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Ontario Ministry of Municipal Affairs and Housing
Building and Development Branch
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President
Lisa Demaline
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Dear Sir/Madame:

Re: ERO # 019-4974 Proposed Changes for the Next Edition of Ontario's Building Code (Winter Consultation). Posted January 27, 2022

Executive Director
Pegeen Walsh
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On behalf of the Ontario Public Health Association (OPHA), please find our feedback on the proposed changes to the next edition of Ontario's Building Code.

Constituent Societies
OPHNL – Ontario Public Health
Nursing Leaders

United by our vision of promoting optimal health for all, OPHA members have been leading change on a wide range of issues impacting public health including environmental protection, climate change, air quality, healthy housing, poverty reduction, chronic disease prevention, supporting children and families, the built and natural environment, and health equity, among others.

Alliance for Healthier Canadians

Association of Supervisors of
Public Health Inspectors of Ontario

Canadian Institute of Public Health
Inspectors (Ontario Branch)

Community Health Nurses'
Initiatives Group (RNAO)

Health Promotion Ontario

Ontario Association of Public
Health Dentistry

Ontario Dietitians in Public Health

Association of Public Health
Epidemiologists

OPHA has also been supporting the Provincial Climate Change Impact Assessment engagement process by providing expert advice about the impacts on people and communities, including housing, and emphasizing the need to include health and equity in assessments of climate risks and adaptive capacity. It is from these public health perspectives that we have reviewed proposed changes to the next edition of Ontario's Building Code and provided the comments and recommendations outlined on the following pages.

Ontario Society of Physical Activity
Promoters in Public Health

Building standards and building energy efficiency are closely linked to a number of health risk factors, health inequities, and population health outcomes including: indoor air quality, thermal comfort, climate-resiliency, housing conditions and affordability, and energy poverty.

Charitable Registration
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Canadians spend approximately 90% of their time indoors⁽¹⁾. Building design and construction that reduces exposure to indoor air contaminants, home energy efficiency standards that reduce energy

consumption and efficient heating, ventilation and air conditioning systems (HVAC), all help to improve indoor air quality, reduce thermal stress for occupants, reduce adverse health impacts and decrease inequities. Children, elderly people and other vulnerable populations are at greatest risk of adverse effects from poor indoor air quality (e.g. asthma and other respiratory conditions, heart conditions) and thermal discomfort (e.g. heat-related illness and death). Improving energy efficiency can also reduce energy poverty and resultant health and health inequity impacts. For example, energy inefficient homes that cost more to heat and cool increase energy bills which may result in families not having enough money for other essential purchases including nutritious food. Persons experiencing energy poverty may resist turning on their air conditioner during extreme heat events because of the energy cost, increasing the risk of heat-related illness and death.

The Public Health Agency of Canada's 2018 report on Key Health Inequalities in Canada⁽²⁾ sheds additional light on housing and health inequities, noting that "housing below standards" persists among different population groups, in particular low-income and marginalized populations – meaning their housing costs more than they can afford, requires major repairs, and/or is overcrowded. Ontario's action plan⁽³⁾ under the National Housing Strategy also draws attention to this plight, noting that in 2016 over 15% of Ontario household were in core housing need – unaffordable, overcrowded, or in need of major repair.

There are a number of ways the province can help Ontarians make where they live more affordable and energy efficient, including incentivizing home energy retrofits for existing buildings, and **mandating more stringent energy efficient standards in the building code**. Increasing energy efficiency standards will make homes more affordable to maintain and provide a healthier indoor environment.

OPHA recommends that the province strengthen the OBC to incorporate the most current evidence to reduce the transmission of infectious diseases and to mitigate sources & proliferation of indoor air pollutants including mould.

