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Proposed Change 1820

Code Reference(s):	NECB20 Div.A 2.2.1.1.(1) (first printing) NECB20 Div.A 3.2.1.1.(1) (first printing)
Subject:	Greenhouse Gas Emissions
Title:	New Greenhouse Gas Emissions Objective and Functional Statement in the NECB
Description:	This proposed change adds a greenhouse gas emissions objective and functional statement to the NECB.
Related Code Change Request(s):	CCR 1805
Related Proposed Change(s):	PCF 1843, PCF 1989, PCF 2003, PCF 2004, PCF 2016

This change could potentially affect the following topic areas:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Division A | <input type="checkbox"/> Division B |
| <input type="checkbox"/> Division C | <input checked="" type="checkbox"/> Design and Construction |
| <input type="checkbox"/> Building operations | <input checked="" type="checkbox"/> Housing |
| <input checked="" type="checkbox"/> Small Buildings | <input checked="" type="checkbox"/> Large Buildings |
| <input type="checkbox"/> Fire Protection | <input type="checkbox"/> Occupant safety in use |
| <input type="checkbox"/> Accessibility | <input type="checkbox"/> Structural Requirements |
| <input type="checkbox"/> Building Envelope | <input checked="" type="checkbox"/> Energy Efficiency |
| <input checked="" type="checkbox"/> Heating, Ventilating and Air Conditioning | <input type="checkbox"/> Plumbing |
| | <input type="checkbox"/> Construction and Demolition Sites |

Problem

In 2011 and 2012, an energy efficiency objective (OE1.1, Excessive Use of Energy) and related design and construction requirements were introduced into the National Energy Code of Canada for Buildings (NECB) and the National Building Code of Canada (NBC).

At the time of the development of the energy efficiency objective, and when setting the Long-Term Strategy for Developing and Implementing More Ambitious Energy Codes in 2016, there was no consensus among provincial and territorial governments on an approach for addressing greenhouse gas (GHG) emissions. In addition, technical committees were directed to focus only on energy efficiency when proposing

performance requirements for future editions of the Codes. Thus, the National Model Codes do not presently address the type or quality of the energy source used by buildings and houses, nor do they address embodied GHG emissions.

In 2022, on advice from the provinces and territories, the Canadian Commission on Building and Fire Codes (CCBFC) decided that an objective related to limiting GHG emissions and requirements meeting this objective were needed in the National Model Codes to enable provincial and territorial regulation, and to further support provincial, territorial and federal GHG emissions reduction targets and climate action plans. The advice indicated that operational GHG emissions should be addressed in the 2025 editions of the Codes and that embodied GHG emissions should be addressed in the 2030 editions of the Codes. This direction was adopted by the newly formed Canadian Board for Harmonized Construction Codes (CBHCC) in November 2022.

"GHG" means any substance included in Canada's GHG inventory in the National Inventory Report.

Justification

In order to meet provincial, territorial and federal GHG emissions reduction targets and climate action plans, including the goals to reduce Canada's total GHG emissions to 40–45% below the 2005 levels by 2030 and to reach net-zero GHG emissions by 2050, Code requirements need an objective and functional statement that pertain to limiting GHG emissions of new buildings and houses.

In the 2020 editions of the NECB and NBC, energy efficiency tiers were introduced with measures that progressively increase energy efficiency in new buildings and houses. While these requirements go a long way towards reducing the amount of energy used to operate a building or house, operational and embodied GHG emissions have not yet been addressed.

Excessive GHG emissions result in increased concentrations of GHGs in the atmosphere, which in turn can lead to climate change and a risk to the environment. This is the basis for the proposed change to add a new objective under the existing objective, OE Environment.

This proposed change would add an objective (OE2.1) and functional statement (F101) related to limiting GHG emissions to the NECB. A similar proposed change (PCF 1843) would add the GHG emissions objective and functional statement to the NBC.

The proposed objective and functional statement are needed for the introduction of objective-based technical requirements addressing GHG emissions. The objective and functional statement are not standalone and are not technical requirements of the NECB. Technical requirements that address this objective in the design and construction of buildings and houses are under development.

PROPOSED CHANGE

NECB20 Div.A 2.2.1.1.(1) (first printing)

[2.2.1.1.] 2.2.1.1. Objectives

[1] 1) The objectives of this Code are as follows (see Note A-2.2.1.1.(1)):

OE Environment

An objective of this Code is to limit the probability that, as a result of the design or construction of the *building*, the environment will be affected in an unacceptable manner.

OE2 Greenhouse Gas Emissions

An objective of this Code is to limit the probability that, as a result of the design or construction of the *building*, greenhouse gas emissions will have an unacceptable effect on the environment. The risks of unacceptable effect on the environment due to greenhouse gas emissions addressed in this Code are those caused by—

OE2.1 - excessive emissions of greenhouse gases

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[3.2.1.1.] 3.2.1.1. Functional Statements

[1] 1) The objectives of this Code are achieved by measures, such as those described in the acceptable solutions in Division B, that are intended to allow the *building* or its elements to perform the following functions (see Note A-3.2.1.1.(1)):

- F90** To limit the amount of uncontrolled air leakage through the *building envelope*.
- F91** To limit the amount of uncontrolled air leakage through system components.
- F92** To limit the amount of uncontrolled thermal transfer through the *building envelope*.
- F93** To limit the amount of uncontrolled thermal transfer through system components.
- F94** To limit the unnecessary demand and/or consumption of energy for lighting.
- F95** To limit the unnecessary demand and/or consumption of energy for heating and cooling.
- F96** To limit the unnecessary demand and/or consumption of energy for *service water* heating.
- F97** To limit the unnecessary demand and/or consumption of energy for electrical equipment and devices.
- F98** To limit the inefficiency of equipment.

F99 To limit the inefficiency of systems.

F100 To limit the unnecessary rejection of reusable waste energy.

F101 To limit operational greenhouse gas emissions.

Impact analysis

The impact analysis for proposed measures to limit GHG emissions will be provided in each of the respective proposed change forms that address the specific technical changes proposed for the NECB.

Enforcement implications

The addition of an objective and functional statement would provide important information to assist with the assessment of alternative solutions.

Who is affected

Owners, designers, manufacturers, building officials, builders and specification writers.