Established in 1889, the Ontario Association of Architects (OAA) is the self-regulating body for the province's architecture profession. It governs the practice of architecture and administers the Architects Act *in order to serve and protect the public interest.*

Secretary, Canadian Board for Harmonized Construction Codes
1200 Montreal Road, Building M-20
Ottawa, ON K1A 0R6

Sent by email to: CBHCCSecretary-SecretaireCCHCC@nrc-cnrc.gc.ca

December 18, 2023

Re: CBHCC Consultation on Greenhouse Gas Considerations in the National Model Codes

To Whom It May Concern:

The Ontario Association of Architects (OAA) continues to monitor and respond to proposals to harmonize the Ontario Building Code with the National Codes. In particular, the Association is concerned with advancing energy efficiency as a key piece of the harmonization process.

The OAA is encouraged to learn that CBHCC is contemplating limiting greenhouse gas emissions via the addition of objective and functional statements in the National Model Codes. Architects have a particularly important role to play in upfront carbon emissions as they are responsible for specifying materials used in the construction of a building. According to the Canada Green Building Council (CaGBC),

> Decarbonizing Canada's built environment will require decisive action on both operational carbon and embodied carbon. Embodied carbon must be treated with the same urgency as operational carbon [.]

As such, the OAA strong urges CBHCC to consider how embodied carbon can be contemplated in the Model Codes.

From an Energy Code perspective, the Association is steadfast that, rather than defining "excessive" greenhouse gas emissions, the CBHCC should change the proposed language to "any net direct or indirect" embodied or operational greenhouse gas emissions.

In the midst of the global climate emergency, policymakers ought to look toward reducing carbon emissions from buildings as a key factor in advancing climate action. Based on estimates from various sources, approximately one third of greenhouse gas emissions come from the built environments in which Canadians live, work, and play. Improving the embodied and operational carbon in our buildings and accelerating our progress toward net zero is critical if Canada and Ontario intend to meet their stated greenhouse gas emissions targets.

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As such, the OAA encourages CBHCC to ensure all changes related to code harmonization contribute to reductions in embodied carbon and improvements in energy efficiency. The Association remains committed to its recommendation and support for the implementation of energy step codes, both in the Ontario and National Codes. The Association has long supported objective targets based on Total Energy Use Intensity (TEUI) for a wide range of building occupancies as a best practice. This is demonstrated by the OAA's own suite of TEUI Calculators, offered to both architects and the wider public for free.

According to CaGBC, its Leadership in Energy and Environmental Design (LEED) and Zero Carbon Building (ZCB) design certification programs already reward projects for reductions in embodied carbon. This is also true for the next iteration (v4) of the Toronto Green Standard. Recently, the City of Vancouver set an embodied carbon reduction target for new construction of 40 percent by 2030. It is currently developing the programs needed to achieve this target.

Objective, tiered performance metrics help everyone understand energy use and embodied carbon in buildings and can help position Canada to achieve its emissions reduction targets. Further, they reduce red tape, are standards-agnostic, and improve the efficiency of designers by allowing use of a wide range of standards to arrive at EUI goals and eliminate the need for modelling against a reference building to prove a "better than" scenario. As well, the inclusion of tiers will provide a framework to move toward net zero standards by 2030—something that does not otherwise seem possible in the next seven years.

CBHCC is uniquely positioned to make a meaningful contribution to climate action. With the Codes currently under review, the time to act is now. Buildings substantially contribute to the climate crisis, but can also be instrumental in advancing climate action.

The OAA enjoys a longstanding, collaborative relationship with government and policymakers, and looks forward to continued work with CBHCC.

Sincerely,

S. T. Vilardi

Settimo Vilardi, Architect
M.Arch., OAA, MRAIC, LEED AP BD+C
President

cc: James Ross, Manager, Building Code Policy Development Unit
Ministry of Municipal Affairs and Housing

Mansoor Mahmood, Director, Building and Development Branch
Ministry of Municipal Affairs and Housing

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OAA's Submission - Fall 2023: Public Review of Proposed Changes to 2020 National Model Codes

Table: Potential Changes To the NBC 2020, NFC 2020, NPC 2020 and NECB 2020:

Background from CBHCC:

The proposed changes included in this public review address the following topics in the National Building Code of Canada, the National Fire Code of Canada, the National Energy Code of Canada for Buildings, and the National Plumbing Code of Canada: alterations to existing buildings, greenhouse gas emissions, radon, airtightness, accessibility – illumination levels and projection of protruding building elements, building envelope – thermal bridging and insulation, building fire safety, climatic loads, combustible construction – fire protection and safety, encapsulated mass timber construction, HVAC equipment efficiency, large farm buildings, hazardous materials and activities, plumbing materials and equipment, fire protection, use and egress, penetrations, prescriptive trade-off path, vegetated roof assemblies, windows, doors and skylights, environmental separation standards, lighting and fenestration – thermal characteristics.
The purpose of this public review is to provide code users, the Codes community, and the public 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 withdrawn.