OPHA appreciates that the Ontario Building Code incorporates a number of health objectives⁽⁴⁾ as per Section 2.2.1.1(1), including:

- *“An objective of this Code is to limit the probability that, as a result of the design or construction of a building, a person in the building will be exposed to an unacceptable risk of illness due to indoor conditions [caused by/due to]:*
 - *inadequate indoor air quality*
 - *inadequate thermal comfort*
 - *contact with moisture*
 - *unsanitary conditions*
 - *consumption of contaminated water*
 - *contact with vermin and insects*
 - *the release of hazardous substances from the building.”*

To ensure that these OBC health objectives are met, **OPHA recommends that the province review the standards and guidelines that are referenced in the ERO # 019-4974 Supporting materials “Proposed Building Code Changes to align with 2020 National Construction Codes” to ensure that they are the most current and science-based documents⁽⁵⁾.**

Some of the referenced standards and guidelines do not appear to be the most current version of the standard or guideline. For example:

Note A-6.2.1.1. Good Engineering Practice. Legionella Control

The proposed OBC (**Proposed Change 1270**) references outdated ANSI/ASHRAE 188-2015, “Legionellosis: Risk Management for Building Water Systems” and ASHRAE Guideline 12, “Minimizing the Risk of Legionellosis Associated with Building Water Systems”
https://www.dropbox.com/s/zzyyz9o3vm86z3i/Proposed_Change_1270.pdf?dl=0

The most recent versions of these documents are:

- ANSI/ASHRAE Standard 188-2021 – “Legionellosis: Risk Management for Building Water Systems”
https://ashrae.iwrapper.com/ASHRAE_PREVIEW_ONLY_STANDARDS/STD_188_2021
- ASHRAE Guideline 12-2020 Managing the Risk of Legionellosis Associated with Building Water Systems
https://ashrae.iwrapper.com/ASHRAE_PREVIEW_ONLY_STANDARDS/GL_12_2020

Note A-6.2.1.1. Good Engineering Practice. Radon

The proposed OBC references EPA 625/R-92/016, Radon Prevention in the Design and Construction of Schools and Other Large Buildings.

More recent guidance and standards for radon prevention include:

- ANSI/AARST RMS-LB 2018 with 12/20 revisions Radon Mitigation Standards for Schools and Large Buildings
- ANSI/AARST RMS-MF 2018 with 12/20 revisions Radon Mitigation Standards for Multifamily Buildings
- ANSI/AARST CCAH 2020 Reducing Radon in New Construction of 1 & 2 Family Dwellings and Townhouses
- ANSI/AARST CC-1000 2018 Soil Gas Control Systems in New Construction of Buildings
<https://www.epa.gov/radon/radon-standards-practice>
- CAN/CGSB-149.11-2019 Radon Control Options for New Construction in Low-Rise Residential Buildings
https://publications.gc.ca/collections/collection_2019/ongc-cgsb/P29-149-011-2019-eng.pdf

Part 6 Heating, Ventilating and Air-Conditioning – 6.2.2. Ventilation

Health Canada acknowledges that good ventilation helps protect against the spread of COVID-19⁽⁶⁾. In light of this evidence on the importance of ventilation in reducing the transmission of COVID-19 indoors, **OPHA recommends that the province review the most current science-based guidelines and standards on ventilation and filtration, and update the proposed OBC accordingly.**

For example, the OBC references CAN/CSA-Z317.2, "Special Requirements for Heating, Ventilation, and Air-Conditioning (HVAC) Systems in Health Care Facilities."

OPHA recommends that the proposed OBC reference these standards and evidence:

- ANSI/ASHRAE/ASHE Standard 170-2021 Ventilation of Health Care Facilities
https://ashrae.iwrapper.com/ASHRAE_PREVIEW_ONLY_STANDARDS/STD_170_2021
- This evidence document from Public Health Ontario "Heating, Ventilation and Air Conditioning (HVAC) Systems in Buildings and COVID-19. March 2021" provides evidence on the role of HVAC systems, humidity, air flow and CO2 on COVID-19 transmission including references to the most current ASHRAE guidance.

Another example, in section 6.2.2. Ventilation, the proposed OBC (Proposed Change 996) refers to ANSI/ASHRAE 62.1, "Ventilation for Acceptable Indoor Air Quality".

