

Submitted electronically

February 12, 2016

Doug Anderson
United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Comments on *ENERGY STAR[®] Framework Document for Exterior and Interior Storm Panels Ver. 1.0*

Dear Doug:

We appreciate the opportunity to comment on EPA's *Framework Document for Exterior and Interior Storm Panels Ver. 1.0*. We have actively supported and participated in the ENERGY STAR[®] Windows, Doors and Skylights program from its inception and would like to offer our comments and recommendations on areas for further study and consideration as EPA considers whether or not to move forward with a program for storm panels.

First and foremost, we believe the EPA should be cautious in extending the ENERGY STAR brand from complete finished goods (i.e. a window or door, appliance, etc.) to a "component," such as a storm window, where the overall performance (energy efficiency, condensation, water drainage, etc.) is in large part reliant upon an unknown existing product, in this case the existing window.

Second, we are concerned about qualifying a product component for which there is no established testing, certification and labeling program in place. While we are aware that the AERC is moving in a direction to do so, at a minimum, we urge EPA to wait until an established testing, certification and labeling program with sufficient certified products is in place and evaluate that outcome before considering an ENERGY STAR specification. NFRC ratings for windows, doors and skylights were well established and referenced by the model energy code prior to EPA developing a program and criteria.

Additionally, setting a specification in advance of an established third party testing, rating and labeling system could adversely impact the work of AERC by predetermining the criteria before that working body has the opportunity to conduct its due diligence to determine the important performance attributes for attachments and a means for testing, rating, certifying and labeling such attributes. In fact, manufacturer interest in certified ratings is likely to wane if an ENERGY STAR label can be used without tested, certified and labeled values.

Instead, we urge EPA and/or DOE to consider an alternative approach to promote storm windows that would mitigate the concerns above by providing "guidelines" and "recommendations" to consumers and pursuing educational opportunities as opposed to putting the ENERGY STAR brand onto a new, accessory product category and on a surprisingly fast timeline.

For the purposes of providing you timely initial feedback, we will refrain from commenting on the studies and specific data cited in the framework document and webinar slides, but rather will focus our comments on whether or not there is merit in moving forward with a low-E storm panel program, key areas to consider and weigh before doing so, and whether or not EPA should lend the reputation, sponsorship, and time-honored brand of ENERGY STAR to storm windows at this point in time.

Key Areas of Consideration for EPA to Either Not Pursue a Storm Panel Program or to At Least Delay:

- **Lack of established Certified Performance Ratings**
 - It is premature to consider ENERGY STAR for storm windows unless and until a storm window certified rating system is finalized and established, sufficient products are tested, rated and certified, and sufficient market data is available to evaluate potential performance criteria and fairly differentiate among products.
 - One of EPA's own guiding principles is that "performance can be measured and verified", which supports the fundamental conclusion that a testing, rating, certification and labeling system needs to be in place before EPA considers an ENERGY STAR storm panel program.
 - Similarly, another EPA guiding principle is that "qualifying products are broadly available". This principle can only be satisfied once an established testing, certification and labeling program is in place and sufficient data is available to assess availability.
 - The stated objective of promoting better performing low-E storm windows could be accomplished in an alternative, effective manner without including storm panels in the ENERGY STAR program and without any ratings. For example, DOE is already promoting low-E storm windows through PNNL studies, weatherization programs, and education programs, as apparently some utility programs are also doing. An educational and promotional effort for low-E storm panels simply does not require inclusion in the ENERGY STAR program.
 - Unlike the current ENERGY STAR Windows program, it is not clear how the product characteristics referenced in the framework documents (emissivity, solar transmittance, and air leakage) would be independently tested, labeled and certified (like NFRC U-Factor, SHGC and Vt ratings for windows, doors and skylights). Without certified performance ratings, neither the EPA nor customers could be assured of a certain level of product performance.
 - Assuming that any product under the ENERGY STAR brand must be subject to ENERGY STAR's Independent Verification Program (IVP), how will EPA verify the attributes proposed in the specification (assuming that the attributes proposed are the right attributes)?
 - The proposed schedule for developing and implementing the new program seems unnecessarily rushed and aggressive, particularly for relatively new products that do not have a testing, rating, certification and labeling program today.

