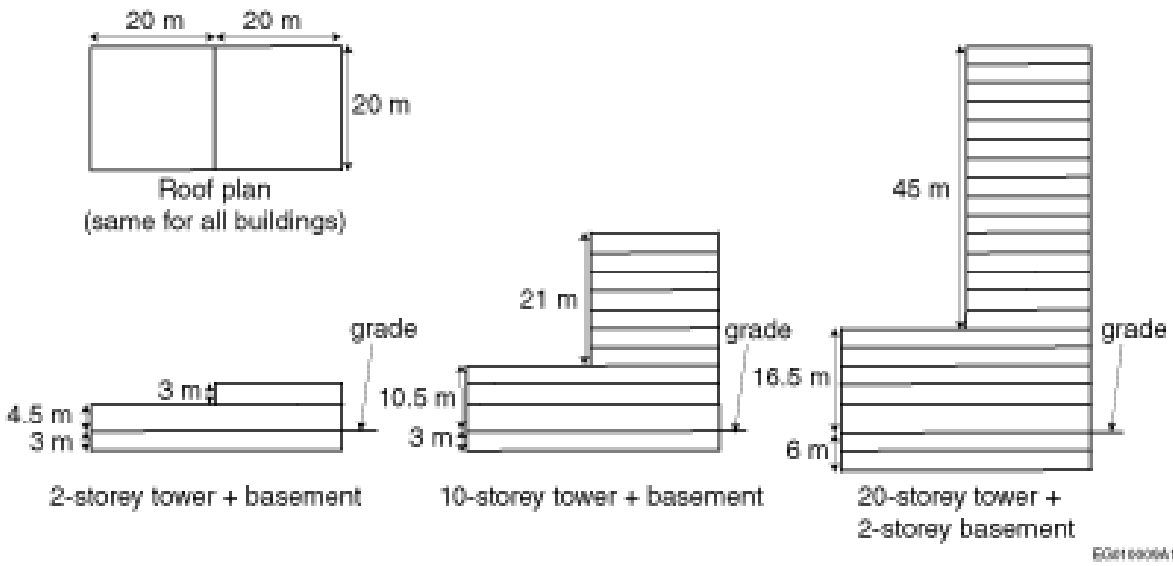
Cost Impact on Roof Drainage Systems in NPC

To evaluate the expected cost impact due to an increase in 15-min rainfall intensity as a result of the proposed changes, the pipe size increase of the combined primary/emergency drainage systems in the buildings shown in Figure 1 was considered. This does not account for the impact of the proposed change on alternative acceptable solutions, such as scuppers.

Three building forms of 2-storeys, 10-storeys, and 20-storeys were considered, each with the same total roof area of 800 m^2. These building types were intended to represent typical building forms commonly seen on commercial or multi-unit residential buildings across Canada.

Figure 1 – Building archetypes: 2-storey, 10-storey, and 20-storey towers with podium sections.



It was assumed that each of the two 20 m × 20 m roofs for each building has two combined primary/emergency drainage systems using Schedule 40 PVC pipes. In each system, there is a 1.5 m primary roof drain connected to a leader sized for 200% of the calculated hydraulic load and the emergency roof drain is attached to the leader. The nominal pipe sizes were determined by the maximum permitted hydraulic load per Table 2.4.10.11. in the NPC. The hydraulic load was calculated as the maximum 15-min rainfall multiplied by the sum of area of the horizontal projection of the surface that is to be drained and one-half of the area of the largest adjacent vertical surface, per Sentence 2.4.10.4.(1).

Table 2 presents the locations impacted as well as the total cost difference per building where the sizes of the primary roof drain pipe and the leader had to be increased due to an increase in rainfall intensity according to the proposed change.

Table 2 – Locations impacted and total cost difference of increased size of leaders per building

	2-storey				10-storey				20-storey			
	Locations impacted	Min. cost diff. ($)	Max. cost diff. ($)	Avg. cost diff. ($)	Locations impacted	Min. cost diff. ($)	Max. cost diff. ($)	Avg. cost diff. ($)	Locations impacted	Min. cost diff. ($)	Max. cost diff. ($)	Avg. cost diff. ($)
NU(1)	9	-	-	-	13	-	-	-	16	-	-	-
NT	17	45	743	546	16	55	2094	1503	17	45	6253	3988
YT	9	41	680	325	9	673	1770	1161	9	41	5729	2569
BC	103	45	741	384	107	55	1928	986	104	45	6241	2686
AB	42	65	2000	506	44	65	4845	1308	52	65	9600	2364
SK	26	91	1846	1319	28	82	5206	2780	28	1283	8862	5575
MB	7	91	1665	478	18	82	5184	1247	9	1277	8742	2632
ON	181	100	2029	1764	229	91	5722	3968	181	1410	9741	8711
QC	109	63	1953	1581	112	87	4732	3502	122	63	10733	6744
NB	13	90	1832	1092	12	82	4439	1897	18	1273	10070	3676
PE	1	55	55	55	4	1439	1495	1453	1	55	55	55
NS	10	62	94	65	16	1514	1670	1625	17	62	1327	657
NL	13	60	688	130	12	151	1789	1144	18	60	5790	787

Notes to Table 1:

(1) Cost data for Nunavut not available.

Cost Impact on Part 9 of Updated Moisture Index Values

NBC 9.3.2.9. Termite and Decay Protection

NBC Clause 9.3.2.9.(3)(b) requires structural wood elements to be pressure-treated with a preservative to resist decay where they are not protected from exposure to precipitation, the configuration is conducive to moisture accumulation, and the moisture index is greater than 1.00.

To provide an example of the potential cost increase associated with the updated moisture index values, the material cost for a sample 3.5 m × 4 m wood deck is considered.

The cost difference of using preservative-treated instead of untreated lumber for the entire wood deck assembly was calculated and shown in Table 1.

It is assumed that fasteners, connectors, other hardware, and labour remain unchanged and would not contribute to the cost increase associated with the updated moisture index values.

Table 1 – Cost increase for using pressure-treated wood for sample deck by province/territory

	Northern					Prairies				Atlantic				
	NT	NU	YT	BC	AB	SK	MB	ON	QC	NB	PE	NS	NL	National
Total locations impacted (1)	0	0	0	4	0	0	0	2	37	8	2	0	3	56
Cost diff. per deck ($)	n/a	n/a	n/a	289.20	n/a	n/a	n/a	271.91	435.24	444.62	444.62	n/a	544.17	415.89

Notes to Table 1:

(1) Locations where moisture index increased to greater than 1.00 due to this PCF.

NBC 9.27.2.2. Minimum Protection from Precipitation Ingress

NBC Sentence 9.27.2.2.(5) requires exterior walls exposed to precipitation to be protected against precipitation ingress by an exterior cladding assembly consisting of a first plane of protection and a second plane of protection incorporating a capillary break, where the number of degree-days is less than 3400 and the moisture index is greater than 0.90, or the number of degree-days is 3400 or more, and the moisture index is greater than 1.00.

To determine the cost increase for locations needing to incorporate a capillary break for exterior walls due to the updated moisture index values, the walls of a 128.5 m^2 2-storey detached dwelling unit with basement will be used as the archetype (see Appendix A).