Legend for Rankings: **1.** I support this proposed change as is. **| 2.** I support this proposed change as-is with comment(s). **| 3.** I support this proposed change with modification(s).
| 4. I do not support this proposed change for the reason(s) stated to the right. **| 5.** I have reviewed this proposed change and I have no opinion on it. | 6. Not Reviewed

National Building Code 2020

Proposed Code Reference and Title	Ranking 1-6	Status	Comments - Ontario Association of Architects
Division A			
Part 1 - Compliance			
1.3.3. Application of Division B			
1812 - Application of NBC Part 10 to the Alteration of Existing Buildings	1	I support this proposed change as is.	
1.4.1.2. Defined Terms			
1813 - "Existing Building" and "Heritage Building"	1	I support this proposed change as is.	
Part 2 - Objectives			
2.1.1.2. Application of Objectives			
1843 - New Greenhouse Gas Emissions Objective and Functional Statement in the NBC	3	I support this proposed change with modification(s).	We recommend the change 'excessive' to "any net direct or indirect" in any statement within this section and all applicable areas. Suggest that this be expanded to include all buildings. Not clear as to why this would be limited to Part 9 buildings.
2.2.1.1. Objectives			
1843 - New Greenhouse Gas Emissions Objective and Functional Statement in the NBC	3	I support this proposed change with modification(s).	We recommend the change 'excessive' to "any net direct or indirect" in any statement within this section and all applicable areas. Consider changing OE 2.1 to 'any net or indirect emissions of greengouse gasses for both embodied and operational carbon'
Part 3 - Functional Statements			
3.1.1.2. Application of Functional Statements			
1843 - New Greenhouse Gas Emissions Objective and Functional Statement in the NBC	3	I support this proposed change with modification(s).	We recommend the change 'excessive' to "any net direct or indirect" in any statement within this section and all applicable areas. Consider adding to F101 - … during the lifecycle of the building' and adding F102 - to limit embodied greenhouse gas emissions during the lifecycle of the building
Division B			
Part 2 - Farm Buildings			
2.2.7.6. Width and Height of Exits			
1784 - Maximum Sill Height for Windows Used as Exits	1	I support this proposed change as is.	
Part 3 - Fire Protection, Occupant Safety and Accessibility			
3.1.1. Scope and Definitions			
1965 - Removal of the Term "Storage Tank" from Part 3 of the NBC	1	I support this proposed change as is.	
3.1.5.13. Gypsum Board			
1841 - Terminology for Gypsum Board (Part 3)	1	I support this proposed change as is.	
3.1.6.4. Encapsulation of Mass Timber Elements			
1870 - Exposure of Mass Timber Elements	2	I support this proposed change as is with comment(s).	Refer to the following resources from the National Research Council: 1. https://firetests.cwc.ca 2. https://firetests.cwc.ca/wp-content/uploads/2023/06/38e02b27-e352-4189-bcfc-3e38fe1be12d.pdf
3.1.6.6. Encapsulation Materials			
1963 - Exposure of Mass Timber Elements	2	I support this proposed change as is with comment(s).	Refer to the following resources from the National Research Council: 1. https://firetests.cwc.ca 2. https://firetests.cwc.ca/wp-content/uploads/2023/06/38e02b27-e352-4189-bcfc-3e38fe1be12d.pdf

Table: Potential Changes To the NBC 2020, NFC 2020, NPC 2020 and NECB 2020:

Proposed Code Reference and Title	Ranking 1-6	Status	Comments - Ontario Association of Architects
3.1.7.1. Determination of Ratings			
1847 - Firestopping of Penetrations in Tested Fire-Rated Assemblies	1	I support this proposed change as is.	
3.1.7.5. Rating of Supporting Construction			
1874 - Fire Protection of Seismic Isolation Systems	1	I support this proposed change as is.	
3.1.9. Penetrations in Fire Separations and Fire-Rated Assemblies			
1847 - Firestopping of Penetrations in Tested Fire-Rated Assemblies	1	I support this proposed change as is.	
3.2.4.16. Manual Stations			
1768 - Accessible Controls for Manual Fire Alarm Stations	3	I support this proposed change with modification(s).	We recommend that the requirement setout in the Ontario Building Code be adopted instead. Refer to OBC 3.8.1.5.(1)(c). These were created as a result public consultations.
3.2.7.1. Minimum Lighting Requirements			
1762 - Illumination Levels	1	I support this proposed change as is.	
3.3.1.14. Ramps and Stairways			
1878 - Nearness of Non-Exit Stairways to Doors	1	I support this proposed change as is.	
3.8.2.6. Controls			
1768 - Accessible Controls for Manual Fire Alarm Stations	3	I support this proposed change with modification(s).	We recommend that the requirement setout in the Ontario Building Code be adopted instead. Refer to OBC 3.8.1.5.(1)(c). These were created as a result public consultations.
Part 5 - Environmental Separation			
5.2.2.2. Determination of Wind Load			
1754 - Requirements for Wind Resistance of Vegetated Roof Assemblies	1	I support this proposed change as is.	
5.9.1.1. Compliance with Applicable Standards			
1332 - Replacement and Addition of Standards in Table 5.9.1.1.	1	I support this proposed change as is.	
1973 - Replacement of Reference to Outdated CAN/CGSB Standard with a Reference to an ASTM Standard	1	I support this proposed change as is.	
1974 - Deletion of Reference to Duplicate Standard	1	I support this proposed change as is.	
Part 9 - Housing and Small Buildings			
9.5. Design of Areas and Spaces			
1765 - Projection of Protruding Building Elements	1	I support this proposed change as is.	
9.9.5.3. Obstructions in Public Corridors			
1765 - Projection of Protruding Building Elements	1	I support this proposed change as is.	
9.18.6.2. Ground Cover in Heated Crawl Spaces			
1809 - Ballast for Ground Cover in Heated Crawl Spaces	1	I support this proposed change as is.	
9.34.2.7. Public and Service Areas			
1762 - Illumination Levels	1	I support this proposed change as is.	
9.36.2.5. Continuity of Insulation			
1831 - Insulation of Masonry Fireplaces	1	I support this proposed change as is.	
9.36.2.7. Thermal Characteristics of Fenestration, Doors and Skylights			
1823 - Thermal Characteristics of Fenestration and Doors	1	I support this proposed change as is.	
9.36.2.11. Trade-off Options for Above-ground Building Envelope Components and Assemblies			
1664 - Option for Insulation Under Ducts (Factory-Constructed Buildings)	1	I support this proposed change as is.	
9.36.3.10. Equipment Efficiency			
1833 - New Performance Metrics for Small Single-Phase Air Conditioners and Heat Pumps	1	I support this proposed change as is.	
9.36.5.3. Compliance			
1823 - Thermal Characteristics of Fenestration and Doors	1	I support this proposed change as is.	
9.36.6.2. Definitions			
1814 - Removing the NLA Airtightness Metric	1	I support this proposed change as is.	
9.36.6.3. Determination of Airtightness			
1814 - Removing the NLA Airtightness Metric	1	I support this proposed change as is.	
9.36.6.4. Determination of Airtightness Level			
1814 - Removing the NLA Airtightness Metric	1	I support this proposed change as is.	
9.36.7.3. Energy Performance Improvement Compliance Calculations			
1823 - Thermal Characteristics of Fenestration and Doors	1	I support this proposed change as is.	

Table: Potential Changes To the NBC 2020, NFC 2020, NPC 2020 and NECB 2020:

Proposed Code Reference and Title	Ranking 1-6	Status	Comments - Ontario Association of Architects
9.36.8. Tiered Energy Performance Compliance: Prescriptive Path			
1834 - Interpolation of Energy Conservation Points	4	I do not support this proposed change for the reason(s) stated to the right.	Walls above grade continue to be relativly weaker thermally than roofs due to concerns about construction cost. Allowing downward interpolation between energy efficiency "points" contributes to the devaluation of the thresholds presented in the prescriptive path and is not in accordance with the energy efficiency or carbon reduction objectives of the code. Increasing the graularity of points will result in deminishing the energy perfomance of walls.
9.36.8.6. Energy Conservation Measures for Fenestration and Doors			
1889 - Energy Conservation Points for Fenestration and Doors	1	I support this proposed change as is.	
9.36.8.8. Energy Conservation Measures Relating to Airtightness			
1888 - Updates to Energy Conservation Points for Airtightness Levels	1	I support this proposed change as is.	
9.36.8.9. Energy Conservation Measures for HVAC Systems			
1836 - Gas-Fired Furnaces	1	I support this proposed change as is.	
9.36.8.10. Energy Conservation Measures for Service Water Heating Equipment			
1835 - Drain-Water Heat Recovery	1	I support this proposed change as is.	
Part 10 -			
1824 - Scope and Application of NBC Part 10	2	I support this proposed change as is with comment(s).	The documentation supporting the Fall Public Review mentionned a new Part 10 Alteration of existing buildings. However, the initial version seems to be limited to Energy Performance of Part 9 buildings. Will the NBC's Part 10 shift towards something ressembling OBC's Part 11 Renovation of Existing Buildings?

