



October 18, 2019

Mr. Doug Anderson

US EPA ENERGY STAR Program Manager

Environmental Protection Agency 1200 Pennsylvania Avenue, NW Washington, DC 20460-0001

Subject: ENERGY STAR® Windows, Doors, and Skylights Version 7.0 Specification Discussion Guide

Dear Mr. Anderson:

The Window and Door Manufacturers Association (WDMA) appreciates the opportunity to comment on EPA's consideration of whether an ENERGY STAR Version 7.0 specification is warranted and the *ENERGY STAR® Windows, Doors, and Skylights Version 7.0 Specification Discussion Guide* (Guide) as part of that consideration.

As a preface to the comments in this letter on specific issues discussed in the Guide and in response to consideration of whether an ENERGY STAR specification is warranted at this time, we appreciate EPA's recognition that there are very significant issues that must be addressed before proposing any revision. These include ensuring a sound, accurate cost data collection methodology can be employed, a thorough evaluation of potential consolidation and revisions to climate zones is undertaken, and improved, accurate methodologies for calculating energy savings are developed.

In addition, EPA must very carefully consider truly representative market share data as well as ENERGY STAR requirements in relation to energy codes before proceeding. In particular, the market share data presented in the Guide does not provide more specific market share data by product type or ENERGY STAR climate zone that we believe is critical to the consideration of any revision to Version 6.0. With respect to building energy codes, EPA should recognize that overall, ENERGY STAR Version 6.0 will still require energy efficiency performance that is superior to minimum building energy codes for several years to come without any revisions to it.

For these reasons we believe EPA needs to engage in further collaboration with stakeholders based upon the comments it receives in response to presentation of these issues in the Guide before making a final determination that an ENERGY STAR Version 7.0 is warranted at this time, especially for the Northern Zone.

That said, we respectfully offer the following comments on the Guide.

Current Market Assessment

We appreciate EPA providing the market share data in *Table 1. ENERGY STAR Market Share by Year* in the Guide, however that data is only aggregate in nature for the U.S. as a whole when market share by ENERGY STAR climate zone and product type should also be recognized. We believe that level of market share detail is critical to the consideration of whether or not proposed revisions to the specifications for each product type in each climate zone is warranted, especially with respect to the Northern Zone.

Should EPA decide to move forward at this time with proposed revisions of the Version 6.0 specification, more detailed market share data needs to be provided with any draft analysis and criteria to substantiate that move.

Developments in Energy Codes

WDMA agrees that it is important for the ENERGY STAR specification to keep pace with code improvements. However, when using existing codes as benchmarks other aspects of them must also be considered e.g., the alternative pathways for compliance they offer. In addition, given ENERGY STAR is a national program the International Energy Conservation Code (IECC) is the most appropriate code for benchmarking purposes taking into account which editions are adopted and where, recognizing that it is years following publication of the latest edition of the IECC before there is widespread adoption of it.

Regarding the development of the 2021 IECC, the only proposal that has been tentatively approved for a requirement more stringent than ENERGY STAR is for the U-factor in IECC Climate Zone 2 and a final determination on that will not be made until the end of this year. Until then it is still uncertain. With respect to aligning other IECC U-factor requirements with those for ENERGY STAR, the same proposal would make the requirements for vertical fenestration in IECC Climate Zone 3 & 4 equivalent to but not exceed ENERGY STAR. However, even if that proposal is approved for the 2021 edition of the IECC it does not necessitate an immediate revision of the ENERGY STAR requirements given (as noted above), it will be a number of years before the 2021 IECC gains widespread adoption.

