

# GEW70-14

## 605.1.1.1

**Proponent:** Garrett Stone, Brickfield, Burchette, Ritts & Stone, representing Brickfield, Burchette, Ritts & Stone (gas@bbrslaw.com); Brian Dean (Brian.Dean@icfi.com); William Prindle (william.prindle@icfi.com); Maureen Guttman (mguttman@ase.org); Harry Misuriello (misuriello@verizon.net)

### Revise as follows:

**605.1.1.1 Permanent shading devices for fenestration.** Vertical fenestration within 45 degrees (785 rad) of the nearest west, south, and east cardinal ordinate shall be shaded by permanent horizontal exterior projections with a projection factor greater than or equal to 0.25. Where different windows or glass doors have different projection factor values, each shall be evaluated separately, or an area-weighted projection factor value shall be calculated and used for all windows and glass doors. Horizontal projections shall extend laterally beyond the edge of the glazing not less than one-half of the height of the glazing, except at building corners.

**Exception:** Shading devices are not required for the following buildings and fenestrations:

1. Buildings located in hurricane-prone regions in accordance with Section 1609.2 of the *International Building Code* or on any other building with a mean roof height exceeding the height limits specified in Table 1504.8 of the *International Building Code* based on the exposure category and basic wind speed at the building site.
2. Where fenestration is located in a building wall that is within 18 inches (457 mm) of the lot line.
3. Where equivalent shading of the fenestration is provided by buildings, structures, geological formations, or permanent exterior projections that are not horizontal, as determined by sun angle studies at the peak solar altitude on the spring equinox, and three hours before and after the peak solar altitude on the spring equinox.
4. Where fenestration has an solar heat gain coefficient (SHGC) equal to or less than 0.25.
4. 5. Where fenestration contains dynamic glazing that has a lower labeled solar heat gain coefficient (SHGC) equal to or less than 0.12, and the ratio of the higher and lower labeled visible transmittance (VT) is greater than or equal to 5. Dynamic glazing shall be automatically controlled to modulate, in multiple steps, the amount of solar gain and light transmitted into the space in response to daylight levels or solar intensity. Functional testing of controls shall be conducted in accordance with Section C408.3.1 of the *International Energy Conservation Code*.

**Reason:** This proposal adds an efficient, practical, cost-effective and commercially-available exception to the current IgCC prescriptive requirement for permanent shading devices. The IgCC must have a simple set of prescriptive requirements for energy conservation measures. These requirements must be applicable to a wide range of climate zones and applications in order to ensure the usefulness and effectiveness of the IgCC. However, there must be enough flexibility to accommodate a wide range of design decisions and local constraints. The current prescriptive path applies a permanent shading requirement to every building unless one of four exceptions applies. These exceptions are extremely narrow, and as a result make the prescriptive compliance option very costly and difficult to use.

The new exception proposed above offers a very practical method for maintaining control of solar heat gain, which is the intended purpose of 605.1.1.1. It will also expand the potential options available to code users, and in turn could expand the ability to use the IgCC prescriptive envelope path when otherwise warranted. The new exception would permit code users to comply by installing fenestration that achieves a maximum of 0.25 SHGC. This change makes sense for a number of reasons:

Low-SHGC windows have consistently proven valuable in commercial construction because of typical daytime occupancy patterns and high internal loads. Low-SHGC windows reduce the impact of both direct and indirect solar radiation, regardless of orientation.

The 0.25 SHGC value is achieved by commonly available glazing technologies in all frame types. It is commercially available today around the country. In fact, the IECC has required a 0.25 SHGC in climate zones 1-3 since the 2006 edition. Although the SHGC can be increased under the IECC when the user utilizes the projection factor trade-off, some level of control over solar heat gain is still required in most climate zones, even in windows covered by overhangs.

Wherever permanent shading devices or one of the current exceptions is appropriate, code users will still be able to employ one of these options. However, for code users who are constrained by site planning, geography, safety issues, or economics, an exception for low-SHGC windows will provide necessary flexibility while maintaining energy savings.

**Cost Impact:** Will not increase the cost of construction.

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