June 7, 2011

Comments of Thomas S. Zaremba, Roetzel & Andress

Docket number 10-BSTD-01
May 31, 2011 Staff Workshop - 2013 Building Energy Efficiency Standards

These comments address the draft proposal presented at the May 31 staff workshop to set a maximum 0.25 SHGC for residential windows.

1) Applicable Climate Zones

The draft proposal sets a maximum 0.25 SHGC for all climate zones except 1 and 3. We believe the 0.25 SHGC was perhaps inadvertently applied to some zones where this low SHGC would be inappropriate and also inconsistent with the recently finalized 2012 IECC. Comparison to the IECC was cited as one basis for this regulatory update, so consistency is important.

The 2012 IECC deliberately does not require 0.25 SHGC in IECC Marine Zone 3 or IECC zones 4-6. On this basis, the 0.25 SHGC should not be applied to California zones 1, 3, and 5 (corresponding to IECC Marine 3), zone 16 (corresponding to IECC zones 4-6), and parts of zone 12 (corresponding to IECC zones 4). The SHGC for zones 1,3,5, and 16 should be NR, and zone 12 should remain at 0.40.

Misapplying the 0.25 SHGC to these zones would not only be inconsistent with the very aggressive 2012 IECC, but it would also harm energy efficiency and *increases* energy usage in these zones.

2) Window Orientation

The current analysis does not differentiate or examine the impact of different window orientations. Even if 0.25 SHGC is warranted for west-facing glass, it is certainly not necessary on the north, and it is questionable whether it is warranted on the east and south. It is recommended further analysis determine the effect of different window orientations. This could result in one SHGC requirement for glazing within 45 degrees of west, and another for the rest of the building.

3) Replacement Windows

Compliance options are restricted for replacement windows – there is no option to use area-weighted averaging or the performance path when looking at an individual unit. Therefore, it is very important to make sure the proposed SHGC number is right, and that it works for *every* fenestration type (picture windows, sliders with and without grids, large sliding glass doors with different frame materials, etc) not just "most" or "typical" windows. Certainly, this provision should not apply to skylights, which have different performance as was mentioned during the workshop. It is recommended the analysis be expanded to examine a broader range of fenestration products types for compliance issues, particularly for replacement products.

4) Dynamic Glazing

Dynamic glazing offers significant energy savings and peak load reductions compared to traditional "static" glazing by being able to dynamically and optimally control solar heat gains and daylighting. As such, dynamic glazing is a key aspect of the Department of Energy's Zero Energy Building initiative. Not only should its use be encouraged, but barriers to its use must be removed.

For these reasons, the 2012 IECC, ASHRAE 90.1-2010, and the Seattle Energy Code all recently added text to define and clarify how to interpret compliance when using dynamic glazing products. These products are designed to be able to vary a performance property such as SHGC and VT, rather than having just a single value. The NFRC ratings for these products give two different values covering the performance rating range, so the language added to the 2012 IECC, ASHRAE 90.1 -2010, and Seattle Energy Code clarify for designers and code officials what to use for baseline code compliance. It is appropriate to include such language here as well, so as to avoid creating a barrier to its use.

The key compliance language regarding SHGC would be as follows:

> For fenestration containing *dynamic glazing*, the lower labeled *SHGC* shall be used to demonstrate compliance with this section. *Dynamic glazing* shall be considered separately from other *fenestration*, and area-weighted averaging with other *fenestration* that is not *dynamic glazing* shall not be permitted.

The definition for dynamic glazing per NFRC is:

> **DYNAMIC GLAZING.** Any glazing system/glazing in-fill that has the fully reversible ability to change its performance properties, including U-factor, SHGC, or VT. This includes, but is not limited to, shading systems between the glazing layers and chromogenic glazing.

Respectfully submitted,

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June 8, 2011

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 10-BSTD-01
1516 Ninth Street
Sacramento, CA 95814-5512

Via FedEx

Re: Comments on Docket No. 10-BSTD-01
May 31, 2011 Staff Workshop – 2013 Building Energy Efficiency Standards

Dear Docket Clerk:

Enclosed please find for docketing a "hard copy" of comments on Docket No. 10-BSTD-01, May 31, 2011 Staff Workshop – 2013 Building Energy Efficiency Standards, that were submitted electronically on June 7, 2011.

Please call me or my assistant Mary Wallace (419-254-5259) if you have any questions.

Very truly yours,

Thomas S. Zaremba /mlw

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TSZ/mlw
Enclosure

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