Regarding consideration of aligning the US ENERGY STAR program with ENERGY STAR Canada, while doing so in the past has been desirable in some respects, that is no longer viable for the immediate future. We believe the significant differences that exists between the two programs, especially as of ENERGY STAR Canada Version 5.0 where Canada is moving from three zones to one zone for the entire country and requiring a U-factor that is just above the current requirements of the U.S. ENERGY STAR Most Efficient program, precludes an alignment. Furthermore, considerations such as those with respect to cost also differ in the Canadian revision process with increased costs carrying far less weight in making determinations for what the requirements will be. That said, we greatly appreciate EPA's recognition that it must evaluate a potential specification revision for the U.S. program on its own merits and WDMA does not recommend alignment with Canada's current program requirements.

Question 1: Are there better data sources for available products than those proposed in this Discussion Guide?

We are not aware of better data sources than the NFRC FenStar database for this purpose and support EPA's use of it as a reasonable proxy for products available for sale. However, we urge EPA's careful consideration of the products that are listed in the FenStar database as many need to be recognized as outliers, including specialty products or more niche products that are in limited production and therefore should not be assumed to be viable for meeting mainstream market availability demands as intended by the ENERGY STAR windows, doors and skylights program.

Question 2: What are the most common pathways (component combinations) that manufacturers use to make ENERGY STAR certified products?

We are cautious in this response as there is no specific metric for determining what pathways are truly the most common. They can vary among manufacturers and product lines and of course depending on the climate zone they are intended to qualify for. However, generally speaking in response to this question, pathways for manufacturing ENERGY STAR certified products could be characterized as follows:

Windows

ENERGY STAR Northern Zone: Clad wood, composite or fiberglass frames, dual pane with multi-silver layer low-e coatings and a low-e coating on surface 4, or for metal clad, a triple pane with a double-silver low-e coatings, and warm edge spacers for either option.

ENERGY STAR Central Zone: Clad wood, composite or fiberglass frames, dual pane with double silver low-e coatings and warm edge spacers.

ENERGY STAR South Central and Southern Zones: Most framing materials with a triple silver low-e coating to meet respective ENERGY STAR SHGC requirements and warm edge or other metal spacers.

Doors

ENERGY STAR all zones: Fiberglass or steel skin with a foam insulation core and glass packages for door lites consistent with those for windows depending on the size of the lite and ENERGY STAR climate zone it is intended to qualify for.

Skylights

ENERGY STAR Northern zones: Wood frame dual pane with a higher solar triple layer silver low-e coating and stainless steel spacer.

ENERGY STAR Southern Zone: Wood frame dual pane with a lower solar triple layer silver low-e coating and stainless steel spacer.

Question 3: Are there pathways represented in the NFRC CPD that should not be considered viable pathways?

In general, pathways that are not reflected by products in the NFRC FenStar database should not be considered viable at this time in the consideration of potential revisions to Version 6.0. Even then, thoughtful consideration needs to be given to the pathways that are reflected in the NFRC FenStar database with respect to whether or not they may be viable for a mainstream ENERGY STAR Version 7.0 program.

Question 4: Among the most common pathways, which (if any) energy performance ratings should EPA consider to be outliers?

What is considered to be an outlier in this regard is a very subjective. EPA should therefore consider setting the current performance requirements of ENERGY STAR Version 6.0 as the default metric for making that determination at this point with performance ratings that exceed those of Version 6.0, especially for the North Central and Northern climate zones, deemed as outliers. Other outliers may be products with limited glazing uses such as dynamic glazings or glazings with exotic gas fills.

Product Costs – Payback Period

Question 5: What sources should EPA consider when evaluating what is a reasonable payback period for building materials like WDS?

Evaluation of what a reasonable payback period is for building materials like ENERGY STAR windows, doors and skylights must be based on sound data demonstrating what consumers consider to be a reasonable payback period. To that end, we recommend EPA consult with the National Association of Home Builders (NAHB), the NAHB Remodelers Council, National Association of the Remodeling Industry (NARI), and the Home Innovation Research Labs (HIRL). These organizations should be able to provide EPA with sound data related to reasonable payback periods from their respective data collection activities such as NAHB's annual survey and report – *What Home Buyers Really Want*, the latest edition of which is 2019, or other information resources those organization possess.

