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February 9th, 2016  
Doug Anderson  
Project Manager  
EPA- Washington DC.

Re: **Storm Panel Stakeholder Discussion**

Mr. Anderson,

I'd like to provide you with some general comments on the Definitions, Scope, Qualification Criteria and Test Methods you are proposing for the Storm Window Energy Star Program.

Our company has been installing these systems for the last 30 years and design and manufacture some of the best performing products in the world. We like to think we made every mistake so I will share some big picture experience with you in hopes that it helps with your project.

I. Definitions:

We have installed thousands of *exterior* storm windows in *commercial* buildings. Interior storm windows will need some kind of screw or adhesive. Storm windows can be operable but not recommended. Taking the operability away from the occupants is better for energy savings in commercial applications.

Storm Windows might also be called "Secondary Glazing Systems" SGS

Hardcoats are deposited onto monolithic glass and Softcoats are deposited onto glass that will make an Insulated Glass Systems.

So softcoats will be used in SGS when going from single pane to triple or double to quadruple.

II. Scope:

Once again- SGS should be considered in Commercial / Industrial / Municipal buildings residential for the following reasons:

- 18% of all energy consumed in US is for commercial buildings.
- Of these buildings, the average square footage is much larger and the number of owners much smaller. If you intend to make a difference fastest, then commercial space would be much easier to make an impact.

- As of 2011 per the EPA website, 53% of non residential buildings still had monolithic glass.

### III. Qualification Criteria:

#### Performance Metrics:

If you do not consider U value and SHGC values, than you would be missing the greatest benefits of these systems. The airgap and low e provides insulation. Why not consider.

The entire SYSTEM – glass and frame needs to be considered for the final values. The biggest question to this whole thing is: How do you account for the existing window in the new calculations.

If you do not, then I suggest saying:

Center of glass U value must be X.  
Total frame to Glass ratio must be Y.

This will need to be discussed and is my core question to your project... but you can not throw U and SHGC out of the equation.

For our systems placed behind an existing clear window. U value = .37, SHGC = .66 – our lab tests show that a reasonable value for air would be .08 at 1.57 psf and .17 at 6.24 for windows leaking air at .12 and .28 respectively.

Negative Impacts: Building up heat in the air cavity will not damage glass or the window frame. If the existing window is not sealed or the SGS is not properly installed, then condensation becomes a risk. If SGS is installed onto an aluminum frame during days less than 40 F outside, then some moisture will be trapped on the interior. Since SGS are not sealed, the temperature differential will be greater than the interior and the pressure will increase pushing the air vapor out into the building.

Small voids in the SGS will not allow moisture from the building to migrate into the airspace. Moisture comes from the outside.

Windows should be installed by professionals.

#### IV: Test methods:

Weep holes only needed on exterior.  
Air infiltration should always be considered.

Our company looks at the system U Values and SHGC of the existing windows and our new glass and frames. This is not hard to do. All you do is send it to a lab or simulate it yourself using WINDOW 6.3 and THERM.

Perhaps you state that all glass should be at least a hardcoat low-e; the frame to glass ratio should not be more than 15% and air infiltrations should be better than .08 at 1.57. Something along these lines.

Call me if you have any questions:

A handwritten signature in blue ink that reads "Steve Champlin". The signature is written in a cursive, flowing style.

Steve Champlin

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