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It is evident from the current Energy Star proposals that the entire formula for energy savings is not being utilized. U-Factor still dominates the code and the Solar Heat Gain Coefficient (SHGC) simply plays an accommodating second.

While we would like to see additional requirements that are directly related to energy savings, such as Visible Transmittance and Air Leakage be included, the proposals thus far have exposed a dissimilar view.

Focusing, as the standard does, only on the U-Factor and SHGC our repeated concerns still remain evident. Not having a minimum SHGC requirement in the North will consume more energy than raising the U-Factor by more than 0.05. Using the program RESFEN for a single story house in Seattle, WA the annual heating and cooling costs for a proposed Energy Star window with a U-Factor of 0.35 and a SHGC of 0.25 is \$469.69 if a window with a U-Factor of 0.42 and a SHGC of 0.50 was used the annual energy costs were actually reduced to \$446.83. When the same scenario was modeled in several other northern cities including New York and Madison the energy usage requirements were very similar to one another.

A similar effort was put forth in the central region where in both Memphis and Fort Worth an Energy Star window was modeled using a U-Factor of 0.40 and a SHGC of 0.40, when that window was switched to a U-Factor of 0.45 and a SHGC of 0.35 the results were within \$1.00 of each other in energy costs.

While our objections remain the same and the energy savings calculations and explanations should be sufficient in their own right, it is quite apparent from the current proposals that another approach may be in order.

The Department of Energy has demonstrated the foresight to allow differing Energy Star ratings for product variations and set this precedence with the proposed Skylight values. Staying with this theme Azon would like to propose a different three zone criteria for Aluminum Windows, while the boundaries remain the same only the criterion changes. The South remains the same as currently proposed with a U-Factor of 0.65 and a maximum SHGC of 0.40, and based on the previously mentioned studies the central would now require a maximum U-Factor of 0.45 and SHGC of less than 0.35, and in the north a maximum U-Factor of 0.42 and SHGC greater than 0.50. This would allow two different ratings each one specifically suited for the materials represented, with similar energy savings realized by both requirements.

While the reasoning behind the allowance for a separate rating for skylights still remains unclear, we believe the following would justify the proposal. Based on the superior

longevity of the Residential Aluminum Window the savings in energy consumption required for product manufacturing is dramatically reduced when compared to its competitors. When these savings are combined with the new criteria for the specific zones overall energy consumption is reduced even further. The European Union has embraced this theory with its own energy saving criteria for fenestration products. Document "L" in the United Kingdom and Document "J" in Scotland both require a U-Factor of 2.0 w/m*K for vinyl and wood and 2.2 w/m*K for aluminum. Germany and others have drawn similar conclusions and have incorporated separate product requirements.

As we have mentioned in our previous recommendations saving energy is at the heart of Azon's existence but until the entire formula and lifecycle of a fenestration product is considered the ultimate goal of the Energy Star program will not be realized.

Sincerely,

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