In feedback from WDMA during development of Version 6.0, we asserted most consumers require a payback period of 10 Years or less in order to invest in energy efficiency upgrades for their homes based upon NAHB's research findings. Based upon our review of the *What Home Buyers Really Want – 2019 Edition*, we maintain that a payback period of 10 years or less is required by nearly two-thirds of consumers.

Again, we recommend EPA consult with the organizations noted above in addressing this question.

Product Costs – Proposed cost estimation methods

We appreciate the challenge EPA faces with respect to gathering and evaluating sound product cost data for ENERGY STAR windows, doors and skylights. Of the three methods proposed, we believe retail pricing and mystery shopping as proposed in the Guide will yield the most accurate data. The costs experienced by consumers is ultimately the most critical data point for considering any revision of the Version 6.0 criteria and EPA should rely most heavily upon it.

With respect to the component bill of materials approach, we believe that suppliers will be reluctant to share this data. Furthermore, this will not directly correlate to the actual cost paid by the consumer at retail locations. Again, the price paid by the consumer is what is most important.

With respect to obtaining cost data directly from manufacturers, we agree with and encourage EPA to work directly with manufacturers to the extent possible. However, EPA should anticipate a reluctance by many manufacturers to provide this information even under a non-disclosure agreement due to the highly sensitive nature of it. If EPA is able collect cost data directly from manufacturers that it believes is sufficiently representative it will need to provide adequate substantiation for that determination in the draft analysis and criteria report.

To reiterate with respect to the proposed methods, the price paid by the consumer at the retail level is the price that EPA should be primarily interested in and is what should be used as the primary basis for any payback analysis.

Energy Savings Methodologies

WDMA supports the use EnergyPlus™ by both the Lawrence Berkeley National Laboratories (LBNL) and National Renewable Energy Laboratory (NREL) in their energy savings calculation methodologies as stakeholder have indicated it is a more accurate simulation tool for that purpose.

We also appreciate EPA's working with LBNL and NREL to address concerns with modeling used to determine energy savings in the development of Version 6.0 and other previous revisions, including ensuring that data inputs on housing stock and construction, residential energy consumption, climate, etc., are the most up to date available. However, we are unable to provide more specific feedback on the new building energy modeling tools developed by the labs at this time without further detail on them. For instance, will calibration routines be employed and if so, how and why? Will the modeling be based solely on the equal distribution of windows on a four-sided building or will it also consider more typical cardinal direction distributions? Will HVAC fan energy be factored in, etc.? We therefore recommend EPA more broadly share the details of those new modeling tools with stakeholders and solicit any feedback that may indicate further refinement or adjustments to them are needed or would otherwise be beneficial.

Combining Southern and South-Central Climate Zones

Question 9: Should EPA consider combining the ENERGY STAR Southern and South-Central climate zones?

Question 10: What impact would the potential merging of these climate zones have on consumers and partners?

WDMA is supportive of combining the ENERGY STAR Southern and South-Central Zones. We agree that the DOE/PNNL field studies show a widespread use of similar products in IECC Zones 2 and 3 meeting ENERGY STAR South-Central Zone criteria and that combining the ENERGY STAR zones is reasonable. We also support simplifying the specifications when justified as we believe it to be in this case and that doing so will not have a negative impact on consumers in terms of product availability or otherwise on manufacturers.

Establishing a Minimum Solar Heat Gain Coefficient (SHGC) for the Northern Climate Zone

Question 11: Should EPA consider setting a minimum SHGC in the Northern climate zone?

Question 12: What impact would a minimum SHGC have on product availability, consumer expectations, and the veracity of the ENERGY STAR label in the window market?

WDMA is not supportive of setting a minimum SHGC in the Northern Zone as we don't believe there is adequate data to support it. While EPA notes previous analyses suggest that significant energy savings may be possible with higher solar gain products in heating-dominant climates, it is not citing any specific analysis. We are therefore concerned for instance that the analyses noted may have been based upon a range of U-factors that is far too broad, may have neglected to consider all factors such as HVAC fan energy when calculating cost savings, and may lack in full consideration of occupant comfort.