For the cost analysis, it is assumed that the only additional material needed to incorporate capillary breaks are 19 mm × 38 mm vertical strapping to go between the cladding and sheathing. The exterior walls are also assumed to have no openings for the determination of the total length of vertical strapping needed, which results in a more conservative cost than with the openings included.

NBC Sentence 9.27.2.2.(4) requires exterior walls exposed to precipitation to be protected against precipitation ingress by an exterior cladding assembly consisting of a first plane of protection and a second plane of protection, where such walls enclose spaces of residential occupancy or spaces that directly serve spaces of residential occupancy. Consequently, it is also assumed that flashing is already required for the second plane of protection per NBC Sentence 9.27.3.1(a) and therefore would not contribute to the cost increase.

The total cost for material and installation of vertical strapping in order to add a capillary break for all exterior walls of the archetypal house are calculated and shown in Table 3. The national average unit cost increase is $1391. Table 2 depicts the material requirements, while Table 3 shows the national and regional unit cost increases of the proposed change.

Table 2 – Length of furring strips needed for archetypal house

	Side Wall A	Side Wall B	Garage Side Wall A	Garage Side Wall B	Front Wall	Back Wall	
Wall length (mm)	10675	10675	1903	1903	7134	7134	
Wall height (mm)	5816	5816	3416	3416	5816	5816	
Number of furring strips [1]	19	19	5	5	13	13	**TOTAL**
Length of furring strips (mm)	110504	110504	17080	17080	75608	75608	406 m

Note to Table 2:

[1] Furring spaced at 600 mm o.c. per Clause 9.27.5.3.(3)(b).

Table 3 – Cost of vertical strapping for capillary break per unit by province/territory

	Northern					**Prairies**				**Atlantic**				
	NT	**NU**	**YT**	**BC**	**AB**	**SK**	**MB**	**ON**	**QC**	**NB**	**PE**	**NS**	**NL**	**National**
Total locations Impacted	0	0	0	1	0	0	0	2	37	8	2	0	3	53
Cost per unit [1] ($)	n/a	n/a	n/a	1706	n/a	n/a	n/a	1666	1653	1226	1226	n/a	1520	1391

Notes to Table 3:

[1] Cost for length of furring strip determined in Table 2.

Cost Impact on Part 9 of Updated Driving Rain Wind Pressure (DRWP) Values

NBC Clause 9.27.3.8.(4)(c) requires flashing to terminate at each end with an end-dam with a height not less than 25 mm or 1/10 the value of the 1-in-5 driving rain wind pressure, and at the same height extending to the face of the adjacent cladding.

To determine the cost increase for locations needing to extend the height of the end-dams for flashing due to the updated driving rain wind pressure values, the windows of the 128.5 m^2 2-storey detached dwelling unit with basement (see Appendix A) are considered.

For the cost analysis, it is assumed that flashing is installed above and below all eight windows and all flashings terminate at each end with an end-dam. The end-dams are taken to be at the ends of the length of a flashing. The height of each flashing is assumed to be 175 mm, accounting for 50 mm minimum upstand per NBC Clause 9.27.3.8.(4)(a), 10 mm minimum lap over element below per NBC Clause 9.27.3.8.(4)(d), 5 mm minimum offset from outer face of building element below per NBC Clause 9.27.3.8.(4)(e), 10 mm for hemmed drip edge, and 100 mm extending from inboard to beyond cladding.

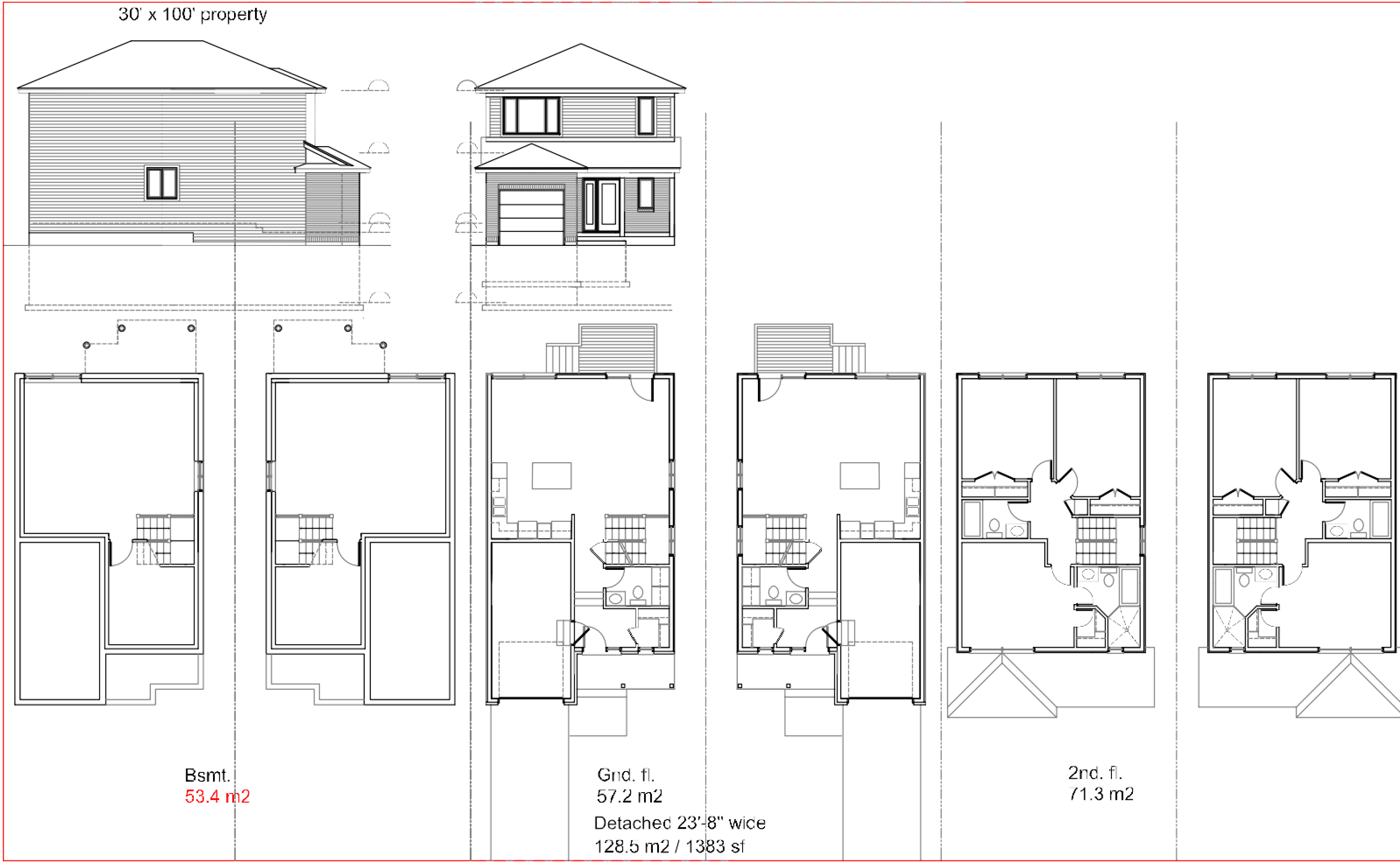
Table 4 depicts the regional and national locations impacted as well as the unit cost increases of the proposed change.