Table: Potential Changes To the NBC 2020, NFC 2020, NPC 2020 and NECB 2020:

Proposed Code Reference and Title	Ranking 1-6	Status	Comments - Ontario Association of Architects
National Fire Code 2020			
Proposed Code Reference and Title	**Ranking 1-6**	**Status**	**OAA Proposed Comments in Submission to the CBHCC**
Division B			
Part 5 - Hazardous Processes and Operations			
5.6.1. General			
1797 - Protection of Adjacent Buildings	1	I support this proposed change as is.	
5.6.4.3. Protective Encapsulation			
1872 - Revisions to Protection Requirements for EMTC During Construction	2	I support this proposed change as is with comment(s).	Refer to the following resources from the National Research Council: 1. https://firetests.cwc.ca 2. https://firetests.cwc.ca/wp-content/uploads/2023/06/38e02b27-e352-4189-bcfc-3e38fe1be12d.pdf
1879 - Revisions to Protection Requirements for EMTC During Construction	2	I support this proposed change as is with comment(s).	Refer to the following resources from the National Research Council: 1. https://firetests.cwc.ca 2. https://firetests.cwc.ca/wp-content/uploads/2023/06/38e02b27-e352-4189-bcfc-3e38fe1be12d.pdf
National Plumbing Code 2020			
Proposed Code Reference and Title	**Ranking 1-6**	**Status**	**Comments - Ontario Association of Architects**
Division B			
Part 2 - Plumbing Systems			
2.2.3.2. Interceptors			
1377 - Introduction of Requirements for Oil Separators	5	I have reviewed this proposed change and I have no opinion on it.	

Table: Potential Changes To the NBC 2020, NFC 2020, NPC 2020 and NECB 2020:

Proposed Code Reference and Title	Ranking 1-6	Status	Comments - Ontario Association of Architects
National Energy Code of Canada for Buildings 2020			
Division A			
Part 1 - Compliance			
1.1.1.1. Application of this Code			
1839 - Application of the NECB to the Alteration of Existing Buildings	1	I support this proposed change as is.	
1.3.3. Application of Division B			
1839 - Application of the NECB to the Alteration of Existing Buildings	1	I support this proposed change as is.	
1.4.1.2. Defined Terms			
1813 - "Existing Building" and "Heritage Building"	1	I support this proposed change as is.	
Part 2 - Objectives			
2.2.1.1. Objectives			
1820 - New Greenhouse Gas Emissions Objective and Functional Statement in the NECB	3	I support this proposed change with modification(s).	We recommend the change 'excessive' to "any net direct or indirect" in any statement within this section and all applicable areas. Consider changing OE 2.1 to 'any net or indirect emissions of greengouse gasses for both embodied and operational carbon'
Part 3 - Functional Statements			
3.2.1.1. Functional Statements			
1820 - New Greenhouse Gas Emissions Objective and Functional Statement in the NECB	3	I support this proposed change with modification(s).	We recommend the change 'excessive' to "any net direct or indirect" in any statement within this section and all applicable areas. Consider adding to F101 - … during the lifecycle of the building' and adding F102 - to limit embodied greenhouse gas emissions during the lifecycle of the building
Division B			
Part 3 - Building Envelope			
3.1.1. General			
1821 - Thermal Bridging Requirements in the NECB	1	I support this proposed change as is.	
3.2.1.2. Continuity of Insulation			
1821 - Thermal Bridging Requirements in the NECB	1	I support this proposed change as is.	
Part 4 - Lighting			
4.1.1.2. Application			
1724 - Application of Lighting Requirements	1	I support this proposed change as is.	
Part 5 - Heating, Ventilating and Air-conditioning Systems			
5.2.12.1. Unitary and Packaged HVAC Equipment			
1832 - New Performance Metrics for Small Single-Phase Air Conditioners and Heat Pumps	2	I support this proposed change as is with comment(s).	There is a typo. See the following: Table 5.2.12.1.-E Upper equipment capacity size symbol is reversed "< 40" presented - should be "> 40" for water-to-air heat pumps.
Appendix C			
1732 - Missing Degree-Days Below 15°C Values	1	I support this proposed change as is.	