With respect to dark or tinted products that are unacceptable to many consumers, consumer preference serves as a driver for what manufacturers will produce and market for the Northern Zone.

In sum, SHGC considerations are much more complicated for colder climate regions and we do not believe there is adequate data to support establishing a sound minimum SHGC requirement for the ENERGY STAR Northern Zone. Doing so could be detrimental.

Evaluating IECC Zone 5 for the Northern or North-Central Climate Zone

Question 13: Should EPA consider moving IECC Zone 5 out of the ENERGY STAR Northern climate zone and into the North-Central climate zone?

Question 14: What impact would changing climate zone boundaries have on consumers and partners?

WDMA is supportive of moving IECC Climate Zone 5 out of the ENERGY STAR Northern Zone and into the ENERGY STAR North-Central Zone if the current North-Central Zone criteria is retained. We agree that combining IECC Climate Zones 4 & 5 for the ENERGY STAR North-Central Zone is particularly important because it has the largest population concentration in the U.S., and that weather data shows IECC Climate Zone 5 climate characteristics are more in-line with the ENERGY STAR North-Central Zone. As with combining ENERGY STAR Southern and South-Central Zones, there is no indication this will have a negative impact on consumers in terms of product availability or otherwise on manufacturers.

Applying the ENERGY STAR Windows Specification to Full-Lite Sliding Patio Doors

Question 16: Should EPA consider including full-lite sliding patio doors in the ENERGY STAR Windows specification?

Question 17: What impact would this potential change have on consumers and partners?

WDMA is not supportive of including full-lite sliding patio doors in the ENERGY STAR windows specification. While some full-lite sliding patio doors may share more components and features with windows than with swinging doors they are still different products, serve different purposes and requirements for them should therefore be maintained separately. This is especially true with respect to the ENERGY STAR Northern Zone where the U-factor requirements for windows would be much more difficult for full-lite sliding patio doors to meet.

In terms of impact such a change would have on consumers and partners, it could easily have a negative impact on the availability of products in the Northern Zone. Furthermore, we believe establishing two sets of criteria for doors would not be a simplification of the specification and could lead to confusion in the market place. The current structure of three separate categories is sensible and reasonable and should not be changed.

Sunsetting the ENERGY STAR Door Criteria

Question 18: Should EPA consider sunseting the ENERGY STAR specification for swinging doors if the analysis does not reveal significant cost-effective energy savings for consumers?

Question 19: Should EPA sunset just part the criteria if additional cost-effective energy savings are only possible for some products, such as glass-only doors?

WDMA is not supportive of sunseting the ENERGY STAR specification for swinging doors if additional cost-effective energy savings for the consumer is not readily achievable. The ENERGY STAR brand, especially for windows, doors and skylights has been so well established it is the number one must have or desired ENERGY STAR product by homeowners according to the data presented in the National Association of Home Builders *What Home Buyers Really Want – 2019 Edition*.

Even if additional cost-effective energy savings is not readily achievable, maintaining the current criteria still results in superior energy efficient swinging door products and the ability for them to be recognized as such with an ENERGY STAR qualification should be maintained. Retiring the specification for swinging doors entirely or partially as posed in Question 19, will all of the sudden leave consumers and builders without a clear means for identifying superior performing swinging doors. This would be a disservice to them and there is simply far greater benefit to consumers, builders and the ENERGY STAR program as a whole by maintaining the ENERGY STAR specification for swinging doors as opposed to retiring the product from the program.

Simplifying or Sunsetting the ENERGY STAR Skylight Criteria

Question 20: Should EPA consider including skylights in the ENERGY STAR Windows specification?

Question 21: What significant technical and market differences between windows and skylights should EPA consider in its analysis?

Question 22: Should EPA consider sunsetting the ENERGY STAR specification for skylights if the analysis does not reveal significant cost-effective energy savings for consumers?

