

To: US Environmental Protection Agency
Douglas W. Anderson
Product Manager for Windows, Doors, and Skylights ENERGY STAR Labeled Products

From: Harvey Building Products

Date: March 23, 2022

RE: ENERGY STAR Version 7.0 Draft #2 Response from HBP

We want to extend thanks for the opportunity to comment on the proposed changes for ENERGY STAR 7.0. There is no question that ENERGY STAR 6.0 has provided benefits across the entire fenestration industry. As both an insulating glass (IG) certified manufacturer as well as prime window and door manufacturer we have the following comments to the proposed changes.

While we agree in concept to increasing energy efficiency for windows and doors and have vigorously supported this effort by adopting industry leading glazing designs since the inception of this program, we feel that the ENERGY STAR 7.0 Draft #2 revision does not address most of the concerns raised in Draft #1 and thus we have many of the same concerns with draft #2.

The concerns we have about many aspects of the Proposed ENERGY STAR Version 7.0 qualification Criteria and have summarized below, and we provided explanations to each of these below. In general terms, we are most concerned with the Proposed 7.0 Qualification Criteria as follows:

1. The proposed criteria are too large of a change and do not provide appropriate product and glass opportunities to reach the proposed numbers without significant cost increases for windows and doors which we feel will have a negative impact in selling ENERGY STAR qualified products.
2. The proposed changes will force most windows to use Triple Pane glass, Krypton filled IG and other costly technologies that will have a very long and undesirable payback period.
3. Along those same lines, we feel that the addition of these materials has not been properly accounted for from a supply chain perspective. Suppliers to our industry and constrained in production outputs (flat glass to name one) and the supplier's ability to ship these materials in a timely manner in a less than desirable position.
4. The methodology used by EPA to determine current product and market performance ratings based on manufacturer CPD listings is not appropriate.
5. The proposed 7.0 Qualification criteria places an unfair burden on manufacturers that supply the Northern Zone.
6. The proposed implementation timetable is too short and should be extended to allow manufacturers time to reconfigure their product offerings and perform the required testing.
7. Additionally, we are concerned about the NFRC subject windows sizes used in NFRC simulations and in particular Casement windows. We have found that based on the size tested (simulated) under the NFRC guidelines leads to inconsistencies in product offerings simply based on the subject test window size.

Each of these topics is discussed below in more detail.

Large Change in the Northern Zone:

The proposed change in the Northern Zone to U22 is too large of a change from the current U27 and will require manufacturers to adopt costly product changes which are not seen as desirable and will require significant cost increases that will have to be passed on to consumers. Furthermore, those cost increases and associated lengthy payback periods are not a good value proposition and may even limit the use of ENERGY STAR rated products. Finally, most of the burden for change falls on the Northern zone and this is an unfair burden on suppliers who provide products in those areas. In fact, once again, the SC and S zones require no changes to the glass designs used in those markets and all the burden falls on the N and NC Zone suppliers to make costly changes to their product offerings in these regions. This begs the question as to why such a penalty on N and NC zone window suppliers? We are in favor of moving the starting point in the N Zone to be U23 and then go up from there – still a large change / improvement - but less of a penalty to N and NC zone window suppliers.

Methods to achieve the proposed ratings:

Additionally, there will be challenges for manufacturers that are difficult to overcome in terms of capital investments that will be needed particularly if Triple Pane glass becomes more prevalent. Lead-times for new capital are very long these days and typically in the 12-18 month range.

Supply Chain Constraints:

We feel the proposed ENERGY STAR 7.0 changes will place difficult challenges on the supply chain that have not been fairly accounted for. Commonly used components have continued to see significant cost increases in recent months due to supply chain constraints. The MFG cost this calendar year was not captured as part of the overall cost analysis for E-Star 7.0. For example, Krypton has seen an over 400% cost price. This drastically reduces it as a viable solution to meeting the draft 7.0 criteria and is no longer a reasonable investment for the consumer. None of this has changed since the first reply we sent to Draft #1 and it could be argued that the supply chain concerns have declined since our first reply. This must be considered in making these proposed changes.

Use of CPD to determine market availability:

Based on the comments during the information session, there is concern that the EPA used the NFRC Certified Product Directory (CPD) as the resource for manufacturer capabilities and for what was being produced in the market. This assumption should be taken very carefully. The number of products posted in the NFRC CPD does not necessarily correspond to the number of available products in production. Using that data makes the pool seem much larger than it really is. Window manufacturers specifically have inflated certified NFRC CPD lists to provide manufacturing flexibility to reduce costs and supply chain risks. To reiterate – this is not a sound method to determine current market availability of glass designs – especially in light of what is going on with glass and machinery supply.