Table 3 – Cost of extra flashing per unit by province/territory

	Northern					Prairies				Atlantic				
	NT	NU	YT	BC	AB	SK	MB	ON	QC	NB	PE	NS	NL	National
Total locations impacted	0	4	1	21	0	3	1	0	9	3	4	16	12	74
Total cost of extra flashing per unit ($)	n/a	(1)	4.09	4.96	n/a	1.43	1.36	n/a	2.86	2.04	2.67	1.42	3.54	1.88

Notes to Table 4:

(1) Cost data for Nunavut not available.


30' x 100' property
Bsmt.
53.4 m2
Gnd. fl.
57.2 m2
Detached 23'-8" wide
128.5 m2 / 1383 sf
2nd. fl.
71.3 m2

Cost impact of climatic load changes on Part 9: Future projected climate data for snow and wind loads (PCF 1979)

Currently, the 1-in-50-year snow loads are used to calculate the specific snow load in Part 9, which is used in various requirements to define the application of a requirement or in tables where structural members are selected based on the specified snow load. The 1-in-50-year wind loads (hourly wind pressures) are used directly in several requirements to define the application.

The specified snow loads are used in the following requirements:

- Platforms subject to snow and occupancy loads (Sentence 9.4.2.3.(1))
- Performance of windows, doors and skylight (Sentence 9.7.3.1.(2))
- Columns (Subclause 9.17.1.1.(1)(b)(ii))
- Ridge support (Sentence 9.23.14.8.(5) and Table 9.23.14.8., Rafter-to-joist nailing (unsupported ridge))
- ICF lintels (Sentence 9.20.17.4.(3) and Span Tables 9.20.17.4.-A, 9.20.17.4.-B and 9.20.17.4.-C)
- Spans for joists, rafters and beams (Sentence 9.23.4.2.(1))
    - Roof joists (Span Tables 9.23.4.2.-D and 9.23.4.2.-E)
    - Roof rafters (Span Tables 9.23.4.2.-F and 9.23.4.2.-G)
    - Built-up ridge beams and lintels supporting the roof (Span Table 9.23.4.2.-L)
    - Lintels for various wood species (Span Tables 9.23.12.3.-A, 9.23.12.3.-B, 9.23.12.3.-C and 9.23.12.3.-D)

The 1-in-50-year hourly wind pressures are used in the following requirements:

- Structural sufficiency of glass (Sentence 9.6.1.3.(2))
- Nailing of framing – roof trusses, rafters and joists to wall framing (Sentence 9.23.3.4.(3))
- Fasteners for sheathing (Article 9.23.3.5.)
- Anchorage of building frames (Sentence 9.23.6.1.(3))
- Required roof sheathing (Sentence 9.23.16.1.(1))
- Lumber roof sheathing (Article 9.23.16.5.)
- Attachment of cladding to flat ICF wall units (Sentence 9.27.5.4.(2)

This document summarizes the cost impact resulting from changes proposed in PCF 1979, which includes future projected data (50-year time horizon) for the 1-in-50-year snow loads and hourly wind pressures.

General approach

As per the Policies and Procedures, Appendix G, the unit cost of material, labour and overhead/profit are obtained from RS Means. RS Means' cost database is a comprehensive collection of industry construction cost data that can be used to develop estimates for construction projects. All costs contained herein have been converted from the US national average cost to Canadian national average. The costs are based on 2023 construction cost data.

To determine overall costs, material quantities are calculated using archetypes and measured in AutoCAD to obtain lengths, areas, etc. Each archetype is described in the sections below.

First, all costs are calculated for a given archetype based on the climatic data in Table C-2 of Appendix C in NBC 2020 (herein this will be referred to as “before the change”). Then, the costs are recalculated using the revised climatic data provided in the proposed change form, PCF 1979 (herein this will be referred to as “after the change”). The difference between the costs is determined, which gives the cost impact of the proposed change.

Snow loads

The future projected 1-in-50-year snow loads increase only in the Yukon, Northwest Territories and Nunavut. There are a total of 42 locations out of 680 in Table C-2 within the territories. Snow load data in all other locations do not change in PCF 1979, so there is no impact on the remaining 638 locations.

Platforms subject to snow and occupancy loads (Sentence 9.4.2.3.(1))

The approach used to assess the cost impact of the proposed change on exterior platforms is to use an archetype exterior platform, in this case, a 3.5 m by 4 m long exterior platform. Sentence 9.4.2.3.(1) requires that exterior platforms be designed for a use and occupancy load of 1.9 kPa or the specified snow load, whichever is greater.

For locations where the specified snow load is less than 1.9 kPa before and after the change, there will be no impact. This is the case for exterior platform design in a total of 29 out of the 42 locations in Table C-2 for the Yukon, Northwest Territories and Nunavut.

For the remaining 13 locations, there is potential impact. For the design of exterior platforms, the span tables can be used to select the required wood joists and built-up beams needed based on the specified snow load in a given location. The span tables provide values for specified snow loads of 1.0 kPa, 1.5 kPa, 2.0 kPa, 2.5 kPa, 3.0 kPa and for 3.5 kPa and 4.0 kPa by way of an appendix note.

For locations where the specified snow load before and after the change remains between the same range (e.g., between 1.0 kPa and 1.5 kPa), there is no impact. This is the case for 6 locations. This leaves 7 locations out of a total of 680 locations in Table C-2 with potential impact.

Assessment of these 7 locations using the archetype, span tables and costs from RS Means found that there are 2 locations that experience a cost increase (see Table below), ranging from $47.77 to $126.43, as a result of PCF 1979. Note, there are 5 additional locations to those noted above that are not impacted because the same joist and built-up beam size is sufficient before and after the proposed change, based on the spans used in the archetype.

Province and Location	Province	Cost **NBC 2020**	Cost **PCF 1979**	Cost Difference
Watson Lake	YT	$542.61	$542.61	$0.00
Fort McPherson	NT	$542.61	$542.61	$0.00
Inuvik	NT	$542.61	$542.61	$0.00

Tungsten	**NT**	**$669.04**	**$716.81**	**$47.77**
Arviat	NU	$542.61	$542.61	$0.00
Kangiqiniq / Rankin Inlet	NU	$542.61	$542.61	$0.00
Kugluktuk / Coppermine	**NU**	**$542.61**	**$669.04**	**$126.43**

Performance of windows, doors and skylight (Sentence 9.7.3.1.(2))

In the 42 locations where the snow loads increase, there is potential for impact on the structural design of skylights. The magnitude of the cost impact could not be determined without industry knowledge on the structural design of skylights including the capacity of the skylight frames and glazing.

Columns (Subclause 9.17.1.1.(1)(b)(ii))

To assess the cost impact of the proposed change on columns an exterior platform with dimensions of 2.44 m by 4 m is used; it is assumed to be raised from the ground by 3 m. Three columns are used to support a beam at the front edge of the deck along the 4 m length.

Subclause 9.17.1.1.(1)(b)(ii) limits the application of Section 9.17. to columns supporting exterior platforms where the sum of the specified snow load and the occupancy load (1.9 kPa) does not exceed 4.8 kPa. Therefore, in locations where the sum of the specified snow load and the occupancy load remains below 4.8 kPa before and after the change, there will be no impact. This is the case for all 42 locations except for one—Resolution Island, NU.

Assessment of this one location using the archetype, Part 4 column design and costs from RS Means (see Table 3) found that it experiences neither an increase or decrease in cost because the same column size is applicable both before and after the proposed change.

