

**DOCKETED**

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BIRCH POINT  
Consulting



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Docket 19-BSTD-03

2022 Energy Code Nonresidential High-Performance Envelope

Thank you for the opportunity to comment on the final Nonresidential High Performance Envelope CASE report. We will keep these comments brief, building upon our prior detailed comments from August 21. As previously noted, I represent the National Glass Association and Aluminum Extruders Council, whom together have over 1800 member companies and manufacturing across North America. We represent broad interests across the commercial and residential fenestration industry from the primary glass manufacturers, to glazing fabricators and frame extruders, to curtain wall and commercial window and door system manufacturers, window and door dealers, to the final glazing contractors and installers.

I am also co-vice-chair of the ASHRAE 90.1 committee. While I do not speak for the ASHRAE 90.1 committee here, I can provide information on how the proposed changes relate to the latest edition of ASHRAE 90.1-2019.

First and foremost, we highly appreciate the team's willingness to make revisions in the final CASE report in response to prior comments. Thank you. In brief,

1. Mandatory Fenestration Requirements, also known as "backstops" or "trade-off limits".

We agree with the decision to not pursue these changes at this time, and agree that it is appropriate to look into them further for CALGreen and next code cycle.

2. Fixed Window and Curtain Wall prescriptive criteria.

Thank for you making the revisions to the fixed window criteria. As stated in our prior comments, we will support a U-factor of 0.34. For SHGC, although we would prefer a value of 0.23, the revision to 0.22 is certainly better than the prior proposed and highly problematic value of 0.20. We will note that ASHRAE 90.1-2019 and the 2021 IECC only lowered SHGC to 0.23 in zone 1 (Miami and Hawaii) and have SHGC-0.25 in zones 2-3 which cover much of California.

We still have a small concern that the combined SHGC and VT criteria will require different types of low-e glazing in fixed windows versus curtain wall (described in more detail in our prior comments), which will be aesthetically unacceptable to architects and designers. However, since area-weighted averaging is allowed by 140.3(a)5, averaging and/or the performance path can be used to come up with a uniform solution for new construction in most cases.

Finally, I just wanted to note that it seems a little odd that the report found the changes in requirements to be cost justified in different climate zones for curtain wall / storefront than for fixed windows. I would expect the cost effectiveness and changes to be somewhat consistent by climate zone, but in fact, they are opposite in many ways: fixed windows are changing in zones 2, 5-9, and 11-15 whereas curtain wall is changing in zones 1, 7, and 16. We don't oppose the values, just asking whether this is correct?

### 3. Glazed door criteria.

We appreciate that the team attempted to address the compliance issue for glazed doors. However, to be blunt, some of the suggested changes may actually make the problem worse. As noted previously, the current U-factor of 0.45 is unrealistic and likely not being enforced, as wide-stile doors necessary for ADA compliance would require a U-factor more like 0.55. For comparison, the lowest U-factor requirement for glazed entrance doors in ASHRAE 90.1-2019 and 2021 IECC is 0.63. It is sometimes possible to achieve U-0.45 in triple glazed doors, but it is limited by the gap size and also presents challenges with weight, operating force, and safety. It is also clear that triple pane glazed doors are not being widely installed in California despite the current requirement. It is possible this is being compensated for in the performance path, but it is more likely the problem and enforcement are just being ignored.

The team suggested some revisions to try to include glazed doors under curtain wall / storefront. For example, it was suggested to change the definition of glazed door as follows:

**GLAZED DOOR** is an exterior door having a glazed area of 25 percent or greater of the area of the door. Glazed doors shall meet fenestration product requirements. Glazed doors within storefront systems shall meet the curtain wall/storefront requirements. See: Door.

This actually makes it worse, putting glazed doors under the curtain wall / storefront U-factor of 0.38 or 0.41. If the intent was that the glazed doors could be included in an overall area-weighted average of the vertical fenestration products, that needs to be addressed in section 140.3(a)5. However, the wording of this modified definition implies the U-0.45 is effectively being lowered to 0.38 or 0.41, which is even more problematic. It also creates confusion with the separate listing of the glazed door requirement in Table 140.3-B and how/if that is different.

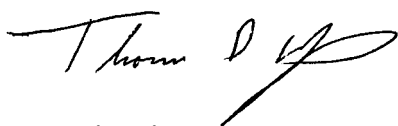
This is a problem for both glazed doors in storefront systems as well as separate individual glazed doors. We again suggest that the U-factor for glazed doors be changed to 0.55 to accommodate reality and practicality. Otherwise, perhaps the language about area-weighted averaging can be improved. Adding “area-weighted performance rating” to the table 140.3-B is helpful, but section 140.3(a)5 may also need to be modified. It currently uses the term “window” instead of “vertical fenestration,” which would bring in glazed doors as well as windows and allow them both to be averaged. This was changed in 2019, although I don’t remember why. Perhaps this needs to be looked at again:

#### **SECTION 140.3 – PRESCRIPTIVE REQUIREMENTS FOR BUILDING ENVELOPES**

**5. Exterior ~~Windows~~ Vertical Fenestration.** Vertical ~~windows~~ fenestration in exterior walls shall: ...

Otherwise, it is likely glazed doors will just continue to be ignored.

Thank you again for the opportunity to comment, and please contact me with any questions.  
Best regards,



Thomas D. Culp, Ph.D.  
Birch Point Consulting LLC  
culp@birchpointconsulting.com