OPHA recommends that the proposed OBC reference the more current standard:

- ANSI/ASHRAE/ASHE Standard 62.2-2019 Ventilation and Acceptable Indoor Air Quality in Residential Buildings
https://ashrae.iwrapper.com/ASHRAE_PREVIEW_ONLY_STANDARDS/STD_62.2_2019

Water-Use Efficiency – 7.7.4.3 Non-Potable Rainwater Harvesting System Design (Proposed Change 940)

OPHA appreciates the incorporation of guidance and standards that encourage water-use efficiency by allowing non-potable water supplies in the place of potable ones for selected purposes such as flushing toilets and irrigating lawns and gardens, while ensuring protection of potable water systems (e.g. ASHRAE Handbooks and CAN/CSA B128.1, "Design and Installation of Non-Potable Water Systems.")

Water-Use Efficiency – 7.7.4.3 Non-Potable Rainwater Harvesting System Design (Proposed Change 945)

OPHA appreciates the introduction of requirements within the Ontario Building Code for non-potable rainwater harvesting and the provisions of permitted applications to ensure protection of potable water supplies and prevent the consumption of contaminated water – section

2.7.2.2 Permitted Applications (1): *“Non-potable harvesting rainwater systems are only permitted to supply... water closets and urinals, clothes washers, ... and other application where the harvested rainwater is not expected to be ingested or inhaled.”* However, OPHA recommends that there should be additional precautions clearly articulated in the OBC to ensure that failsafe mechanisms are in place to prevent the accidental ingestion or inhalation of this non-potable water system (e.g. signage, provisions to prevent access by children). OPHA has also noted the *“revised proposed change following public review”* to section 2.7.2.2. Permitted Applications (1)[c] from *“mop service and clothes washer sinks”* to *“floor-mounted service sink and laundry tray.”* OPHA will continue to monitor future proposed changes to this and other sections of the OBC to ensure that these permitted applications ensure health protection.

Energy Efficiency-Related Changes to the OBC – Section 9.36. Energy Efficiency

OPHA is concerned that with no energy efficiency improvements in the proposed changes to the Ontario Building Code (OBC), progress towards greenhouse gas targets and improvements to air quality will be further delayed.

Homes and buildings account for 18% of Canada’s greenhouse gas (GHG) emissions, due to the combustion of fossil fuels for space and water heating, and electricity use for cooling, lighting and appliances. This is an area where much more work needs to be done to reduce GHG emissions. Renewable energy, clean energy technology, and improved energy efficiency are key energy and power supply measures that can greatly reduce GHGs and provide significant health co-benefits in the near term and long-term including reductions in cardiovascular and respiratory diseases.

As highlighted in Health Canada’s 2022 Report: Health in a Changing Climate⁽⁷⁾, *“Reducing greenhouse gas emissions can provide very large and immediate health co-benefits to Canadians”* including thousands of avoided premature deaths annually in Canada from air quality improvements. Many of the sources of air pollution (e.g. the burning of fossil fuels for energy and power supply) are also sources of greenhouse gases⁽⁸⁾. Health Canada estimates that **air pollution contributes to 6,600 premature deaths in Ontario every year**, with the annual economic cost of these air pollution attributable deaths being \$50 billion⁽⁹⁾. Thus, action to reduce energy needs is a win-win for public health and for the planet.

OPHA is very concerned that we are not making the progress needed for the province to achieve our 2030 GHG reduction target. With no energy efficiency improvements as proposed in this ERO posting of the Ontario Building Code (OBC), the province is missing another opportunity to ensure Ontarians are able to reduce their vulnerability to energy price increases over time through increasing energy efficiency at the most cost-effective time to advance energy efficiency - at the time of construction.

OPHA urges the province to incorporate the following recommendations with respect to energy efficiency standards within the next edition of the OBC. Ensuring higher energy efficiency

standards over time will help to improve indoor air quality, reduce adverse health impacts including heat-related illness, reduce energy poverty, help create jobs, build a local green economy, and ensure real progress towards Ontario's 2030 GHG reduction targets:

Energy Efficiency Recommendation # 1: Bring in the Tiered Energy Efficiency Standards and Timeframe for Advancement to Higher Tiers

The ERO posting indicates that the code change proposals focus on harmonizing with the National Model Building Code, aligning with the 2020 National Construction Codes and *“enhancing energy efficiency of buildings by adapting Section 9.36 of the National Building Code.”*

OPHA was very disappointed that the ERO posting did not bring in the tiered approach to energy efficiency associated with the National Model Building Code. This approach provides a clear and transparent pathway for the building sector to make progress towards net-zero targets. It is a leading practice used in many other jurisdictions such as the Province of British Columbia (through the BC Step Code), the City of Vancouver's Building Code, and the City of Toronto and Town of Whitby's mandatory tiered Green Standard.

