**CEPI-20-21**

**IECC®: C303.1.3**

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**2021 International Energy Conservation Code**

**Revise as follows:**

**C303.1.3 Fenestration product rating.** *U-*factors, *solar heat gain coefficient* (SHGC), and *visible transmittance* (VT) of fenestration products shall be determined as follows:

1. For windows, doors and skylights, *U-*factor, SHGC, and VT ratings shall be determined in accordance with NFRC 100 and NFRC 200. For the ~~total performance path~~ Total Building Performance option in Section C407, the U-factor, SHGC, and VT modeled in the ~~whole building simulation~~ *proposed design* shall be based on either the proposed project specific size(s) and configurations ~~calculated according to NFRC 100. When using the area-weighted average U-factor, U-factors for project specific sizes shall be calculated~~ for all *fenestration* representing 5% or more of the total *fenestration* area, or the NFRC 100 standard sizes and configurations for all *fenestration*. Physical testing of *fenestration* at the project size and configuration ~~fenestration~~ to verify U-factor is not required.
2. Where required for garage doors and rolling doors, *U-*factor ratings shall be determined in accordance with either NFRC 100 or ANSI/DASMA 105.

*U-*factors, SHGC, and VT shall be determined by an accredited, independent laboratory, and *labeled* and certified by the manufacturer.

Products lacking such a *labeled* *U-*factor shall be assigned a default *U-*factor from Table C303.1.3(1) or Table C303.1.3(2). ~~The~~ *~~solar heat gain coefficient~~* ~~(SHGC) and~~ *~~visible transmittance~~* ~~(VT) of glazed fenestration products (windows, glazed doors and skylights) shall be determined in accordance with NFRC 200 by an accredited, independent laboratory, and~~ *~~labeled~~* ~~and certified by the manufacturer.~~ Products lacking such a *labeled* SHGC or VT shall be assigned a default SHGC or VT from Table C303.1.3(3). For Tubular Daylighting Devices, VTannual shall be measured and rated in accordance with NFRC 203.

**Reason:** The purpose of this submission is to prevent project teams, when using the total performance path (not the prescriptive path), from taking advantage of using U-factors for NFRC standard sizes when using fenestration of smaller size(s) than these NFRC standard sizes in projects. Members of the Façade Tectonics Institute have observed that project teams are already taking advantage of using U-factors calculated for project specific sizes when the fenestration is of a larger size than the NFRC standard size (since this is to their advantage), however, project teams can “play the system” by using U-factors for the NFRC 100 standard size for smaller units.

In addition, the proposed language will help clarify the confusion among design teams on whether to consider NFRC sizes or the project specific size and configurations, streamlining the design process. It also clarifies that the project size U-factor shall be calculated according to the NFRC 100 standard and does not require separate physical testing.

The proposal does not change the fact that the NFRC 100 methodology remains the standard, and prescriptive U-factors for fenestration remain based on the standard NFRC size.

Clause C402.4.3.4 Area-weighted U-factor listed below would still allow for using an area-weighted average of the different project size.

We have suggested this section of the code for this clarification to be inserted, but the committee may find a more appropriate place for it. Either way, FTI believes that this loophole should be removed.

**Cost Impact:** The code change proposal will neither increase nor decrease the cost of construction.

This proposal aims to close a loophole and clarifies the way U-factor is defined in the total energy compliance path. There should be no impact in the cost of construction. Some designs may be changed to increase fenestration size (less frame, more glass) in order to improve U-factor to the NFRC 100 value. In the case of curtainwall, some project teams simulate and submit both project size and NFRC size because of lack of clarity, so clarifying this point could actually reduce the cost of the design process.