Time to market for these changes:

The proposed timeline for these changes is too aggressive and not realistic. Changes of this magnitude require adequate time to re-configure and design the necessary changes to a company’s product lines. Once the ENERGY STAR 7.0 changes are approved, we propose that at least a 24-month time period for adoption given manufacturers and supplies sufficient time to adjust and implement changes to their product offerings and to insure the required testing in place. Forcing these changes into the market to quickly will not be good for the ENERGY STAR program and its stakeholders and thus we should be given ample time to comply with these changes and that must fall within the constraints of the markets we are in. If the 12-month adoption timeframe proposed in Draft #2 for is to stay in play, then extra time must be provided to N and NC zone window suppliers to become compliant because of the extra burden placed on N and NC Zone window suppliers. An extra 12 months for these N and NC zone suppliers make sense and is the past precedent that was set when we adopted ENERGY STAR 6.0 and that same standard should apply here with 7.0.

Differences between Energy Star 6.0 vs. Energy Star 7.0

Our company produces windows primarily in the Northern Region where hung windows are the most prevalent type of window. When Energy Star 6.0 was proposed, the methods to reach the new standards were achieved using design improvements and adoption of glass technologies that were available on the market at the time of proposal. The designs of windows were able to be configured with reasonable cost increases to reach these performance specifications. The pathways needed to meet the ENERGY STAR 7.0 requirements are not as straightforward.

The proposal for ENERGY STAR 7.0 would make the Most Efficient ENERGY STAR program unnecessary because they would be very similar performance criteria. U22 – SHGc17 proposed for Energy Star 7.0 requires similar components and construction as U20 – SHGc20 for Most Efficient ENERGY STAR. See performance requirements for ES and ME ES below.

ENERGY STAR Most Efficient 2021	
Residential Windows and Sliding Glass Doors*	U-factor ≤ 0.20 in all Zones SHGC in Northern Zone ≥ 0.20 SHGC in North-Central Zone ≤ 0.40 SHGC in South-Central and Southern Zones ≤ 0.25 North American Fenestration Standard/Specification (NAFS) Performance Grade ≥15

As was the case with ENERGY STAR 6.0, the Northern and North Central zones would be disproportionately impacted compared to the rest of the USA. The significant decrease in U-factor, even with Equivalent options, significantly increase cost for products targeting these zones while South Central and Sothern zones are not impacted nearly as much.

Builders trying to offer improved performance with ENERGY STAR products would be unable to justify the cost increases to windows and sliding glass doors. They are doing their best to deal with the out-of-control lumber costs and adding considerable cost using draft 2 of version 7.0 Energy Star windows would certainly be burdensome.

As a manufacturer in the Northern region, consumer window choices would be drastically reduced within the marketplace. Many product lines would be excluded from the Energy Star 7.0 program.

Glass manufacturing and SHGc Requirements

Discussions with glass/coating manufactures claim that a single pane of glass has been optimized. Triple silver coated glass or Room-side Low-E glass has been optimized to the max. When testing a quadruple silver coating there were diminishing emissivity ratings. As an IG manufacturer, to reach the U-Factor and Solar Heat Gain requirements will require substantial product configuration changes and testing and the potential of leveraging the use of Krypton gas filling. Krypton has become prohibitively expensive to use in standard manufacturing and the industry has seen upwards of 500% price increases or more.

NFRC Test Sizes:

We understand that the selection of tests sizes is not something that is governed by the EPA, but we do want to ensure that that it is understood that these sizes used for evaluation do have an effect on developing new glazing options. We are concerned about the NFRC subject windows sizes used in NFRC simulations and in particular Casement windows. We have found that based on the size tested (simulated) under the NFRC guidelines leads to inconsistencies in product offerings simply based on the subject model window size. The current size used for casement windows is 24" in width and we feel that this sizing compromises what we can offer for glass designs on this important market segment. This is noticeable when you compare a fixed lite version of the same window which is tested at 47" in width. The concern with the 24" width is that leaves very little glass in the window at that size and thus skews the thermal results. The 24 width is also not a very realistic size – our windows need to be at least 27.5" in width to meet a minimum 20" width clear opening for egress and most of the casements we produce are wider than 24". With all the added burden place on N and NC zone window suppliers, it would be ideal if we could see this NFRC model size increased to something more realistic like 30" or above. We included Table 4-3 *Product Types and Modeling Sizes* from ANSI/NFRC 100-2020 for your reference and consideration.

In closing and in response to the Proposed ENERGY STAR 7.0 Draft #2 proposal, we offer the following comments and recommendations:

- 1. Scale back the proposed Northern Zone qualification criteria to be no less than a U-Factor of U=0.23.**
- 2. Provide a longer adoption timetable so that manufacturers and suppliers can make the appropriate design changes and capital investments that will still be required to achieve U=0.23.**
- 3. Use a more realistic method to determine product and market availability of ENERGY STAR rated product as opposed to using the NFRC CPD.**
- 4. Limit criteria changes to allow the use of technologies that can be adopted at a reasonable cost increase that will encourage the use of ENERGY STAR rated windows and doors.**

Thank you for the opportunity to present our thoughts and comments of the proposed ENERGY STAR version 7.0 Draft #2 changes. We look forward to working with you to revise and improve the qualification criteria we all use. Our hopes are that these comments, which we feel will be supported by most other NFRC members and affiliates, will be carefully reviewed, and factored into the next round of proposed change. Our objective is to encourage and promote the use of ENERGY STAR qualified windows and doors and feel like our recommendations do in fact provide that.