If this critical tiered approach is not brought into the updated OBC, it will result in a significant lost opportunity for municipalities to increase consistency across the energy metric in their Green Standards. Incorporating the tiered approach would ensure that the development community advances its market and skill capability towards higher energy efficiency requirements in the coming decade. There is no better time to advance energy efficiency than at the time of construction. It is recognized that lower energy efficiency requirements will only result in increased energy costs for Ontarians now and into the future.

OPHA recommends that the OBC update adopt the tiered energy efficiency standards associated with the National Building Code and timeframe for when those standards will become the minimum OBC energy efficiency requirement. In addition, it is also recommended that the province adopt a Greenhouse Gas Intensity (GGI) metric option to ensure that a climate lens is applied to energy planning and that developers and municipalities are able to ensure that the OBC can make progress towards energy affordability and climate commitments. This is similar to what takes place in the BC Step Code, as well as municipal green standards.

Energy Efficiency Recommendation # 2: Improve Energy Efficiency Requirements in OBC

The ERO # 019-4974 document “Executive Summary: Proposed Changes for the Next Edition of Ontario's Building Code (Winter 2022 Consultation)” states that the changes include “enhancing energy efficiency of buildings.” However, **it appears that this OBC update will result in no energy efficiency improvements over the existing OBC energy efficiency requirements.** This is of significant concern as the most cost-effective opportunity to advance energy efficiency and address Ontarians' vulnerability to energy price increases over time is at the time of construction.

As proposed in Ontario's Building Code updates there will have been no changes in building performance since 2015 (National Building Code) and 2017 (National Energy Code for Buildings) (NECB) if Ontario goes ahead with plans to adopt Tier 1 for the National Energy Code for Buildings and Tier 3 for the National Building Code. From an energy efficiency perspective, Tier 1 for Part 3 buildings (buildings classified as Group A, B or F-1; or exceeding 600 m² in building area or exceeding three storeys in building height) would be less stringent and therefore reduce energy efficiency in new buildings in Ontario. Tier 3 for Part 9 buildings (buildings defined as three or fewer storeys in height and smaller than 600 m² in area) would maintain energy efficiency requirements resulting in no improvements in energy efficiency requirements.

If Ontario advances this approach, it will stagnate energy efficiency in new buildings for a decade (the next OBC update would be in 2028). We recognize that Ontarians are experiencing significant real estate affordability issues, but undermining energy efficiency improvements will not address these real estate affordability challenges and will only result in increased energy costs for Ontarians over time. The most cost-effective time to improve energy efficiency is at the time of construction. This decision will only pass on future energy and retrofit costs onto Ontarians.

To ensure new home buyers are provided with affordable, healthy, durable buildings, OPHA recommends that the Province adopt the upper tiers of the national model building codes and allow municipalities to choose a tier of the building code by:

- Ensuring all tiers are available within the Ontario Building Code (i.e., no exclusions), and
- Advancing towards higher performance by adopting Tier 2 for the National Energy Code for Buildings and Tier 4 for the National Building Code.

Energy Efficiency Recommendation # 3: Support implementation of the tiered Code through education, capacity building and skill training in areas such as airtightness testing, building envelope design and building science.

OPHA recommends that the province support the development industry in moving to higher energy efficiency through education, training, and other cost-reduction strategies. Builders could increase their knowledge through resources such as the "Best Practices" guide. This approach is supported by experiences in British Columbia, where much of the success of the [BC Energy Step Code](#) can be attributed to supports provided by the [BC Energy Step Code Council](#), as well as training and peer support networks, plain-language communications materials, and strategies for cost reductions that include training programs, incentives, builders' guides, and pragmatic costing guidelines for various tiers of the Code. Education and capacity building at the municipal level would be of significant value as well to improve capacity within municipal building and planning departments.