Ridge support (Sentence 9.23.14.8.(5) and Table 9.23.14.8., Rafter-to-joist nailing (unsupported ridge))

To assess the cost impact of the proposed change on the nailed connection between a roof rafter and ceiling joist or collar tie, a 120 m^2 bungalow is used as an archetype (see Figure 1).

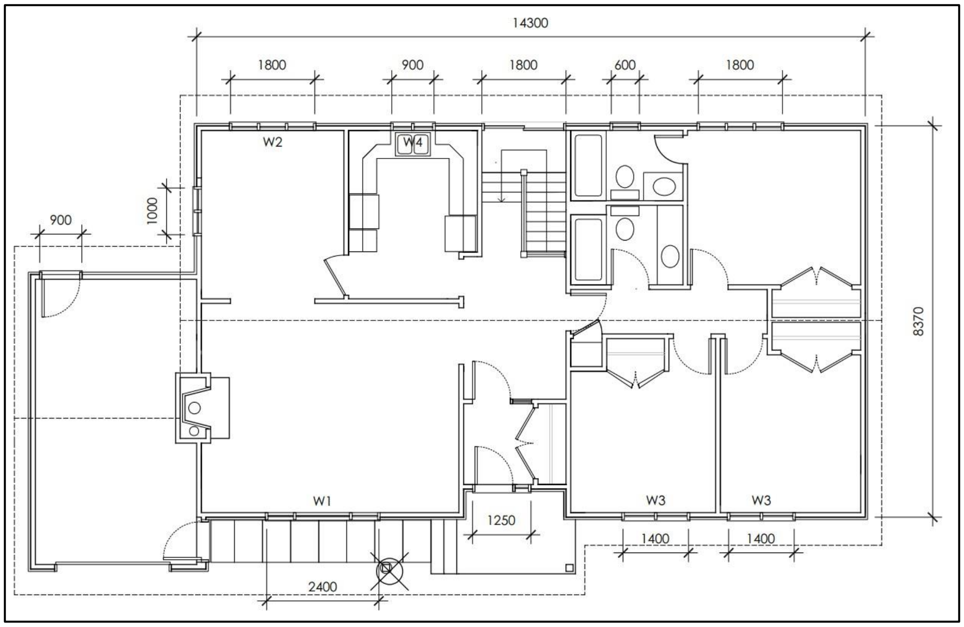


Figure 1 – 120 m^2 bungalow archetype

Table 9.23.14.8. provides the number of nails to be used at the rafter-to-joist connection for a 1.0 kPa, 1.5 kPa and 2.0 kPa specified snow load. In locations where the specified snow load remains within the same range there is no impact. This is the case for 32 locations. Of the remaining 10 locations, 7 experience an increase in the number of nails (maximum 3 additional nails) and an additional 3 locations are not impacted because the same number of nails are sufficient before and after the change.

Table 9.23.14.8. is used in the analysis to determine the number of nails in locations less than or equal to 2.0 kPa, while connection design using CSA O86-19 is used for locations with a specified snow load greater than 2.0 kPa.

Based on the archetype, adding 3 additional nails to each rafter-to-joist connection results in an additional material cost of **$5.54** for a 120 m^2 bungalow with wood framed construction.

Province and Location	Province	Required Number of Nails (Part 4 Design) **NBC 2020**	Required Number of Nails (Part 4 Design) **PCF 1979**	Additional Nails Required
Fort Smith	NT	10	11	1
Eureka	**NU**	**7**	**10**	**3**
Igluligaarjuk / Chesterfield Inlet	NU	14	15	1
Kanngiqtugaapik / Clyde River	NU	16	17	1
Kugluktuk / Coppermine	NU	13	14	1
Resolution Island	NU	20	21	1
Salliq / Coral Harbour	NU	15	16	1

ICF lintels (Sentence 9.20.17.4.(3) and Span Tables 9.20.17.4.-A, 9.20.17.4.-B and 9.20.17.4.-C)

To assess the cost impact of the proposed change on insulating concrete form (ICF) lintels, an approximate 120 m^2 bungalow is used assuming 150 mm thick ICF walls (see Figure 1 above).

The three largest windows with openings of 2.4 m, 1.8 m and 1.4 m along with patio door and front entrance door, both of equal to or similar size opening to the window opening sizes, are analysed. ICF lintel sizes before and after the proposed change were determined using the ICF span tables in the NBC and using lintel span tables from an ICF manufacturer where the ground snow load, S_s, is more than 3.33 kPa (the upper limit of the ICF span tables in the NBC). Where the ground snow load exceeds 5.15 kPa, the size of lintels was not determined and in practice these locations would likely need the assistance of a professional engineer to design the ICF lintels.

In locations where the ICF lintel size is sufficient to support the snow load before and after the change, there will be no impact. This occurs in 31 out of the 42 locations in the Yukon, Northwest Territories and Nunavut. One location (Resolution Island, NU) has a ground snow load that exceeds both the span tables in the NBC and those provided by an ICF manufacturer. In this location, concrete beam design using Part 4 is needed, which likely requires a structural engineer and additional material and labour costs.

For the remaining 10 locations not accounted for above, the proposed change results in an increased cost for the ICF lintels between **$6.71** to **$32.63** for a 120 m^2 bungalow with 150 mm thick ICF walls.

Location	Province	Total Cost Difference
Teslin	YT	$6.71
Watson Lake	YT	$32.63
Echo Bay / Port Radium	NT	$6.71
Fort McPherson	NT	$32.63
Mould Bay	NT	$14.01
Norman Wells	NT	$6.71
Arviat	NU	$6.71
Baker Lake	NU	$15.56
Kangiqiniq / Rankin Inlet	NU	$6.71
Kugluktuk / Coppermine	NU	$15.56

Spans for joists, rafters and beams (Sentence 9.23.4.2.(1))

As per above, to assess the impact of the future projected climatic data on the span tables (roof joists, roof rafters, built-up ridge beams and lintels) in Part 9 an approximate 120 m^2 bungalow is used (refer to Figure 1). Each of the span tables for wood members supporting snow loads provide member sizes for specified snow loads of 1.0 kPa, 1.5 kPa, 2.0 kPa, 2.5 kPa, 3.0 kPa; and, 3.5 kPa and 4.0 kPa by way of an appendix note. For locations where the specified snow load before and after the change remains between the same range (e.g., between 1.0 kPa and 1.5 kPa), there is no impact. This the case for 38 locations out of the 42 locations where snow loads change as a result of PCF 1979.

The impact of the proposed change on roof joists, roof rafters, built-up ridge beams and lintels, for the remaining 4 locations—Fort Smith, NT; Tungsten, NT; Eureka, NU; and, Kugluktuk, NU—are summarized below.

Roof joists (Span Tables 9.23.4.2.-D and 9.23.4.2.-E)

Two of the of the 4 locations experience a cost increase of approximately $1,850.00 (see Table below). Two locations do not experience an impact because the same roof joist size is sufficient before and after the proposed change, based on the spans used in the archetype.

