



EMERGING TECHNOLOGIES SHOWCASE WEBINAR:

A COMING OF AGE: LOW-E STORM WINDOW RETROFITS

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Question and Answer Session

Q: How does the Regional Technical Forum (RTF) expect home owners who do self-installations to meet the installation requirements?

A: [Sarah] The installation requirements are not a big list, so it is possible. Installing storm windows is definitely within a homeowner's capability. The RTF had not considered whether or not this measure would be eligible for homeowner installation. It becomes an issue of the utility's ability to document that the windows been installed correctly.

Generally the RTF doesn't make program expectations. They look at the base case to the efficient case, installation practices that they believe are tied to achieving the energy savings. They have at times drifted a little farther afield; for example the original RTF weatherization specifications required screens on the windows, smoke detectors and CO monitors. Those three things are not tied to energy savings. They have gotten better as they have evolved over the years, at really sticking to the characteristics of a technology or a measure as it relates to energy savings. I can't say that the RTF considered the difference between self-installed and contractor-installed on this measure. I can review the presentation notes and look back into workbooks to see if any of those assumptions were included, but regardless, program delivery is really up to Bonneville. Bonneville probably has more to say about self-installed versus contractor-installed and whether or not that seems like a good idea. I'm interested in hearing from my public utilities on their opinions about that.

Q: Are there any condensation concerns? Are there any moisture issues with these storm windows? In the past we've experienced moisture issues between the storm and primary window. Is this still an issue? How is the storm window sealed to prevent moisture getting between windows?

A: [Terry] One of the recent additions that have been made to storm windows are weep holes. The video on slide 14 (link to video: <http://www.thisoldhouse.com/toh/video/0,,20052892,00.html>) mentions these. Weep holes are very small indentations along the bottom of the storm window frame that leave a tiny opening when you attach the entire window. You are not going to get any of the convective air currents, but it does allow moisture to leave from in between the storm and primary windows. I don't know if the attendees who asked these questions are familiar with weep holes or if they are asking

about the storm windows from the 80's and 90's when these problems were common. The weep holes have certainly addressed these problems to a certain extent. It was probably a bigger problem when you put storm windows over fixed windows because then you couldn't get at them. If the window is operable then it seems like the simple solution is to just open the window to let the moisture out or to get in there and dry the window off with a towel. Over fixed windows obviously it is a little more difficult – you have to take the storm window off and then put it back on. I believe that issue was addressed by weep holes. Weep holes are something that I've only really seen in the last 3-4 years.

[David Bailey with Larson Manufacturing] Storm windows are sometimes installed on the inside of the home. What we have found is, to avoid any moisture, that it is best to have the interior window be the tightest window. So if you are putting an interior storm window on you want that to be very, very tight. If you have a primary window that is the interior and a storm window that is the exterior you want the primary window to be very tight.

[Attendee comment] One thing to check for, regarding the moisture between the storm and primary windows, is the possibility of moisture intrusion via the facade materials, for example if the concrete is porous.

[Q: Would you please explain why one would face the low-e film of an interior storm window towards the primary window?](#)

A: [Terry] The answer is to protect the low-e coat. Even though it is a hard coating and was designed specifically to withstand the elements, the less exposure it has to the elements, the better. Once again, we are talking about exterior or interior storm windows; the difference is that with an exterior storm window the low-e coating faces inside the house (towards the primary window), and with an interior storm panel the low-e coating still faces towards the primary window, but this time it's towards the outside of the house. This is just to protect the low-e coating.

[Q: What about flashing requirements and sliding glass door \(SGD\) installations?](#)

A: [David Bailey] With regards to sliding glass doors, we (Larson Manufacturing) make a patio storm door which is sliding glass panels that you can put over a single or double pane sliding glass patio door. Typically there is usually no need for flashing with storm windows that are installed over a brick mold; they are just screwed into the framework. It is usually a good idea to caulk and seal around windows, but even that is not always necessary.

[Q: How does the storm window mount over a metal casement or awning window if it cannot be attached directly to the metal frame? Are there casement operable storm windows?](#)

A: [Terry] My understanding is that there are aren't any storm windows for the awning windows because those are the ones that open outwards, unless it is on the interior of the home.

[David] As for casement-operable storm windows, they would typically be a fixed panel and I think that is in violation of what Sarah mentioned about it needing to match the operation of the primary window. I guess if there are people who are not ventilating their casement windows (in certain parts of the country people have ventilating windows and never ventilate) that could be a solution. A fixed interior storm window could be used with a casement window, but to ventilate you would have to take that down completely. Otherwise I do not know of a solution from any manufacturer that would address a casement or awning (out-swing type window) with some way to mount onto that. I do not know of anything that would work other than going with an interior.

Q: What types of operable storm windows are available? Do they fit all types of windows?

A: [David] Generally, with double-hung or single-hung windows, you would use a vertical sliding-type storm window – those are available. Also, there is what we would call a slider, a horizontal slider, available. When it comes to fixed windows, a picture window is available – those are all available as exterior applications. All these versions are available from our company (Larson) or other manufacturers as an interior option. In terms of what is not available, casements and awnings are not, as discussed previously. Generally the most popular window styles out there are going to be double hung and single hung and sliders (especially in areas of the PNW, where there are a lot of sliders, and sliders are also popular with manufactured homes, as Sarah talked about). Certainly we would have a product, along with our competitors, that would operate pretty much any way that a primary window operates, except for the ones that are hinged and swing out (like a casement or an awning).

Q: The BPA program requires solar transmittance of greater than 0.55. How that does solar transmittance compare to solar heat gain coefficient (SHGC)?

A: [Sarah] Those are not Bonneville specifications; I was quoting the specifications that came out of the RTF's workbook. Those RTF requirements and specifications on slide 24 of the presentation. Whether or not those come through as BPA requirements and specifications is still to be determined. Terry can answer the question about solar transmittance and solar heat gain.

A: [Terry] I actually looked into this because solar transmittance is not a common term in the industry. RTF threw a curve ball at us there, and I had to go look that one up. Solar transmittance is actually visible transmittance in the window industry. A 0.55 minimum means you have to have a visible transmittance of at least 0.55 for that low-e storm window. The reason they bring this up is because the low-e coating often adds a tint to the window. A lot of times the problem they had with the triple-pane windows with two low-e coatings was that the tint was very dark, and ultimately you do want to be able to see outside. The thinking is that if you have less than a 0.55 transmittance (which ultimately means the percentage of visible light that is going through the window), which is close to half of the visible light being cut off, RTF figures that no one will buy it, and thus will not be a worthwhile product. So RTF said it has to be at least a 0.55 visible transmittance, but there is some confusing terminology.

Q: How are energy savings impacted by the use of shades or blinds? Wouldn't that minimize the benefits of the low-e coating?

A: [Terry] This is a question that will have to wait until the Attachments Energy Rating Council (AERC) is developed so we can get answers. Low-e coating storm windows is a relatively new technology in terms of energy conservation; the effects of having two different products in tandem with each other, such as shutters or blinds with low-e storms, becomes a highly detailed question. My guess is we are going to have to wait for the answers to come out of the AERC starting next year.

Q: An attendee wrote that they support the idea of developing a qualified products list, as suggested on slide 25 of the presentation.