- **Lack of Customer Experience and Risk of Harm to the ENERGY STAR Brand.**
 - According to the specification document, low-E storm windows have been available for purchase for only the past few years and, as a result, there is a very small real life sample of use from which to draw real life conclusions.
 - There simply is not enough customer experience with low-E storm windows to be certain that customers will be satisfied with the product from both an energy performance and quality metric to ensure that the ENERGY STAR brand will be protected. As stated on the ENERGY STAR website, "more than a mark of energy efficiency, ENERGY STAR is also a symbol of trust, quality and responsible stewardship of our environment."
 - The various studies referred to in the framework document confirm that performance results are highly variable, depending largely on the underlying window over which the storm panel is installed and also dependent on the manner and quality of installation.

- How does ENERGY STAR intend to address/convey this inherent variability in actual performance to consumers? This would be particularly challenging without first having an established testing, certification and labeling program for these products.
- The risk of this variability is that a homeowner’s opinion of the ENERGY STAR product could be drastically affected by variables beyond the product itself. In other words, there is a risk that the ENERGY STAR brand could be harmed by significant factors key to the labeled product’s performance, but are beyond the product’s control. There is also the potential for confusion as to how the storm windows compare to replacement windows. EPA’s and DOE’s first priority should be to protect the credibility of the brand.

PNNL Study Suggests Challenges to Storm Panels.

According to PNNL, storm windows face numerous challenges:

- (1) identity crisis,
- (2) stigma,
- (3) not recognized by rating systems,
- (4) potential code barriers,
- (5) do-it-yourself (or not), and
- (6) industry structure (lack of incentive for producers).¹

There is no evidence an ENERGY STAR label will make even a slight difference in overcoming these barriers. For example, PNNL expressed little optimism that the Building America program could overcome them. As stated in the PNNL study, “[s]ome of these barriers, such as industry structure and persistent stigma issues, may not be easily addressed with Building America efforts. . . .”² It is important for EPA to consider whether promoting a product with so many challenges ultimately is consistent with the ENERGY STAR brand.

Protecting the ENERGY STAR Brand Should Be the #1 Priority.

The overall success of the ENERGY STAR brand and the success of ENERGY STAR Windows program is readily apparent. Andersen has been a proud partner of ENERGY STAR Windows since its inception, and we believe strongly that EPA’s first priority should be to protect the credibility of the brand everyone has worked so hard to create, support and grow. We have serious concerns that an ENERGY STAR storm windows program could negatively impact the existing ENERGY STAR Windows program, could cause consumer confusion, and ultimately damage the ENERGY STAR brand for all products, not just windows.

In the course of preparing these comments, we reviewed the 2007 branding report prepared by Interbrand for EPA on “Building a Powerful and Enduring Brand: The Past, Present, and Future of the ENERGY STAR Brand.” This report sets out key tenets for protecting and developing the ENERGY STAR brand. We believe the section discussing the “Future of the ENERGY STAR Brand” is highly relevant to EPA’s determination whether to expand to include storm windows. Here are some key excerpts for EPA to consider before going any further with an ENERGY STAR storm windows program (emphasis added):

¹ Cort KA. June 2013. *Low-E Storm Windows: Market Assessment and Pathways to Market Transformation*. PNNL-22565, Pacific Northwest National Laboratory, Richland, WA, at 22-23.

² Cort KA, at 25.

“ENERGY STAR clearly has permission to expand its boundaries, **but** new developments must be disciplined by the **heritage and credibility of its current reputation**. ENERGY STAR benefits from the simplicity of its promise and the reliability of its core competencies: **proven technology** and services that save energy and money. Any departure from this proposition will invite confusion and challenge the credibility of the brand. Therefore, **any movement or expansion from the essence of the brand must be carefully examined to ensure that short-term gain is not compromised by long-term alienation from loyal constituents**.