Province and Location	Province	Cost **NBC 2020**	Cost **PCF 1979**	Cost Difference
Fort Smith	NT	$8,579.88	$8,579.88	$0.00
Tungsten	NT	$10,429.56	$10,429.56	$0.00
Eureka	**NU**	**$6,725.16**	**$8,579.88**	**$1,854.72**
Kugluktuk	**NU**	**$8,579.88**	**$10,429.56**	**$1,849.68**

Roof rafters (Span Tables 9.23.4.2.-F and 9.23.4.2.-G)

Three of the 4 locations experience an increase in roof rafter costs between $255.30 and $1,342.89 (see Table below). One additional location is not impacted because the size of the roof rafters is sufficient before and after the proposed change, based on the spans used in the archetype.

Province and Location	Province	Cost **NBC 2020**	Cost **PCF 1979**	Cost Difference
Fort Smith	**NT**	**$5,082.92**	**$6,425.81**	**$1,342.89**
Tungsten	**NT**	**$6,425.81**	**$7,768.70**	**$1,342.89**
Eureka	**NU**	**$4,827.62**	**$5,082.92**	**$255.30**
Kugluktuk	NU	$6,425.81	$6,425.81	$0.00

Built-up ridge beams and lintels supporting the roof (Span Table 9.23.4.2.-L)

Similar to the result for roof rafters, three out of the 4 locations experience an increase in built-up ridge beam costs between $140.24 and $262.66 (see Table below). Again, one additional location is not impacted because the size of the built-up ridge beam is sufficient before and after the proposed change, based on the archetype and assuming the 14.3 m long built-up ridge beam is supported every 2.86 m.

Province and Location	Province	Cost **NBC 2020**	Cost **PCF 2048**	Difference
Fort Smith	**NT**	**$645.40**	**$908.06**	**$262.66**
Tungsten	NT	$1,061.91	$1,061.91	$0.00

Eureka	**NU**	**$505.16**	**$645.40**	**$140.24**
Kugluktuk	**NU**	**$908.06**	**$1,061.91**	**$153.85**

Lintels for various wood species (Span Tables 9.23.12.3.-A, 9.23.12.3.-B, 9.23.12.3.-C and 9.23.12.3.-D)

The archetype bungalow includes six different opening sizes for the front entrance door, rear patio door, rear garage entrance door and the 8 windows.

All four locations identified above experience a lintel cost increase between $32.13 and $84.47 (see Table below) as a result of the proposed change, based on the archetype.

Province and Location	Province	Overall Cost Impact **NBC 2020 – PCF 1979**
Fort Smith	NT	$32.13
Tungsten	NT	$84.47
Eureka	NU	$41.82
Kugluktuk / Coppermine	NU	$53.88

Hourly wind pressures

The future project climatic data provided in PCF 1979 results in an increase in the 1-in-50-year hourly wind pressure in all 680 locations in Table C-2. The order of magnitude of the increases are between 4.1% and 11.4%.

Structural sufficiency of glass (Sentence 9.6.1.3.(2))

To assess the impact of the proposed change on the structural sufficiency of glass, a 128.5 m^2 2-storey detached home is used as the archetype (see Figure 2). The detached home contains five different sized windows with glass areas between 0.57 m^2 and 1.43 m^2.

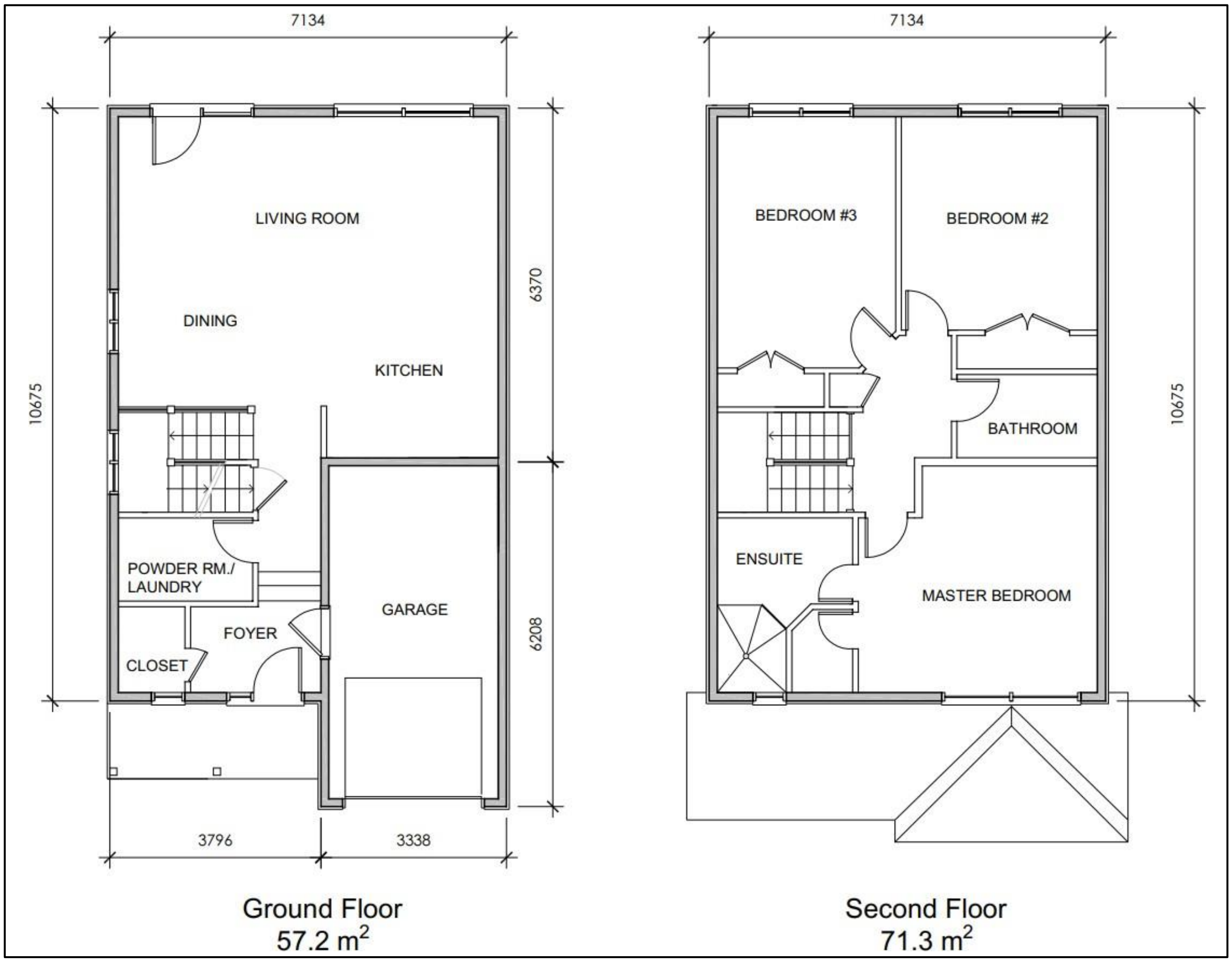


Figure 2 – 128.5 m², 2-storey detached house archetype

Table 9.6.1.3.-A, 9.6.1.3.-B and 9.6.1.3.-C provide the maximum glass area for windows in locations in Table C-2 with 1-in-50-year hourly wind pressures of less than 0.55 kPa, less than 0.75 kPa and less than 1.0 kPa, respectively. For the impact analysis, factory-sealed insulated glass (IG) units are assumed.

