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Proposed Change 2067

Code Reference(s):	NECB20 Div.C 2.2.2. (first printing)
Subject:	Performance Compliance - Other
Title:	Documentation on Exceptional Calculation Methods
Description:	This proposed change establishes requirements for documentation on exceptional calculation methods used when energy modeling software cannot be used.
Related Proposed Change(s):	PCF 2056

This change could potentially affect the following topic areas:

- | | |
|--|---|
| <input type="checkbox"/> Division A | <input type="checkbox"/> Division B |
| <input checked="" type="checkbox"/> Division C | <input checked="" type="checkbox"/> Design and Construction |
| <input type="checkbox"/> Building operations | <input 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 type="checkbox"/> Heating, Ventilating and Air Conditioning | <input type="checkbox"/> Plumbing |
| | <input type="checkbox"/> Construction and Demolition Sites |

Problem

As part of the update to referenced documents, the 2023 edition of ANSI/ASHRAE 140, "Method of Test for Evaluating Building Performance Simulation Software," is recommended to appear in the National Energy Code of Canada for Buildings (NECB). Moreover, PCF 2056 proposes to add Article 8.4.2.12. in Division B of the NECB on exceptional calculation methods that can be used when energy modeling software is not used to model a design, material or device. Failing to update the relevant Division C requirements could result in difficulty for authorities having jurisdiction when enforcing the proposed Division B requirements for exceptional calculation methods.

Justification

This proposed change provides a list of documentation that would help authorities having jurisdiction to administer the new requirements when exceptional calculation methods are used to demonstrate compliance.

PROPOSED CHANGE

[2.2.2.] 2.2.2. Information Required for Proposed Work

[2.2.2.1.] 2.2.2.1. General Information Required

[2.2.2.2.] 2.2.2.2. Design Calculations and Analysis

[2.2.2.3.] 2.2.2.3. Documentation on the Building Envelope

[2.2.2.4.] 2.2.2.4. Documentation on Lighting Systems

[2.2.2.5.] 2.2.2.5. Documentation on HVAC Systems

[2.2.2.6.] 2.2.2.6. Documentation on Service Water Heating Systems

[2.2.2.7.] 2.2.2.7. Documentation on Electrical Power Systems and Motors

[2.2.2.8.] 2.2.2.8. Documentation Requirements for Building Performance Compliance

[2.2.2.9.] --- Documentation Requirements for Exceptional Calculation Methods

- [1] --)** Where an exceptional calculation method is used, the following documentation shall be provided:
- [a] --) theoretical and empirical information that verifies the method's accuracy,
 - [b] --) step-by-step documentation of the exceptional calculation method performed, having enough detail to allow the results to be reproduced,
 - [c] --) copies of all spreadsheets or other tools used to perform the calculations,
 - [d] --) a sensitivity analysis of energy consumption where each input parameter that is estimated is varied from half to double the value assumed,
 - [e] --) evidence that calculations are performed on a time-step basis that are consistent with the energy modeling software and, where

- appropriate, informed by outputs from the energy modeling software, and
- [f] --) the *building energy target* of the reference *building* and the *annual energy consumption* of the proposed *building* calculated with and without the exceptional calculation method.

Impact analysis

This proposed change is expected to be cost neutral and complements PCF 2056, which proposes that the exceptional calculation method used by the energy modeler comply with ANSI/ASHRAE 140-2023, which is no different than the current practice and is also proposed to be required for energy modeling software.

Enforcement implications

The energy modeler would provide the information to certify that the exceptional calculation method meets the requirements of ASHRAE 140-2023.

Who is affected

Energy modelers, energy modeling software vendors, and building officials.