Following are the brand tenets that cannot be compromised:

- **Technology must be proven, impeccable, and predictable.**
- **Benefits must be reasonably immediate and measurable.**
- Outcomes must contribute to carbon reduction.
- Opportunities must be easy to access and simple to manage.

With EPA’s limited resources, it is important to focus first on managing the ENERGY STAR brand – a job it is currently doing well. But EPA, like all brand owners, must never assume that the current status of the brand gives permission to shift priorities. The reality for all brands is that they rarely tap their potential. Too often, the brand owner becomes complacent and wanders off to capture new frontiers – almost always at the expense of the core brand. Always secure a solid and defensible foundation. With that guaranteed, it is then possible to consider expansion opportunities, provided they are consistent with the current brand promise and using resources cost effectively.”³

Variable Results and Reliance on the Existing Window Call into Question Performance of Storm Windows.

Expanding the ENERGY STAR program to storm windows would establish a program for a component, as opposed to a whole product. We are not aware of any other ENERGY STAR product that would function in the same manner as storm windows. Because storm windows are add-on components, the performance and perceived quality of a storm window are dramatically affected by the underlying window product to which it is being attached. There is no way for a consumer (or EPA or DOE, for that matter) to fully comprehend the value and performance of the storm window because of that variability. This is borne out by the cited studies themselves that cite to huge variability in measured results (emphasis added):

“While there is significant variability in the results that makes it difficult to draw strong conclusions, it appears that there is the potential for significantly more energy savings when low-E glass is used versus no storm window or clear glass storm windows. **However, due to variability in the data, it is difficult to conclusively say whether one type of low-E performed better than the other.**”

* * *

“**These highly variable results provide little confidence in predicting energy savings;** however, the general trend is that energy savings can be expected with the use of the storm windows in this climate, and potentially larger savings using low-E glass.”⁴

³ Interbrand. June 2007. *Building a Powerful and Enduring Brand: The Past, Present, and Future of the ENERGY STAR Brand*®, at 36-37.

⁴ Home Innovation Research Labs. November 2013. *Residential Low-E Storm Window Retrofit Study in a Warm/Mixed Climate*, Report # 3323.001RES_11152013, at B-30.

For these reasons, more time and data are needed to clearly determine whether there are problems or issues with the performance of storm panels that could negatively affect the ENERGY STAR brand – perceived or real – before the program should be expanded to include storm windows. In the interim, any market transformation efforts for low-E storms should be done through educational programs, ratings, and pilot programs to further study the performance of low-E storms to determine if an ENERGY STAR designation is warranted for them.

Potential Negative Unintended Consequences from Promoting Storm Windows through ENERGY STAR.

In addition to variable study results and unclear performance, another big concern is the potential negative unintended consequences from promoting storm windows through ENERGY STAR that we do not believe have been adequately considered and addressed. Some of these potential consequences include:

- Customer Satisfaction: If a consumer is not satisfied with fit, appearance, ease of installation, ventilation, operability, etc., will the consumer keep the storm windows installed? By their very nature as add-on products, storm windows are highly susceptible to making views and functionality worse than that to which the consumer is accustomed. Energy savings might improve, but everything else could be worse. If the storm windows do not remain in place, the product will not save any energy. Moreover, will such dissatisfaction bleed over to the ENERGY STAR brand?
- Egress: Depending on the method of installation and type of storm window installed, the application of a storm panel could impede emergency escape and create significant safety concerns. Most homeowners are not aware of the need for egress windows and typically a code permit would not be required to ensure compliance. Simply requiring instructions is insufficient to address this major concern.
- Variability in Installation Quality: Successful storm window performance is highly dependent on proper installation and integration with the existing, underlying window. The quality of installation of storm windows, often by untrained individuals or homeowners, can be highly variable and uncertain. The studies indicate there must be a 0.5-inch gap between the panel and the existing window to maximize insulating properties; the panels must be properly sealed to control air leakage; and any thermal break issues must be properly addressed. With the exception of air leakage, these variables do not exist with an ENERGY STAR replacement window; moreover, replacement windows are far more likely to be installed by a trained professional.
- Quality and Condition of the Underlying Window: Performance of the low-E storm window will vary greatly depending whether it is installed over a single-pane window, double-pane window, wood, vinyl or aluminum window, leaky window, etc. Two consumers installing the same storm window in homes side by side are likely to get vastly different energy savings and comfort results.
- Ventilation: There is a significant potential negative effect on ventilation if the installed storm window is not easily operable, or must now operate in tandem with another product that has differing operability features. Ventilation can be a positive for energy savings in many climates during swing seasons.
- Potential Condensation Issues: Storm windows can create potential condensation problems as a function of the air tightness of the storm panel and the base window.