For locations where the 1-in-50-year hourly wind pressures remain below the maximum limits provided in the tables before and after the change, there will be no impact. This is the case for 649 out of 680 locations in Table C-2. For the remaining 31 locations, there is potential impact. Three locations—Cowley, AB; Cape Race, NL; and Resolution Island, NU—have a 1-in-50-year hourly wind pressure, before and after the proposed change, that exceeds the maximum value of 1.0 kPa provided in the prescriptive table in the NBC. These locations would need to consult the window manufacturer for glass thickness. The 1-in-50-year hourly wind pressure increases in all three locations by approximately 5% to 10% so there is likely a cost impact. For the remaining 28 locations out of 31, the proposed change results in an increased cost for windows between **$126.98** to **$353.51** (see Table below) for the 128.5 m² 2-storey detached archetype.

Province and Location	Province	Total Cost Difference
Bamfield	BC	$126.98
Bella Bella	BC	$126.98
Port Renfrew	BC	$126.98
Prince Rupert	BC	$126.98

Squamish	BC	$126.98
Tofino	BC	$353.51
Ucluelet	BC	$353.51
Battrum	SK	$126.98
Estevan	SK	$126.98
Moose Jaw	SK	$126.98
Swift Current	SK	$126.98
Boissevain	MB	$126.98
Morden	MB	$126.98
Mont-Joli	QC	$126.98
Port-Cartier	QC	$126.98
Rimouski	QC	$126.98
Sept-Îles	QC	$126.98
Tadoussac	QC	$126.98
Moncton	NB	$126.98
Saint John	NB	$126.98
Antigonish	NS	$126.98
Greenwood (CFB)	NS	$126.98
Kentville	NS	$126.98
Stewiacke	NS	$126.98
Wolfville	NS	$126.98
Grand Bank	NL	$353.51
Echo Bay / Port Radium	NT	$126.98
Baker Lake	NU	$126.98

Nailing of framing – roof trusses, rafters and joists to wall framing (Sentence 9.23.3.4.(3))

To assess the impact of the proposed change on the nailing of framing, specifically for roof truss, rafter or joist connections to wall framing, a 120 m^2 bungalow is used as the archetype (see Figure 1 above).

Where the 1-in-50-year hourly wind pressure is equal to or exceeds 0.8 kPa, roof trusses, rafters or joists are required to be tied to wall framing with connectors that can resist 3 kilonewtons (kN) of roof uplift. Galvanized-steel straps that are 50 mm wide, no less than 0.91 mm thick and allow for fastening at each end with four 63 mm nails are deemed to comply with the roof uplift requirement.

Currently, there are 7 locations out of 680 locations in Table C-2 with a 1-in-50-year hourly wind pressure that is equal to or exceed 0.80 kPa. As a result of the future projected climatic data in PCF 1979, 6 additional locations would exceed 0.80 kPa.

Using the 120 m^2 bungalow archetype, the number of required galvanized-steel connectors are calculated to be approximately 72, resulting in a cost increase for these 6 new locations of **$437.04** (see Table below).

Province and Location	Province	Total Cost Increase
Argentia	NL	$437.04
Channel-Port aux Basques	NL	
Grand Bank	NL	
St. John's	NL	
Wabana	NL	
Nottingham Island	NU	

Fasteners for sheathing (Article 9.23.3.5.)

To assess the impact of the proposed change on fastening of both roof and wall sheathing, the 128.5 m^2 2-storey detached house (see Figure 2) is used as an archetype.

The NBC provides three prescriptive tables to determine fastener size and spacing for sheathing. Application of each table depends on the 1-in-50-year hourly wind pressure and seismic spectral acceleration in a given location. For locations where the 1-in-50-year hourly wind pressure is less than 0.8 kPa requirement for fasteners are less stringent than locations with a 1-in-50-year hourly wind pressure that is equal to or exceeds 0.8 kPa.

For locations where the 1-in-50-year hourly wind pressure remains below 0.8 kPa, there will be no impact. This is the case for 667 out of 680 locations. As noted above, there are 7 locations in the current Table C-2 with a 1-in-50-year hourly wind pressure greater than 0.8 kPa so there will be no impact in these locations. However, the same 6 locations noted above will exceed 0.8 kPa as a result of the future projections and could experience cost increases for both roof and wall sheathing fasteners.

<u>Roof Sheathing</u>

As a result of the proposed change, roof sheathing in the 6 new locations would now require larger size fasteners and fasteners spaced at 50 mm within 1 m of the roof edge. For the cost impact analysis common wire nails are assumed. Based on the increase in nail size (51 mm to 63 mm), additional fasteners at the edge of the roof and the size of the archetype roof, a cost increase of **$468.68** is estimated for the 6 new locations (see Table below).

Province and Location	Province	Total Cost Increase
Argentia	NL	$468.68
Channel-Port aux Basques	NL	
Grand Bank	NL	
St. John's	NL	
Wabana	NL	
Nottingham Island	NU	

<u>Wall Sheathing</u>

The impact of the proposed change on fasteners for wall sheathing occurs when braced wall panels are required per Subsection 9.23.13 in the NBC. Similar to the prescriptive tables for roof sheathing, a 1-in-50-year hourly wind pressure of 0.8 kPa acts as a threshold for when braced wall panels with wood-based wall sheathing are required. As a result of the future projected climate data, the same 6 locations identified above will need to follow the NBC requirements for high wind forces (Article 9.23.13.2.) resulting in a cost increase of **$1,125.30** (see Table below).

To determine the above cost impact, the length of braced wall panels is calculated for the 128.5 m^2 2-storey detached archetype using the braced wall panel spacing and length requirements in Table 9.23.13.5. A total length of 28.2 m is calculated. For the cost assessment, it is assumed that the archetype is constructed without wood-based exterior sheathing (e.g., sheathed with rigid insulation) before the proposed change and now requires some percentage of wood-based sheathing at exterior wall and the interior, end garage wall. In this case, the cost impact is dictated by the requirement for wood-based sheathing (11 mm thick OSB assumed), which requires specific size and spacing of wall sheathing fasteners.

Province and Location	Province	Total Cost Increase
Argentia	NL	$1,125.30
Channel-Port aux Basques	NL	
Grand Bank	NL	
St. John's	NL	
Wabana	NL	
Nottingham Island	NU	

Anchorage of building frames (Sentence 9.23.6.1.(3))

Similar to the fasteners for wall sheathing, a cost increase for anchorage of building frames is dictated by the need for braced wall panels when the 1-in-50-year hourly wind pressure exceeds 0.8 kPa, which is the case for the 6 new locations noted above. The spacing and length of braced wall panels is calculated as described above. Sentence 9.23.6.1.(3) requires that two anchors be provided for each braced wall panel and that the anchor bolts are either 15.9 mm diameter spaced at 2.4 m or 12.7 mm diameter spaced at 1.7 m. Between braced wall panels the regular requirement for 12.7 mm diameter anchor bolts at 2.4 m is maintained.

For the cost assessment, braced wall panel anchorage with 12.7 mm diameter anchor bolts at 1.7 m is used. As a result of the future projected climatic data in PCF 1979 and the need for braced wall panels, the number of anchor bolts is estimated to increase by 15 for a total cost increase of **$94.20** in the 6 new locations noted (see Table below).