Regards – Steve

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Table 4-3 – Product Types and Model Sizes

Product Type	Opening (X) Non-operating (O)	Model Size (width by height)
		SI (IP)
Casement – Double ¹	XX, XO, OO	1200 mm x 1500 mm (47 in x 59 in)
Casement – Single	X ⁶	600 mm x 1500 mm (24 in x 59 in)
Dual Action	X ⁶	1200mm x 1500 mm (47 in x 59 in)
Fixed (includes non-standard shapes)	O	1200 mm x 1500 mm (47 in x 59 in)
Garage (Vehicular Access)/Rolling Door	X ⁶	2134 mm x 2134 mm (84 in x 84 in)
Greenhouse/Garden ²	X ⁶	1500 mm x 1200 mm (59 in x 47 in)
Hinged Escape	X ⁶	1500 mm x 1200 mm (59 in x 47 in)
Horizontal Slider	XO or XX	1500 mm x 1200 mm (59 in x 47 in)
Jal/Jal Awning	X ⁶	1200 mm x 1500 mm (47 in x 59.in)
Pivoted	X ⁶	1200 mm x 1500 mm (47 in x 59 in)
Projecting (Awning, Dual)	XX ⁶	1500 mm x 1200 mm (59 in x 47 in)
Projecting (Awning – Single)	X ⁶	1500 mm x 600 mm (59 in x 24 in)
Door Sidelite ⁵	X or O	600 mm x 2090 mm (24 in x 82 3/8 in)
Skylight/Roof Window	X ²	1200 mm x 1200 mm (47 in x 47 in)
Sliding Patio Door with Frame	XO or XX ⁸	2000 mm x 2000 mm (79 in x 79 in)
Curtain Wall/Window Wall/Storefront/Sloped Glazing	OO ³	2000 mm x 2000 mm (79 in x 79 in)
Spandrel Panel	OO	2000 mm x 1200 mm (79 in x 47 in)
Side-Hinged Exterior Door	O, X, XO or XX ⁴	960 mm x 2090 mm (37 3/4 in x 82 3/8 in); or 1920 mm x 2090 mm (75 1/2 in x 82 3/8 in)
Door Transom ^{5,7}	O	2000 mm x 600 mm (79 in x 24 in)
Tropical Awning	X ⁶	1500 mm x 1200 mm (59 in x 47 in)
Tubular Daylighting Device	O	350 mm Dia. (14 in Dia.)
Vertical Slider	XO or XX	1200 mm by 1500 mm (47 in by 59 in)

¹Double Casements and Dual Awning are to be rated only in the case where single units are not manufactured.

²If not manufactured, use O (non-operable version). Non-operating versions of this type may be included in the same product line as the operable version as long as the changes to render the product non-operable comply with Section 4.2.

³Two lites with one vertical mullion. A multi-story system shall be simulated as a curtain wall and a single-story system shall be simulated as a window wall. Curtain walls shall be simulated and tested with intermediate verticals as jambs and intermediate horizontals as head/sill frame members. Window walls and storefronts shall be simulated and tested with intermediate verticals as jambs and standard head and sill members. For rating of curtain walls or window walls and storefronts, area weight intermediate members based on centerline dimensions. Sloped glazing may also be rated based on the centerline dimensions if utilized like a curtain or window wall, except for solariums and sunrooms. Sloped glazing of solariums and sunrooms shall be simulated and tested with standard jamb, head, and sill members (see Section 5.6.4.2). Other sloped glazing not similarly used like a flat curtainwall or windowwall, as identified under the "Sloped Glazing" definition, shall also be rated as sloped glazing products based on centerline dimensions and they shall be simulated and tested with purlins as head and sill and rafters as jambs and intermediate verticals.

⁴The single door shall be used to represent all door assemblies (single, double, multiple) unless the manufacturer does not produce a single door, in that case the double door shall be used to represent double and multiple door assemblies.

⁵Sidelites greater than 700 mm wide (27 in) and transoms greater than 700 mm (27 in) high shall be rated as fixed windows. Slab sidelites greater than 700 mm wide (27 in) shall be rated as swinging doors. Operable sidelites are rated as the appropriate operator type.

⁶Non-operating versions (O) of this type may be included in the same product line as the operable version as long as the changes to render the product non-operable comply with Section 4.2. If there is no operable version of the product, it is classified as a fixed window.

⁷Operable transoms are rated as the appropriate operator type.

⁸Representative of all sliding patio doors and combinations of sliding patio doors and fixed unit(s).