



Attachments Energy Rating Council
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Attachments Energy Rating Council Response to ENERGY STAR for Exterior and Interior Storm Panels Specification Framework Document

The Attachments Energy Rating Council (AERC) appreciates the opportunity to respond to the Specification Framework Document for ENERGY STAR for Exterior and Interior Storm Panels. AERC has been tasked by the U.S. Department of Energy to rate, label and certify the energy performance of window attachments, including storm panels. AERC fully supports the development of an ENERGY STAR Program for Exterior and Interior Storm Panels.

AERC is developing a rating, labeling and certification program that ENERGY STAR will be able to rely on as the basis for having independently verified product performance. AERC recognizes that its program will provide a way for consumers to compare product performance, but believes consumers also need an easy way to identify which products are energy-efficient and can save them money.

For over two-decades, ENERGY STAR has served that role for consumers across a wide-variety of product categories and AERC believes that the ENERGY STAR program is well-suited to help consumers searching for exterior and interior storm panels identify the most energy-efficient options. ENERGY STAR has very strong brand awareness with consumers and is relied on by utilities for setting the minimum performance specifications. Having one minimum performance specification that exterior and interior storm panels have to meet rather than different requirements for each of the hundreds of utilities spread across the country makes it much easier for manufacturers and lessens the burden for utilities. This also means that more utilities are likely to incentivize interior and external storm panels, which will help ENERGY STAR's goal of energy savings and CO₂ reduction.

Additional Research

AERC encourages EPA to also review the following papers for additional information about interior and exterior storm panels, along with other attachment products:

- D. Charlie Curcija et al. 2013. *Energy Savings from Window Attachments*. Lawrence Berkeley National Laboratory, Berkeley, CA.



- Patrice Frey et al. 2012. *Saving Windows, Saving Money: Evaluating the Energy Performance of Window Retrofit and Replacement*. National Trust for Historic Preservation/Preservation Green Lab, Washington, DC.

Results from the National Trust for Historic Preservation (NTHP) study shows that interior and exterior storm panels save between 14-27% annually and have an average return on investment of 2.2% to 4.9% across the cities modeled.¹ LBNL found savings ranging from 5 to 65 GJ when storm panels were modeled over single pane aluminum windows.²

Definitions

AERC recommends the following changes:

Interior storm panel: A fenestration attachment product consisting of a frame component and one or more pieces of glazing, installed over the interior of a primary window **with, or** without the use of nails, screws, adhesives, or other means of attachment.

Low-E Coating/Glazing: A microscopically thin metal or metallic oxide composition that is deposited directly on a **glass glazing surface to reduce its thermal infrared emittance.**

Excluded Products

AERC also supports the inclusion of blinds, shades, and shutters, in particular, the inclusion of cellular shades and roller shades (both interior and exterior) in an ENERGY STAR program either now or in the near future. AERC is developing energy performance ratings for these product categories and therefore ratings and certification will be completed for these products at the same time as storm panels. Additionally, modeling by LBNL and NTHP has showed a substantial energy savings opportunity for cellular shades and roller shades. LBNL estimated that cellular shades had savings ranging from approximately 4 to 35 GJ and roller shades had savings ranging from approximately 2 to 25 GJ when modeled with single pane aluminum windows using normal operation schedules.³ NTHP found annual percent energy savings from approximately 6% to 14%.⁴ AERC encourages EPA to investigate the savings potential of these other measures and consider them for inclusion in the ENERGY STAR Program either now or at a later stage.

¹ Patrice Frey et al. 2012. *Saving Windows, Saving Money: Evaluating the Energy Performance of Window Retrofit and Replacement*. National Trust for Historic Preservation/Preservation Green Lab, Washington, DC.

² D. Charlie Curcija et al. 2013. *Energy Savings from Window Attachments*. Lawrence Berkeley National Laboratory, Berkeley, CA.

³ D. Charlie Curcija et al. 2013. *Energy Savings from Window Attachments*.

⁴ Patrice Frey et al. 2012. *Saving Windows, Saving Money: Evaluating the Energy Performance of Window Retrofit and Replacement*.



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Metrics

AERC will be certifying performance for U-factor, SHGC, Visual Transmittance (VT) and Air Leakage (AL) and Annual Energy Performance (AEP) metrics for storm panel product performance. AERC is in the process of developing an AEP rating, and once it is ready strongly recommends that EPA use this rating as the basis for establishing qualification criteria for this product category. AERC believes that an AEP rating is the easiest way for consumers to understand and make comparisons between product performance. Most consumers are unfamiliar with U-Factor and SHGC and do not understand what those numbers represent. An AEP rating will allow for consistent and easily understandable information to be conveyed about the product performance. AERC strongly recommends that EPA consider this as the performance metric on which to base its qualification criteria for future stages of the program. AERC is happy to involve EPA in discussions as it continues to develop its AEP rating.

In the meantime, AERC supports the use of emissivity and solar transmittance as the initial metrics for differentiating energy efficient storm panels, as that is easily verified in the International Glazing Database (which will also be used as part of the AERC program) and provides consistency with other programs such as the Regional Technical Forum of the Northwest Power and Conservation Council, until such time as the U, SHGC, AL, and AEP ratings are ready.

Test Methods

AERC is currently engaged in a research project with Intertek-ATI to evaluate a new test method for air leakage for storm panels, which would likely be a modified version of the ASTM E283 methodology using a storm panel mounted over a calibrated test panel that would produce the characteristics of a primary window. AERC will keep EPA informed as this research progresses, and expects that EPA could point to this test method in the future.

AERC appreciates the opportunity to comment on the Interior and Exterior Storm Panels Framework document and is happy to assist EPA in any way possible as it moves forward through this process.

Ralph Vasami
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