Province and Location	Province	Total Cost Increase
Argentia	NL	$94.20
Channel-Port aux Basques	NL	
Grand Bank	NL	
St. John's	NL	
Wabana	NL	
Nottingham Island	NU	

Required roof sheathing (Sentence 9.23.16.1.(1))

To assess the impact of the proposed change on required roof sheathing, the 128.5 m^2 2-storey detached bungalow is used. It is assumed that trusses are spaced at 600 mm and before the proposed change the roof is sheathed with panel-type material that would not comply with Subsection 9.23.16. (i.e., sheathing that is too thin for the truss spacing—7.5 mm plywood).

Sentence 9.23.16.1. requires that continuous lumber or panel-type roof sheathing be installed to support the roofing when the 1-in-50-year hourly wind pressure is equal to or exceeds 0.8 kPa. Similar to above, 6 locations would be impacted by the future projected climatic data increases and would be required to follow the roof sheathing requirements in Subsection 9.23.16. For this cost assessment, 9.5 mm plywood sheathing, supported at edges, to comply with Subsection 9.23.16. The resulting cost increase from a sheathing that would be deemed too thin for the truss spacing in Sentence 9.23.16.7.(2) to a compliant plywood sheathing is approximately **$168.82**.

Province and Location	Province	Total Cost Increase
Argentia	NL	$168.82
Channel-Port aux Basques	NL	
Grand Bank	NL	
St. John's	NL	
Wabana	NL	
Nottingham Island	NU	

Lumber roof sheathing (Article 9.23.16.5.)

To assess the impact of the proposed change on lumber roof sheathing the roof area of the 128.5 m^2, 2-storey detached archetype is used.

Sentence 9.23.16.5. requires that lumber roof sheathing be installed diagonally when the 1-in-50-year hourly wind pressure is equal to or exceeds 0.8 kPa. Therefore, the same 6 locations will be impacted by an increase in 1-in-50-year hourly wind pressure above 0.8 kPa as a result of PCF 1979. The cost impact for lumber roof sheathing in these 6 locations is approximately **$311.67** and represents the difference between installing lumber roof sheathing horizontally versus diagonally.

Province and Location	Province	Total Cost Increase
Argentia	NL	$311.67
Channel-Port aux Basques	NL	
Grand Bank	NL	
St. John's	NL	
Wabana	NL	
Nottingham Island	NU	

Attachment of cladding to flat ICF wall units (Sentence 9.27.5.4.(2)

To assess the impact of the proposed change on the attachment of cladding to flat wall insulating concrete form (ICF) units, the 128.5 m^2, 2-storey detached archetype is used. Sentence 9.27.5.4.(2) and Table 9.27.5.4.-B provide the screw size and spacing requirements for the attachment of cladding, trim and furring members to the web fastening strips of flat wall ICF and limits the application to locations where the 1-in-50-year hourly wind pressure is equal to or less than 0.60 kPa.

For the impact analysis, it is assumed that the cladding is attached to furring that is attached to either the flat wall ICF web fastening strips when permitted or to the solid concrete core of the ICF where the 1-in-50-year hourly wind pressure exceeds 0.6 kPa.

For locations where the 1-in-50-year hourly wind pressure is equal to or less than 0.6 kPa before and after the change, there will be no impact. This is the case for locations in 612 out of the 680 locations in Table C-2. For the remaining 68 locations there is potential impact requiring further assessment.

Similarly, for locations where the 1-in-50-year hourly wind pressure is greater than 0.6 kPa before and after the change, the impact is assumed to be minimal and would account for additional fasteners. This is the case for half (34) of the remaining 68 locations.

The greatest impact is assumed to occur when the future projected climatic data for 1-in-50-year hourly wind pressure moves from equal to or less than 0.60 kPa before the proposed change to more than

0.6 kPa after the change. This is the case for 34 locations, representing the other half of the 68 locations.

The resulting cost increase in these locations for the attachment of cladding to flat ICF walls is approximately **$2,009.15** (see Table below), which represents the different material costs for fasteners into concrete and the additional labour and reduced daily output to attach the furring through the flat wall ICF units into the solid concrete backup wall.

Province and Location	Province	Cost Difference for Furring
Jordan River	BC	$2,009.15
Ocean Falls	BC	
Victoria	BC	
Victoria (Gonzales Hts)	BC	
Claresholm	AB	
Kuujjuaq	QC	
Puvirnituq	QC	
Bridgewater	NS	
Digby	NS	
Dartmouth	NS	
Halifax	NS	
Lockeport	NS	
New Glasgow	NS	
North Sydney	NS	
Pictou	NS	
Sydney	NS	
Tatamagouche	NS	
Yarmouth	NS	
Charlottetown	PE	
Souris	PE	
Summerside	PE	
Buchans	NL	
Cape Harrison	NL	
Corner Brook	NL	
Gander	NL	
Grand Falls	NL	
Stephenville	NL	
Destruction Bay	YT	
Mould Bay	NT	
Arviat	NU	
Isachsen	NU	
Kangiqiniq / Rankin Inlet	NU	
Resolute	NU	
Salliq / Coral Harbour	NU	

Impact of future projected climatic data (PCF 1979) on major city centres in each province/territory.

As provided herein, not all locations for each requirement that includes reference to specified snow loads or 1-in-50-year hourly wind pressures are impacted by the future-projected climatic data. In some cases, major Canadian cities are not impacted by the proposed change. Appendix A provides a table summarizing the results of the cost impact analysis detailed herein for major city centres in each province/territory.

Appendix A

Impact of future projected climatic data (PCF 1979) on major city centres in each province/territory.

