STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

May 2018

Log No. _____

1. State Building Code to be Amended:

- ☒ International Building Code
- ☐ ICC ANSI A117.1 Accessibility Code
- ☐ International Existing Building Code
- ☐ International Residential Code
- ☐ International Fire Code
- ☐ Uniform Plumbing Code
- ☐ International Mechanical Code
- ☐ International Fuel Gas Code
- ☐ NFPA 54 National Fuel Gas Code
- ☐ NFPA 58 Liquefied Petroleum Gas Code
- ☐ Wildland Urban Interface Code

For the Washington State Energy Code, please see specialized energy code forms

Section(s):
1608.2

Title:
Ground Snow Loads

2. Proponent Name (Joshua Mergens, PE, SE):

Proponent: 2024 International Building Code Technical Advisory Group

Title: TAG Member

Date: 09/11/2024 – Rev 1 12/03/2024

3. Designated Contact Person:

Name: Joshua Mergens, PE, SE

Title: Principal/Owner (Balanced Structural Engineering, LLC)

Address: PO Box 3806, Lacey, WA 98509

Office Phone: (253) 341 7139

Cell: (253) 341 7139

E-Mail address: JoshM@balancedse.com

4. Proposed Code Amendment.

Code(s) 2024 International Building Code Section(s) 1608.2 – Ground Snow Load

1608.2 Ground snow loads.

The ground snow *loads* to be used in determining the design snow *loads* for roofs shall be determined in accordance with the reliability-targeted (strength based) ground snow load values in Chapter 7 of ASCE 7 or Figures 1608.2(1) through 1608.2(4) for the contiguous United States and the Table 1608.2 for Alaksa. Site-Specific case studies shall be determined in accordance with Chapter 7 of ASCE 7 and shall be *approved* by the *building official*. Snow loads are zero for Hawaii, except in mountainous regions as *approved* by the *building official*.

1608.1 General.

Design snow loads shall be determined in accordance with Chapter 7 of ASCE 7, but the design roof load shall be not less than that determined by Section 1607.

Exception: Temporary structures complying with Section 3103.6.1.1.

1608.2 Ground snow loads.

The ground snow *loads* to be used in determining the design snow *loads* for roofs shall be determined in accordance with the reliability-targeted (strength-based) ground snow load values in Chapter 7 of ASCE 7 or Figures 1608.2(1) through 1608.2(4) for the contiguous United States and Table 1608.2 for Alaska. Site-specific case studies shall be determined in accordance with Chapter 7 of ASCE 7 and shall be *approved* by *the building official*. Snow loads are zero for Hawaii, except in mountainous regions as *approved* by the *building official.*

Amend section to read as follows:

Proposed New Amendments:

1603.1.3 Roof snow load data.

The ground snow *load*, *Pg,* shall be indicated. In areas where the ground snow *load*, *Pg,* exceeds 15 pounds per square foot (psf) (0.72 kN/m^2), the following additional information shall also be provided, regardless of whether snow *loads* govern the design of the roof:

1. Flat-roof snow *load, pf*.
2. Snow Exposure factor, *Ce*.
3. *Risk Category*
4. Thermal Factor, *Ct*
5. Slope factor(s), *Cs*
6. Drift surcharge load(s), *pd*, where the sum of *pd* and *pf* exceeds 30 psf (1.44kN/m^2)
7. Width of snow drift(s), *w*.
8. Winter wind parameter for snow drift, *W2*
9. Site elevation above sea level and mapped elevation from the ASCE 7 Hazards Tool or equivalent Geodatabase.

1608.1 General.

Design snow loads shall be determined in accordance with Chapter 7 of ASCE 7, but the design roof load shall be not less than that determined by Section 1607.

Exceptions: 1. Temporary structures complying with Section 3103.6.1.1.
2. For sites west of the Cascade Mountain Range, where site elevation is less than 700 feet and the flat roof snow load, Pf, is 35 PSF or less, snow drift requirements of ASCE 7 sections 7.7 - Snow Drift on Low Roofs (Aerodynamic Shade) and 7.8 - Roof Projects and Parapets shall not be required. Section 7.9 -Sliding Snow requirements shall not be waived.

1608.2 Ground snow loads.

The ground snow *loads* to be used in determining the design snow *loads* for roofs shall be determined in accordance with the reliability-targeted (strength-based) ground snow load values in Chapter 7 of ASCE 7 or Figures 1608.2(1) through 1608.2(4) for the contiguous United States and Table 1608.2 for Alaska. Site-specific case studies shall be determined in accordance with Chapter 7 of ASCE 7 and shall be *approved* by *the building official*. Snow loads are zero for Hawaii, except in mountainous regions as *approved* by the *building official.* Snow load justification shall be submitted to the *building official* to be *approved* where site elevation above sea level and the mapped elevation from the ASCE 7 Hazards Tool, or the equivalent Geodatabase used, differ by more the maximum of the following:

1. 10% of the site elevation above sea level
2. 300 feet

Exception: Elevation differences of less than 100 feet, in any case, shall not require additional justification unless determined necessary by the *building official*.

5. Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.

The new maps in the ASCE 7-22 are based on more current, complete, and better processed data than the SEAW maps. However, the only mapping tool is based on 0.5 mile by 0.5 mile grids, which can result in significant differences between the "Mapped Elevation" the online tool uses to calculate ground snow load and the actual site elevation above sea level. This difference can cause drastically different snow loads, both in conservative and unconservative directions. The ASCE Online Hazard tool does state that where site elevation and mapped elevations differ significantly engineers should consult the local authority having jurisdiction.

There are several concerns with implementation of these new maps for Washington specific sites. The first is that the visibility of the note which states that if mapped elevations and site elevations are significantly different, the EOR must reach out to the AHJ. Second, there is no definition for "significantly" different. Last, the previous SEAW maps stated snow drift considerations could generally be ignored for low laying lands of Western Washington.

To address these concerns, we are proposing requiring the mapped and site elevations be listed on the construction documents, which results in both the AHJ and EOR having to review the elevation differences. This approach resolves the concern of visibility. Additionally, we are proposing amendment language which better defines "significantly different" elevations and where snow drifts may be omitted.

6. Specify what criteria this proposal meets. You may select more than one.

- ☒ The amendment is needed to address a critical life/safety need.
- ☒ The amendment clarifies the intent or application of the code.
- ☐ The amendment is needed to address a specific state policy or statute.

☐ The amendment is needed for consistency with state or federal regulations.
☒ The amendment is needed to address a unique character of the state.
☐ The amendment corrects errors and omissions.

7. Is there an economic impact: ☐ Yes ☒ No

If no, state reason:

While economic impacts can occur, it is impossible to quantify on a state level as the site-to-site conditions will dictate if the ASCE 7-22 Snow Load Maps ground snow loadings will drastically increase, drastically decrease, or effectively remain unchanged. For this reason, no economic impact is provided. The proposed amendment is not considering economy, it is ensuring life safety and appropriate snow loadings for given sites.

Please send your completed proposal to: sbcc@des.wa.gov