

DOCKETED

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Comment Received From: Jim Larsen

Submitted On: 10/20/2017

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Cardinal Glass Comments on the Proposed Residential Fenestration U-Factor and SHGC Requirements in the Draft 2019 Title 24 BEES

Additional submitted attachment is included below.



October 20, 2017

California Energy Commission
Attention: Docket No. 17-BSTD-01
1516 Ninth Street, MS-4
Sacramento CA 95814

Re: Cardinal Glass Comments on the Proposed Residential Fenestration U-Factor and SHGC Requirements in the Draft 2019 Title 24 Building Energy Efficiency Standards -- Docket Number 17-BSTD-01

On behalf of Cardinal Glass Industries, I would like to offer our brief comments on the proposed new residential prescriptive requirements for fenestration U-factor and SHGC. We think that the proposed improvement in U-factor and SHGC (a maximum 0.30 and 0.23) is reasonable, measured and appropriate. These values represent available, cost-effective low solar gain low-emissivity glazing capable of providing additional cooling and heating energy savings. Moving to these values will save energy and reduce peak demand in California as compared with the existing standard.

However, we believe that the proposal to move to a prescriptive minimum 0.35 SHGC in certain zones is not in the best interest of California, and we recommend against this approach. In our experience, high solar gain products should only be addressed under a performance analysis compliance approach due to orientation-specific and other effects of such glazing.

Cardinal Glass is the state and national leader in manufacturing high performance low-E coatings and insulating glass units used in fenestration. We are a management-owned corporation with more than 6,000 employees and close to 40 manufacturing facilities nationwide. Cardinal has two facilities in California that produce the type of coated glass products that meet the requirements in the current California Building Energy Standards. We believe that the lion's share of the glass used in residential windows and glass doors in California is produced by Cardinal.

Cardinal recommends that the proposed minimum prescriptive 0.35 SHGC requirement be eliminated.

Cardinal manufactures a complete range of low, mid, and high solar gain coated glass and insulating glass products. We produce high solar gain glass that would meet the proposed minimum 0.35 SHGC requirement, but we do not believe such a requirement is advisable as a prescriptive requirement in California or elsewhere. Given our extensive experience with all types of solar gain glazing, we recommend using high solar gain glazing only in south-facing orientations with an overhang and ideally in conjunction with appropriate solar design. We do not recommend attempting to achieve benefits from high solar gain through a prescriptive compliance path. It is our

position that recognition of potential benefits through the use of high solar gain glazing in a home is properly done only through a performance-based compliance approach. (To be clear, we do not oppose setting a 0.35 SHGC or ideally lower value as the reference for the performance analysis in these zones; we only object to setting it as a prescriptive value.)

The proposed minimum prescriptive SHGC requirement, without associated overhang requirements, would result in high solar gain glazing on west and east-facing orientations as well as such glazing on south orientations without an overhang. This will likely lead to occupant discomfort from unwanted and unusable solar gain, particularly with west-facing glazing. In other words, our experience is that homeowners may not be able to comfortably sit in front of these windows when the sun is shining directly through the window. Moreover, this discomfort could negate other benefits of windows due to responsive shade usage (such as views and ventilation) and generate cooling load demand where none previously existed. We believe it will also generate customer complaints. The prescriptive requirement for high solar gain glazing would be particularly problematic for windows used in alterations and for replacements, where trade-offs are not an option and there is little or no opportunity to adapt the design of the building. Finally, we are concerned with the choice of a 0.35 SHGC as the minimum point. If we were to set a minimum, it should be at a lower value that better divides glass technologies.

For these reasons, instead of California attempting to account for and/or promote passive solar design through the prescriptive requirements, we recommend that any attempt to incorporate the benefits of passive solar design should be done by modifying California's performance path reference baseline parameters, including overhangs, orientation, thermal mass, expected shade use, etc., to achieve the passive solar results California may be seeking.

We thank you for the opportunity to provide these comments. Please contact me with any questions.

Sincerely,

A handwritten signature in black ink that reads "Jim Larsen". The signature is written in a cursive, flowing style.

Jim Larsen
Director, Technology Marketing