



WINDSOR
WINDOWS & DOORS
A Woodgrain Millwork Company

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Date: 8/20/21

To: Douglas W. Anderson
Program Manager, ENERGY STAR Windows, Doors, and Skylights
U.S. Environmental Protection Agency

RE: Energy Star Version 7.0 Draft 1 Specifications

Thank you for the opportunity to comment on Energy Star 7.0 Draft 1 Specification. Windsor Windows & Doors appreciates the efforts and research the EPA has done on developing the draft Version 7.0. Windsor is proud to be an Energy Star Partner and a national manufacturer of energy efficient windows and doors. Our comments on several key components of the proposed Energy Star requirements are outlined below:

EPA's Rationalization for Significant Changes:

The EPA's analysis on product availability and technology was based on NFRC's Certified Product Directory. The CPD is a good resource but we don't feel it's an accurate representation of products that are commercially available today. Windsor, like other manufacturers, have options and glass configurations in the CPD that are not currently offered or have limitations in the marketplace. These may include concept designs, emerging technology or glass options that have limited applications in terms of size or thickness constraints of current window designs. They may also include glass options that are available today in limited quantities but may result in supply chain restrictions if volumes significantly increase.

The EPA maintains that one of Energy Star's "Guiding Principles" is to be better than the current energy codes. However, the current V6.0 is still significantly more stringent than the latest version of the IECC (2021). The *lowest* U-Factor requirement in the 2021 IECC is 0.30 for Climate Zones 3-8. Energy Star requirements would still be well below this without any changes.

Also consistent with the guiding principles, the EPA uses market share as a prompt that a specification revision may be needed. The EPA reports that 2019 market share of Energy Star windows was 86%. Windsor feels that a high market share of Energy Star products is a good thing. Current V6.0 requirements result in very energy efficient windows. We feel that making significant and wholesale changes to Energy Star will result in high cost and low availability of Energy Star products. This will reduce demand for Energy Star products and potentially make the Energy Star brand less relevant.

Windsor also questions the EPA's rationale behind basing their entire analysis on vinyl frame windows. While popular, vinyl window frames are not the only frame types available in the marketplace today. The same analysis, if done on aluminum clad wood windows, would likely be very different in terms of payback, energy savings and realistic performance goals.

Finally, what affect will the proposed V7.0 changes have on Energy Star's "Most Efficient" program? The proposed changes will result in window U-Factor requirements that are very close to the current "Most Efficient" designation. Windsor feels that the proposed V7.0 changes will make the "Most Efficient" program less relevant.

U-Factor Reduction for All Zones:

The EPA is proposing a significant drop in U-Factors for all climate zones. The Northern Zone proposal is a 0.22 from current 0.27 (19% reduction). Improvements that manufacturers can reasonably implement on products have diminishing returns the more stringent the requirements get (the previous change was a 0.03 drop in U-Factor versus the 0.05 drop proposed).

This is even more of a disadvantage on aluminum clad wood windows. Clad windows are chosen for their strength, durability, architectural appeal, and interior aesthetics. However, even with triple I.G. many existing clad window designs will not meet the proposed Northern Zone criteria.

By the EPA's analysis, all 2-pane windows in the Northern and North Central zones will need to have room-side LoE coatings to meet the proposed criteria. Since room-side LoE glass has a lower interior temperature, it has the potential to increase condensation and decrease comfort.

For these reasons, Windsor urges the EPA to set reasonable and rational U-Factors for Energy Star 7.0. We feel that setting the Northern Zone U-Factor at 0.25 would result in significant energy savings while allowing manufacturers to implement across all product lines equitably.

Solar Heat Gain Trade-Offs for the Northern Zone

Like Version 6.0, the EPA is allowing higher SHGC in the Northern Zone through U-Factor trade-offs. Higher SHGC (as much as 0.50) will greatly reduce comfort and increase cooling costs in Northern zones.

Window blinds and shades are commonly used on residential windows, which are frequently in the lowered and closed position. Blinds and shades greatly reduce the energy savings realized with high solar gain windows. Windsor did not find anything in the EPA's payback justification where this was considered or adjusted for.

In addition, higher SHGC tradeoffs have a minimal effect on windows on the northern elevation of a home. SHGC trade-offs are confusing to the consumer and complicated for the manufacturers. Windsor requests that the EPA consider eliminating the Northern Zone equivalency path altogether.

Solar Heat Gain Minimum for the Northern Zone

For the first time, the EPA is proposing a SHGC minimum of 0.17 in Northern Zone. To reach the proposed U-Factors, manufacturers will need to rely on high-performance glass options. This minimum would restrict some glass options with 2 LoE surfaces and most glass options with 3 LoE surfaces.