WDMA is not supportive of including skylights in the ENERGY STAR windows specification. As with full-lite sliding patio doors, skylights are similar to windows but they are still different products and should be considered as such in an independent category. Simplifying the window, door and skylight specifications by combing skylights with windows does not simplify the differences.

We understand EPA believes it is difficult to determine if a proposed specification for skylights is consistent with the ENERGY STAR Guiding Principles, but do not agree that is justification for developing a completely new approach to determining thermal performance requirements for skylights. While we appreciate EPA's efforts to evaluate a potential new criteria approach for skylights we believe that what is being considered actually adds complexity to the program, will result in a confusing specification and will potentially cause confusion in the market place. As stated in response to EPA's consideration of including full-lite sliding patio doors in the windows specification, the current structure of three separate categories is sensible and reasonable and should not be changed.

With respect to any consideration of retiring skylights from the ENERGY STAR windows, doors and skylights program, our response is the same as that to the consideration of retiring swinging doors. Again, the ENERGY STAR brand, especially for windows, doors and skylights, has been so well established it is the number one must have or desired ENERGY STAR product by homeowners according to the data presented in the National Association of Home Builders *What Home Buyers Really Want -- 2019 Edition*.

As with swinging doors, even if additional cost-effective energy savings is not readily achievable, maintaining the current criteria would still result in superior energy efficient skylight products and the ability for them to be recognized as such with an ENERGY STAR qualification should be maintained. Retiring the specification would likewise all of the sudden leave consumers and builders without a clear means for identifying superior performing skylight products. This would also be a disservice to them and there is simply far greater

benefit to consumers, builders and the ENERGY STAR program as a whole by maintaining the ENERGY STAR specification for skylights as opposed to retiring the product from the program.

Dynamic Glazing and Shading

Question 23: What is the market penetration of products with dynamic glazing or integrated shading systems for residential applications? Do stakeholders expect the market for such products to expand in the next few years?

Question 24: How should the process for certifying and listing dynamic and/or integrated products be revised to better evaluate the performance and availability of such products?

WDMA does not possess specific data on the current market penetration of dynamic glazing or integrated shading products for residential applications. With respect to the near future expansion of the market for these products we likewise have no specific data indicating what the expansion of that market might be. However, regardless of the current or near future market conditions for those products we believe the current provisions for qualifying dynamic glazing products should be maintained and that it is premature for including integrated shading systems products into the window, door and skylight program.

Extended Implementation Schedule

Question 27: Should EPA consider extending the effective date beyond the typical 9 to 12 months after release of a final specification?

Question 28: How would an extended implementation schedule make it easier to meet a potential revised specification?

Should EPA ultimately move forward with the development of an ENERGY STAR Version 7.0, WDMA supports extending the effective date beyond the typical 9 to 12 months after the final specification is published. Given the changes in product design, testing, certification (for building and energy code compliance as well), bringing those products into production, labeling, etc., a lead time of 9 to 12 may not be adequate as was the case with ENERGY STAR Version 6.0 Northern Zone products. In addition, the effective date should also be as closely aligned to the beginning of the calendar year as possible to better align with timing for bringing new products to the marketplace in relation to increasing construction and remodeling activity as the year progresses.

Conclusion

Again, WDMA appreciates the opportunity to comment on EPA's consideration of whether an ENERGY STAR Version 7.0 specification is warranted and the *ENERGY STAR® Windows, Doors, and Skylights Version 7.0 Specification Discussion Guide*. Because of the significant issues that must be fully considered with respect to revising the Version 6.0 specification we strongly encourage EPA to engage in further collaboration with stakeholders based upon the comments it receives before making a final determination that an ENERGY STAR Version 7.0 is warranted at this time and proposing revisions to the Version 6.0 specification.

Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey T. Inks". The signature is fluid and cursive, with the first name being the most prominent.

Jeffrey T. Inks
Senior Vice President - Advocacy