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To: Windows@EnergyStar.gov

Re: Guardian Glass comments on Energy Star Windows, Doors, and Skylights V7 Specification Discussion Guide

Guardian Glass is a component supplier to residential window manufacturers. Guardian Glass produces several products used in residential window manufacturing including glass, coated glass, insulated glass units, and spacer. We appreciate the opportunity to review and respond to the discussion document and are supportive of the Energy Star program for residential windows. While we're responding to the best of our knowledge, we recognize that as a component supplier we may not have a full view of the impact of the requested information and recommend that you rely more heavily on responses from window manufacturers.

Question 1 – The data sources used in the discussion document are appropriate, and there are no better sources known to us.

Question 2 – Low-e coated glass products are the main contributing component to the SHGC of a window. The common pathways today include a moderate or high SHGC package in northern windows and a lower SHGC package in southern windows.

Question 3&4 – No comment

Question 5 – We agree that the payback based on a homeowner's tenure in a home is reasonable; this may be further supported by typical window warranty language in which a warranty is non-transferrable between owners.

Question 6 – No comment

Question 7 – Manufacturer self-reported or mystery shopping costs would be the most accurate sources for cost estimation. Supplier and component costs may not necessarily be indicative of the total cost of assembly; additionally, cost-based estimates may not be truly representative of value-based market pricing.

Question 8 – There are two component categories that are worth mentioning 1) Grids/No Grids - this component creates additional complexity for meeting SHGC requirements. If not reviewed, this may have unintended regional design consequences depending on where SHGC requirements are set. It's recommended that this component be added and reviewed in the CPD data, particularly in considering two pathways: First, to meet lower SHGC in the south where grids are less popular yet improve SHGC. Second, pathways to meet higher SHGC in the north where grids are more common but detrimental to SHGC. 2) Frame material type; a deeper dive into frame material type may provide a more accurate pathway

understanding for realistic performance improvements, particularly for hybrid frame categories and added elements like foam fill or additional air cavities.

Question 9 – The combination of the Southern and South-Central zones is worth consideration.

Question 10 – Because the Southern and South-Central zones currently have the same SHGC requirement, merging the two zones would have limited impact from a coated glass selection and glazing perspective.

Question 11 – Setting a reasonable minimum SHGC in the Northern climate zone would potentially eliminate the use of inappropriate low SHGC products from the North. The minimum value should be supported by energy calculations. Setting a minimum which drives high passive solar gain could have negative implications for comfort. Maximum summer heat load calculations could be considered as part of the calculation to ensure the solution is practical for the intended climate.

Question 12 – The impact of a minimum SHGC on the northern zone depends on where the limit is set. The current range of data in the CPD is representative of what can be achieved with low-e coatings, which will remain the primary pathway for SHGC control. In addition, Grid/NoGrid performance should be considered here.

Question 13 – The consideration for moving IECC zone five from the Northern zone to the North-Central zone should be driven by the results of the energy savings calculations.

Question 14 – Moving IECC zone five from the Northern zone to the North-Central zone would create short-term concern over handling the effective date, labeling, and inventory loss and the transition should be carefully considered. From product solution standpoint, currently all 4 zones can be effectively serviced by two glazing solutions, one moderate SHGC and one low SHGC, though more solutions are popular for differentiation. As the four zones requirements become mutually exclusive, additional solution complexity and cost of supply may be incurred. The impact of moving zone five may be reduced or intensified depending on the specific energy star criteria set for the Northern and North-Central zones and the decision to consolidate the Southern and South-Central zones.

Question 15 – No comment

Question 16 – No comment

Question 17 – Including full-lite sliding patio doors in the Energy Star window specification would potentially create more product consistency across a house package. However, the glass to frame ratio is significantly higher than traditional window types in the NFRC calculation; this may result in performance values that do not necessarily fall in line with typical window requirements. Depending on the relative impact of windows to patio doors in whole house performance it may be detrimental to lag window requirements to include patio doors.

Question 18&19 – Sunsetting the specification for products which do not reveal significant cost-effective energy savings should be considered. However, the possibility that these products may regress in energy efficiency should be taken into consideration when evaluated.



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Question 20, 21, 22, & 23 – No comment

Question 24 – The current process for certifying and listing dynamic and integrated products using open and shut metrics creates understandable performance metrics. However, we would support improving the methodology by considering a weighted average employing a realistic usage calculation, or some type of weighted average to better understand the potential energy savings of this solution.

Question 25 – No comment

Question 26 – We recommend avoiding the complexity of allowances for impact resistance glazing and exempting them from the program. Impact glazing which utilizes metal framing to withstand window level impact requirements may not be able to achieve performance requirements without sacrificing impact resistance. High altitude glazing can achieve similar performance as traditional glazing with the right processes or through local manufacturing, though it does present some current complexity.

Question 27 – A twelve-month timeline or greater between specification and effective date is more reasonable. The nine-month timeline is tight when considering time for new product development from suppliers, implementation in IGDB, and adoption into window manufacturing. The implementation timeline should reflect the complexity of changes being made to the specification, zone changes or significant performance changes may require more advanced notice to implement.

Question 28 – An extended implementation schedule will increase availability of improved components and will lead to more cost-efficient solutions at the window level. A longer timeline may also relieve inventory concerns in the supply channel.

Thank you again for the opportunity to respond to the Discussion Guide. If you have any further questions on the responses above, we would be happy to discuss our position or provide more information as needed.

Regards,

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