			Climatic Data						Requirements using Snow Loads							
Location	Province	2021 Census Populations	Snow Load, kPa 1/50 S_s NBC 2020	Snow Load, kPa 1/50 S_s PCF 1979	Specified Snow Load (Part 9) $S = C_bS_s + S_r$ NBC 2020	Specified Snow Load (Part 9) $S = C_bS_s + S_r$ PCF 1979	Hourly Wind Pressure 1/50 (kPa) NBC 2020	Hourly Wind Pressure 1/50 (kPa) PCF 1979	Impact on Article 9.4.2.3. Platforms	Impact on Article 9.17.1.1. Columns	Impact on Sentence 9.23.14.8.(5) Rafter Nailing	Impact on Sentence 9.20.17.4.(3) ICF Lintels	Impact on Sentence 9.23.4.2.(1) Roof Joists	Impact on Sentence 9.23.4.2.(1) Roof Rafters	Impact on Sentence 9.23.4.2.(4) Built-up Ridge Beam and Lintels	Impact on Sentence 9.23.12.3.(1) Lintels
Kelowna	BC	222162	1.7	1.7	1.04	1.04	0.40	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Vancouver (City Hall)	BC	2642825	1.8	1.8	1.19	1.19	0.45	0.50	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Victoria	BC	397237	1.1	1.1	0.81	0.81	0.57	0.63	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Calgary	AB	1481806	1.1	1.1	0.71	0.71	0.48	0.50	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Edmonton	AB	1418118	1.7	1.7	1.04	1.04	0.45	0.47	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Lethbridge	AB	123847	1.2	1.2	0.76	0.76	0.66	0.69	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Prince Albert	SK	45718	1.9	1.9	1.15	1.15	0.38	0.40	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Regina	SK	249217	1.4	1.4	0.87	0.87	0.49	0.51	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Saskatoon	SK	317480	1.7	1.7	1.04	1.04	0.46	0.48	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Brandon	MB	54268	2.1	2.1	1.36	1.36	0.49	0.51	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Steinbach	MB	17806	2.0	2.0	1.30	1.30	0.40	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Winnipeg	MB	834678	1.9	1.9	1.25	1.25	0.45	0.47	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Hamilton	ON	785184	1.1	1.1	1.01	1.01	0.46	0.51	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Ottawa (City Hall)	ON	1135014	2.4	2.4	1.72	1.72	0.41	0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Toronto (City Hall)	ON	6202225	0.9	0.9	0.90	0.90	0.44	0.48	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Montréal (City Hall)	QC	4291732	2.6	2.6	1.83	1.83	0.44	0.46	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Québec	QC	839311	3.6	3.6	2.58	2.58	0.41	0.43	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Sherbrooke	QC	227398	2.2	2.2	1.81	1.81	0.32	0.34	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Fredericton	NB	108610	3.1	3.1	2.31	2.31	0.38	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Moncton	NB	157717	3.0	3.0	2.25	2.25	0.50	0.55	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Saint John	NB	130613	2.3	2.3	1.87	1.87	0.53	0.58	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Halifax	NS	465703	1.9	1.9	1.65	1.65	0.58	0.64	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
New Glasgow	NS	34397	2.2	2.2	1.81	1.81	0.55	0.61	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Truro	NS	46157	2.0	2.0	1.70	1.70	0.48	0.53	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Charlottetown	PE	78858	2.7	2.7	2.09	2.09	0.56	0.62	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Summerside	PE	18157	3.1	3.1	2.31	2.31	0.60	0.66	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Corner Brook	NL	29762	3.7	3.7	2.64	2.64	0.55	0.61	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Grand Falls	NL	13853	3.4	3.4	2.47	2.47	0.60	0.66	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
St. John's	NL	212579	2.9	2.9	2.30	2.30	0.78	0.86	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Dawson	YT	1577	2.9	3.0	1.70	1.75	0.31	0.33	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Whitehorse	YT	31913	2.0	2.1	1.20	1.26	0.38	0.40	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Hay River	NT	3169	2.4	2.5	1.42	1.48	0.35	0.37	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Inuvik	NT	3137	3.1	3.3	1.81	1.92	0.40	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Yellowknife	NT	20340	2.2	2.3	1.31	1.37	0.40	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Iqaluit	NU	7429	2.9	3.0	1.80	1.85	0.65	0.68	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Kangiqiniq / Rankin Inlet	NU	2975	3.0	3.2	1.85	1.96	0.60	0.63	$0.00	$0.00	$0.00	**$6.71**	$0.00	$0.00	$0.00	$0.00

			Climatic Data						Requirements using 1-in-50 Hourly Wind Pressure							
Location	Province	2021 Census Populations	Snow Load, kPa 1/50 Ss NBC 2020	Snow Load, kPa 1/50 Ss PCF 1979	Specified Snow Load (Part 9) S = CbSs + Sr NBC 2020	Specified Snow Load (Part 9) S = CbSs + Sr PCF 1979	Hourly Wind Pressure 1/50 (kPa) NBC 2020	Hourly Wind Pressure 1/50 (kPa) PCF 1979	Impact on Article 9.6.1.3. Glass	Impact on Sentence 9.23.3.4.(3) Roof Connectors	Impact on Article 9.23.3.5. Fasteners for roof sheathing	Impact on Article 9.23.3.5. Fasteners for wall sheathing	Impact on Sentence 9.23.16.1.(1) Anchorage of building frames	Impact on Sentence 9.23.16.1.(1) Required roof sheathing	Impact on Article 9.23.16.5. Lumber roof sheathing	Impact on Sentence 9.27.5.4.(2) Attachment of cladding to ICF
Kelowna	BC	222162	1.7	1.7	1.04	1.04	0.40	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Vancouver (City Hall)	BC	2642825	1.8	1.8	1.19	1.19	0.45	0.50	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Victoria	BC	397237	1.1	1.1	0.81	0.81	0.57	0.63	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$2,009.15**
Calgary	AB	1481806	1.1	1.1	0.71	0.71	0.48	0.50	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Edmonton	AB	1418118	1.7	1.7	1.04	1.04	0.45	0.47	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Lethbridge	AB	123847	1.2	1.2	0.76	0.76	0.66	0.69	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Prince Albert	SK	45718	1.9	1.9	1.15	1.15	0.38	0.40	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Regina	SK	249217	1.4	1.4	0.87	0.87	0.49	0.51	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Saskatoon	SK	317480	1.7	1.7	1.04	1.04	0.46	0.48	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Brandon	MB	54268	2.1	2.1	1.36	1.36	0.49	0.51	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Steinbach	MB	17806	2.0	2.0	1.30	1.30	0.40	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Winnipeg	MB	834678	1.9	1.9	1.25	1.25	0.45	0.47	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Hamilton	ON	785184	1.1	1.1	1.01	1.01	0.46	0.51	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Ottawa (City Hall)	ON	1135014	2.4	2.4	1.72	1.72	0.41	0.45	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Toronto (City Hall)	ON	6202225	0.9	0.9	0.90	0.90	0.44	0.48	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Montréal (City Hall)	QC	4291732	2.6	2.6	1.83	1.83	0.44	0.46	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Québec	QC	839311	3.6	3.6	2.58	2.58	0.41	0.43	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Sherbrooke	QC	227398	2.2	2.2	1.81	1.81	0.32	0.34	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Fredericton	NB	108610	3.1	3.1	2.31	2.31	0.38	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Moncton	NB	157717	3.0	3.0	2.25	2.25	0.50	0.55	**$126.98**	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Saint John	NB	130613	2.3	2.3	1.87	1.87	0.53	0.58	**$126.98**	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Halifax	NS	465703	1.9	1.9	1.65	1.65	0.58	0.64	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$2,009.15**
New Glasgow	NS	34397	2.2	2.2	1.81	1.81	0.55	0.61	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$2,009.15**
Truro	NS	46157	2.0	2.0	1.70	1.70	0.48	0.53	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Charlottetown	PE	78858	2.7	2.7	2.09	2.09	0.56	0.62	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$2,009.15**
Summerside	PE	18157	3.1	3.1	2.31	2.31	0.60	0.66	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$2,009.15**
Corner Brook	NL	29762	3.7	3.7	2.64	2.64	0.55	0.61	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$2,009.15**
Grand Falls	NL	13853	3.4	3.4	2.47	2.47	0.60	0.66	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$2,009.15**
St. John's	NL	212579	2.9	2.9	2.30	2.30	0.78	0.86	$0.00	**$437.04**	**$468.68**	**$1,125.30**	**$94.20**	**$168.82**	**$311.67**	$0.00
Dawson	YT	1577	2.9	3.0	1.70	1.75	0.31	0.33	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Whitehorse	YT	31913	2.0	2.1	1.20	1.26	0.38	0.40	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Hay River	NT	3169	2.4	2.5	1.42	1.48	0.35	0.37	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Inuvik	NT	3137	3.1	3.3	1.81	1.92	0.40	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Yellowknife	NT	20340	2.2	2.3	1.31	1.37	0.40	0.42	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Iqaluit	NU	7429	2.9	3.0	1.80	1.85	0.65	0.68	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Kangiqiniq / Rankin Inlet	NU	2975	3.0	3.2	1.85	1.96	0.60	0.63	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	**$2,009.15**