Energy Efficiency Recommendation # 4: Support the Scale Up of Energy Efficiency Within Ontario’s Existing Building Stock

While the OBC only addresses energy efficiency within new construction, there is a need for Ontario to scale up energy efficiency within its existing building stock. Energy efficiency advancements in the building retrofit sector is imperative to reduce our reliance on fossil fuels and meet GHG reduction targets. This will also contribute to significant public health and health equity benefits, job creation and economic development opportunities for Ontarians.

Numerous studies have shown that home energy retrofits reduce air contaminants linked to chronic illnesses, control environmental contaminants (mould and moisture), and improve symptoms of asthma and other respiratory and heart conditions^(10,11). Housing retrofit activities provide opportunities to improve indoor air quality through ventilation system upgrades, radon testing and mitigation, and removal or isolation of other pollutant sources such as mould and pests⁽¹²⁾.

To address energy and emissions from existing buildings, the province should:

- Accelerate and expand Ontario’s Energy and Water Reporting and Benchmarking initiative to include all large buildings and require the EnerGuide Rating System at the time of purchase for all other buildings.
- Enable mandatory building performance standards for existing buildings to regulate energy and emissions from Ontario’s worst-performing buildings.

Recommendation to Improve Additional Building Sustainability Features for Public Health, Health Equity, Climate Mitigation and Climate Adaptation

Green building standards are universally acknowledged as having positive benefits for public health, the environment and the economy. These progressive and achievable standards for “*high-performance buildings*” help to reduce air pollution and greenhouse gas emissions, improve building occupants’ health and comfort, conserve water resources, protect biodiversity, promote sustainable use of resources and materials, and, as stated in the first reference below “*support the goal of development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*”

OPHA recommends that the province incorporate the following standards and guidelines into the proposed changes to the Ontario Building Code:

- ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2020 Standard for the Design of High-Performance Green Buildings.(Except Low-Rise Residential Buildings)
https://ashrae.iwrapper.com/ASHRAE_PREVIEW_ONLY_STANDARDS/STD_189.1_2020
As noted in the document: “This standard is intended to provide the technical basis of mandatory building codes and regulations for high-performance green buildings that are broadly adoptable by national and local jurisdictions.”

- ANSI/ASHRAE/IES Standard 90.2-2018 Energy-Efficient Design of Low-Rise Residential Buildings
https://ashrae.iwrapper.com/ASHRAE_PREVIEW_ONLY_STANDARDS/STD_90.2_2018
- The WELL Building Standard™ version 2 (WELL v2™)
<https://v2.wellcertified.com/en/v/overview> The WELLv2 standard is founded on six principles for healthy buildings, the first of which is: *"Equitable: Provides the greatest benefit to the greatest number of people, inclusive of all demographic and economic groups and with special consideration of groups of the least advantage or vulnerable populations."*

In summary, building codes are one of the most effective policy tools to mitigate climate change by reducing greenhouse gas emissions and to improve the health and reduce inequities. Ensuring climate resilience and reducing greenhouse gas emissions by increasing building and housing energy efficiency and mandating high-performance green building standards is crucially important for the health and well-being of all Ontarians.

There are multiple health benefits when building design and construction prioritize sustainability and energy efficiency from improved indoor air quality, reduced thermal stress for occupants, reduced adverse health impacts to decreased inequities. For the reasons discussed above, OPHA recommends that the proposed changes to the Ontario Building Code be considered through this health and equity lens, with an emphasis on building sustainability, energy efficiency, indoor air quality, thermal comfort and home energy affordability.

OPHA appreciates the opportunity to comment on the proposed changes to the next edition of the Ontario Building Code. We look forward to participating in future consultation on this important legislation.

Sincerely,



Pegeen Walsh
OPHA Executive Director

More about the Ontario Public Health Association:

OPHA is a member-based, not-for-profit charitable organization that has been advancing the public health agenda since 1949. OPHA provides leadership on issues affecting the public's health and strengthens the impact of those who are active in public and community health throughout Ontario. OPHA does this through a variety of means, including influencing public policy, capacity building, research, and knowledge exchange. Our members come from various backgrounds and sectors - from the various disciplines in public health, health care, academic, non-profit to the private sector. OPHA is also home to Nutrition Connections (formerly the Nutrition Resource Centre) which advances nutrition knowledge and collaboration

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