EPA should be very concerned about a qualifying product being subject to so many variables associated with, but beyond the control of, the qualifying product. The above factors will have a significant impact on safety, performance and customer satisfaction, but cannot be solved by the qualifying product itself. If a consumer is dissatisfied with an ENERGY STAR storm window, even if it has to do with a factor beyond the energy performance of the product, this dissatisfaction will lead directly back to the ENERGY STAR brand.

Issues Regarding the Proposed Performance Metrics Exist.

Based on the information presented, we do not believe that the proposed performance metrics are reasonable, easily verifiable or sufficient to measure storm window performance in order to establish ENERGY STAR criteria:

- The choice of criteria (other than air leakage) is limited to the effect of low-E coatings and would not adequately measure the product's entire performance, particularly as a system once installed over an existing window. For example, these metrics would fail to account for other possible energy efficiency technology improvements such as an IG storm window, more than one low-E coating, the effectiveness of the thermal break for metal products, and the value of alternative frame approaches. As a result, the program could serve to discourage, rather than encourage, efficiency improvement and innovation. Moreover, the ratings ignore the most important issue, the contribution of the existing window product.
- No program currently exists to establish tested, certified and labeled ratings for storm panels as a separate product for the proposed performance metrics.
- We do not think EPA should specify types of low-E coatings in its product definition (see page 4 of Framework document) and we note that, contrary to footnote 8, certain sputtered products are durable enough for exposed surfaces. Similarly, we do not see the need for certain other definitions (such as "annual energy rating"), depending on how the ultimate features of the program are designed. If EPA goes forward with this program, we recommend that EPA refrain from finalizing any definitions and revisit these definitions after the program specifications have been fully developed.
- The information provided by EPA shows that interior storms exhibit significantly better insulating value performance than exterior storms.⁵ Under the circumstances, this poses the question: how can both products be ENERGY STAR if one performs better? Should all low-E storm window types qualify as ENERGY STAR or only interior storms? What performance criteria can be consistently measured, rated and certified for validation?
- The proposed climate zones do not seem necessary (a national specification would seem to work better, similar to ENERGY STAR doors) and are potentially confusing if the primary goal is simply to promote the use of low-E glazing. Using the same climate zones as the ENERGY STAR Windows program is likely to create confusion among the two products.
- Encouraging solar gain in the north central zone for storm windows (a minimum solar transmittance), while discouraging solar gain for regular windows and doors (a maximum SHGC), is also inconsistent and unsubstantiated. If solar control is ultimately a qualification criterion, a maximum solar transmittance (SHGC) requirement should apply nationwide as with ENERGY STAR doors, or at least for all climate zones except the north, where there would be no requirement, consistent with the windows program.

⁵ EPA Specification Framework Webinar, January 14, 2016, page 10.

Conclusion

In summary, Andersen does not believe there is sufficient justification at this time to expand the ENERGY STAR program to include storm windows. EPA and DOE first should ensure that a comprehensive rating system is in effect to verify product performance with sufficient certified products and then evaluate the rating system and product data. We also urge the EPA to consider an alternative path, instead of an ENERGY STAR product designation, to provide educational information and guidelines regarding the use of storm panels, discussing both the benefits as well as the disadvantages of use.

We thank you for the opportunity to provide our comments. We reserve the right to change and/or amplify our comments and position as we further consider and better understand the implications of the EPA proposed Storm Panel Program. Please let me know if you have any questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark T. Mikkelson". The signature is fluid and cursive, with a large initial "M" and "T".

Mark T. Mikkelson

Director, Corporate Regulatory Affairs