In addition, it would limit grid options and products with high-profile sash and frames. Windsor feels that this new SHGC minimum for the Northern Zone restricts glass and grille options without adding value or savings. Windsor requests that the EPA consider removal of the minimum 0.17 SHGC requirement from the proposed V7.0.

Solar Heat Gain Maximum for the South-Central and Southern Zones

The EPA is proposing a change to the maximum allowable SHGC to 0.23 in the South Central and Southern Zones. In many cases, this will require solar control coatings that significantly reduce visible light transmittance.

We also see a trend in the marketplace for contemporary, low-sightline windows. The high glass-to-frame ratio of these products makes it difficult to provide efficient glass options with SHGC below 0.25. Windsor feels that the EPA should not change the SHGC requirements from the current 0.25 requirement today.

Sliding Doors Added to Window Criteria

Windsor feels that door criteria should be kept separate from windows. While they do share some similar components, doors tend to be made of stronger materials and have wider stiles & rails due to their high frequency of use and durability required for foot traffic. Because of these differences, they tend to have higher U-factors.

The proposed Energy Star 7.0 would change U-factor requirements in the Northern Zone for sliding glass doors from a 0.30 (V6.0) to 0.22 (V7.0). This is a significant reduction from the current standard. On an aluminum clad wood door, it will be extremely difficult to meet a 0.22 U-factor (even with triple I.G.). In addition, tempered glass required by code limits available glass options.

Payback Analysis

The EPA's payback analysis was based primarily on vinyl double-hung windows. While vinyl windows have a high market share, they're not the only window type and material in the marketplace. Windsor suggests that the EPA look at payback scenarios on other window materials and types.

In addition, the EPA's analysis shows as much as 12.3 years payback in the Northern Zone. We feel that paybacks longer than 10 years are not reasonable.

Glass Technology

The EPA mentions that there are new glass technologies in the marketplace now. However, thin triples, vacuum glazing and aerogels are still emerging technologies, and many are not commercially available today or are available with limited capacity.

To our knowledge, thin triples are not available with a tempered option and cannot satisfy safety glazing standards – particularly for doors. Other emerging glass options have size and weight limitations which can restrict sizes that are offered.

Manufacturers may also be forced to use Krypton gas in lieu of Argon to compensate for smaller cavities. Krypton is significantly higher in cost than argon and may be difficult to source if demand for it soars.

No Allowances for High Altitude and/or Impact Resistant Windows

Allowances for high altitude or impact resistant windows were not included in the draft V7.0. Because of the limited air spaces and the restrictions on gas filling, these types of products are inherently less energy efficient than standard products. In our opinion, it's not practical to have the same Energy Star requirements for these window types. Windsor urges the EPA to reconsider adding these allowances into Energy Star V7.0

Manufacturer Challenges

Windsor proposes that now is not the right time to make extreme and wholesale changes to the Energy Star program. The current environment that window and door manufacturers face make it extremely difficult to add new glass options, redesign products and introduce material changes to their products. Many manufacturers are operating at capacity already and are focused on servicing customers on existing orders.

Supply chain issues are affecting all areas of our industry. Making product changes could disrupt supply issues even more by creating demand for some materials that are in limited supply today.

Meeting the proposed guidelines will require significant design changes to many of our product options. This will, in turn, require new equipment or changes to equipment to be able to manufacture our products. Equipment suppliers are at capacity as well. In many cases, lead times on new equipment is 18 months or longer.

Implementation Timeline

The EPA's estimated timeline for Version 7 include a "Final Specification" by January 2022 with an implementation date 9-12 months after that. This could result in a potential effective date of as early as October 2022.

These extreme changes in the 7.0 criteria will force many manufacturers such as Windsor to completely redesign and retool our entire clad/wood product offering which will take multiple years and millions of dollars in investment to accomplish. This all comes at a time where the fenestration industry is over capacity, there are severe supply chain challenges with extended lead times, a shortage of available workforce and equipment suppliers who's lead times are out 12 – 18 months and longer. The timing of any type of change or improvement to Energy Star needs to take these factors into consideration and extend the implementation date allowing for these dynamics to come back to some measure of normalcy. Any change to the criteria should occur no earlier than January of 2024.

Based on the reasons outlined in this letter, Windsor Windows & Doors urges the EPA to reconsider and re-write the proposed standards for Energy Star 7.0. We believe that updates to Energy Star needs to be incremental, reasonable, and rational for all window and door types.

Sincerely,

A handwritten signature in black ink, appearing to read "Phil Weber". The signature is written in a cursive, slightly slanted style.

Phil Weber
Design Engineering Manager
Windsor Windows & Doors