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February 11, 2016

Mr. Doug Anderson  
Project Manager  
U.S. Environmental Protection Agency  
[windows@energystar.com](mailto:windows@energystar.com)

Dear Doug:

**RE: Comments to ENERGY STAR for Exterior and Interior Storm Panels, Specification Framework Document**

QUANTA Technologies is appreciative of the opportunity to comment on the framework document for the proposed new Energy Star® program for exterior and interior storm panels. As you know, QUANTA has been actively involved in the research, market development and commercial supply of low-e storm windows and panels for residential, commercial and multifamily properties. We believe that low-e storm panels offer significant promise for cost effectively upgrading of the energy efficiency of existing buildings, in particular providing the means to improve window performance where building or home owners will not or cannot (due to historical restrictions) utilize replacement windows.

As you know, improvement in poor performing windows in existing buildings has the potential to result in significant energy savings nationally. We believe this program will have a substantial impact in market adoption by enabling consumers to comprehend and appreciate the benefits of modern, low-e storm windows, and will go a long way in creating distinction between the technology available today and the inefficient storm windows that dominated the market many years ago.

It has been our experience, that one of the principal challenges to market adoption is overcoming misperceptions or lack of knowledge of performance when a consumer is comparing different window options. In many cases, this leads to a decision to “do nothing”. We believe implementation of this program will address this key factor which stands in the way of broader market penetration.

We would like to offer specific comments on a few points in the Framework Document:

**DEFINITIONS**

**Exterior storm panel:** A fenestration attachment product consisting of a frame component and one or more pieces of glazing, installed over the exterior of a primary window in a residential building.

*We do not believe that this should be limited to residential buildings. Exterior Storm Panels are often used in low rise apartment buildings and small commercial buildings.*

**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 without the use of nails, screws, or adhesives.

*We do not believe that the attachment method should be limited or defined as above to exclude certain attachment types. The optimum attachment methodology (similar to an Exterior Storm Panel) should be defined*

*by the application, and should be suitable and appropriate for the given window in which it is being installed. This limitation does not seem necessary or reasonable.*

## **SCOPE**

*While we also supply low-e panels to other applications such as historic, light commercial, and larger multifamily buildings, we understand that this program is focused on low-rise residential, and are in general agreement with the scope as defined.*

## **QUALIFICATION CRITERIA**

**Performance Metrics:** EPA proposes that storm panel qualification criteria be based on emissivity, solar transmittance (Tsol), and air leakage. EPA is not proposing the use of U-factor and SHGC for the criteria as these metrics account for the energy performance of frame materials in addition to glazing materials. Research shows that in most applications, the frame of an exterior or interior storm panel product has a negligible impact on product performance. Emissivity and Tsol are glass-only properties, and EPA believes that these metrics directly distinguish higher-performing, energy-saving products from conventional products.

*We concur with the proposed use of emissivity, solar transmittance and air leakage as described, at least for the program implementation, and have provided specific comments below on Possible Criteria. Work currently underway by the Attachment Energy Rating Council (AERC) may lead to parameters beyond this, including effective U-factor and SHGC, which could be considered if and when they become available and are standardized amongst the industry.*

## **Possible Criteria**

### **Emissivity**

*The RTF of the Northwest Power and Conservation Council and the Pennsylvania Weatherization Program set a maximum glass emissivity of 0.22. This allows low-e products from all five glass manufacturers while also clearly differentiating the proposed Energy Star product from conventional clear glass products. All the low-e products we supply meet this proposed criteria.*

### **Solar Transmittance**

*Following analysis of the energy impact by PNNL, the RTF of the Northwest Power and Conservation Council set a minimum solar transmittance of 0.55 for the northwest. This seems to be a reasonable dividing line between high solar gain and low solar gain products. We offer two glass options: our standard low-e panel with a Tsol of 0.74, and a solar control low-e panel with Tsol of 0.46.*

### **Air Leakage**

*Air leakage is a significant benefit of storm panels as demonstrated in the field studies and models, and for this reason it should be specified. We recommend the use of the existing test method ASTM E283 with pressure applied to the exterior of the product only (the current method). AERC is also working on a new test method based on ASTM E283 for measuring the air leakage of storm windows over a calibration panel meant to represent a primary window. This should provide a more realistic measurement of storm window performance. Once this test method is ready, we would expect the proposed criteria be set around 0.3 cfm/ft<sup>2</sup> with exterior storm windows installed, and 0.1 cfm/ft<sup>2</sup> with interior panels installed.*

**Climate Zones:** EPA proposes that storm panel qualification criteria vary based on the climate zone in which the product is installed.

1. EPA proposes that a minimum solar transmittance value be required for products installed in the ENERGY STAR Northern and North-Central Climate Zones.
2. EPA proposes that a maximum solar transmittance value be required for products installed in the ENERGY STAR South-Central and/or Southern Climate Zones.

*While we believe the most important parameter is to simply have low emissivity glazing of any type, we supply products that could be used in both regions, and are okay with the proposed zones.*

**Installation instructions:** EPA proposes that ENERGY STAR certified exterior and interior storm panels be required to have installation instructions that are packaged with the product or readily available online that contain the following elements.

*We concur with the recommendation to include Installation Instructions to ensure proper, safe and effective installation.*

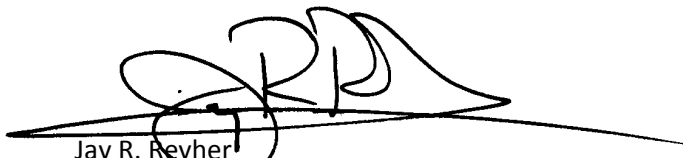
#### **Negative impact**

The question was asked whether there were any concerns where low-e storm panels could cause overheating or damage to the primary window.

*Since we began operations as one of the first companies supplying low-e storm panels, we are not aware of any instance where a storm panel installed on either the interior or exterior resulted in overheating or damage to the primary window, or adversely affected the primary window in any way.*

QUANTA Technologies has been involved in a number of initiatives seeking to expand the market adoption and availability of low-e storm windows for the market. We believe this Energy Star program, when implemented, along with other initiatives underway (most notably the AERC program) will have a substantial impact. We are appreciative of the opportunity to comment on the Specification Framework Document.

Sincerely,



Jay R. Reyher  
Chief Executive Officer