



November 15, 2004

Marc LaFrance  
 Richard Karney  
 Office of Energy Efficiency and Renewable Energy  
 U.S. Department of Energy  
 1000 Independence Ave SW  
 Washington, D.C. 20585-0121

Dear Marc and Rich:

Once again, thank you for the opportunity to comment on the latest analysis regarding performance-based ratings for the Energy Star Windows program. We commend you and LBNL for your hard work in developing trade-off criteria based on equivalent energy performance. This effort represents an important advancement of the Energy Star program, and we encourage the Department to implement the trade-off criteria developed by LBNL for the South Central and Southern zones as outlined below:

Zone	Current Prescriptive Criteria		Alternative Criteria with Equivalent Energy Performance		
	U	SHGC	Max U	Max SHGC	
North	≤ 0.35	Any	--		
North Central	≤ 0.40	≤ 0.55	--		
South Central	≤ 0.40	≤ 0.40	0.41	0.36	} Excludes California
			0.42	0.31	
			0.43	0.24	
South	≤ 0.65	≤ 0.40	0.66	0.39	
			0.67	0.39	
			0.68	0.38	
			0.69	0.37	
			0.70	0.37	
			0.71	0.36	
			0.72	0.35	
			0.73	0.35	
			0.74	0.34	
			0.75	0.33	

*South Central Zone:*

The LBNL report stated that a trade-off can be implemented in the South Central zone if California is excluded to reduce variability due to climate differences. This is a reasonable short term solution which we support, although

we would like to remind the Department that this same climate variability exists in the current prescriptive requirements. We also urge the Department to continue to develop a comprehensive system which also includes California. The large size and ongoing energy issues of California highlight the importance of having a wide variety of energy efficient products available there. AEC and its members would like to continue to work with LBNL and the Department in developing a performance-based system that can provide additional choices to consumers in California.

We want to be clear that even this trade-off is very challenging for aluminum windows, and a 0.43 U-value is very difficult to achieve cost effectively, even with the newer 2001 and 2004 NFRC rating procedures. This is particularly true of operable double hung windows, which more typically have  $U = 0.47-0.48$  even when using the best thermal barrier and glazing technologies. Therefore, implementing this performance trade-off should not be simply viewed as a bailout of the aluminum industry, as some have suggested. We support these trade-offs because they more properly reflect total energy performance rather than oversimplified prescriptive criteria. The South Central zone will remain the most stringent region in the Energy Star program relative to the code requirements, by far. Nonetheless, our industry accepts this difficult challenge, and we will strive to advance the market through new advanced aluminum products with superior energy efficiency and durability.

In the proposed trade-off, equivalent energy performance is achieved with a U-value up to 0.43 by reducing the SHGC down to 0.24. Although it has been suggested that few products exist today that can meet this low SHGC, the Department should not restrict potential future developments based on current limitations. One of the Departments own research objectives includes new solar selective glazing with very low SHGC for cooling-dominated climates. Another concern was that this low SHGC would require windows with low visible transmittance (VT). However, a survey of the NFRC database shows the existence of products with SHGC of 0.24 and VT around 0.30, deemed to be an acceptable value. Furthermore, it should be pointed out that low VT products are not restricted by the current prescriptive criteria, so it would be beyond the scope of the Department to make this restriction on the equivalent performance-based criteria. Unless the Department quantifies the impact of VT on energy performance, the consumer should determine what visible transmittance is acceptable in the market, as is the situation with the current program.

#### *Southern Zone:*

The LBNL report determined that a trade-off is also possible in the Southern Zone, and we strongly encourage the Department to implement this trade-off. The report incorrectly suggests that there is no compelling market reason to use the trade-off in this region. It was wrongly assumed that products in this zone already meet the U-value requirement, because a solar selective low-e coating will be used to meet the 0.40 SHGC requirement.

Because of strict hurricane impact requirements in Florida and along the Gulf Coast, the use of aluminum windows with laminated glass is greatly increasing. The need for these products to protect both life and property was highlighted in this year's devastating hurricane season. When spectrally selective low-e is used in laminated glass, the SHGC is reduced but the U-value is unaffected relative to plain glass, because all low-e properties are lost when the coating is embedded within the laminate. Similarly, high performance tints are also used to meet the SHGC requirement without imparting low-e properties. Furthermore, even thermal barrier aluminum products will not always meet the highest impact requirements, sometimes necessitating the use of unbroken aluminum frames. As a result, there are numerous low SHGC products in the Southern region which may not automatically meet the prescriptive U-value of 0.65, but could meet the performance-based trade-off criteria. If these products have equivalent energy performance, there is no reason to exclude these products from participating in the Energy Star program. We believe these are compelling reasons, and strongly encourage the Department to adopt the trade-off criteria in the Southern zone. We support LBNL's recommendation to use the more conservative trade-off equation where the U-value may be increased up to the code limit of 0.75 while the SHGC requirement is reduced to 0.33. As the report recommended, this equation can be applied to the entire Southern zone including Miami and Hawaii, as it will guarantee equivalent or superior energy performance in all cases.

#### *North Central and Northern Zones:*

While we believe performance-based ratings should be pursued wherever possible, we acknowledge that the issues pointed out in the LBNL report do present some additional difficulties for the North Central and Northern zones at this time. We look forward to continuing to work with the Department to develop future solutions for performance-

based ratings in these regions.

On another issue, certain groups have objected to the perceived “complexity” of performance-based ratings. In fact, this argument has little merit. The complexity to the consumer is unchanged, as they only look whether the product has an Energy Star label or not. For industry participants, the table given above shows that alternative trade-off criteria can be presented in a simple manner, and manufacturers can always choose to use only the simple prescriptive criteria if they so desire. Of course, the analysis used to develop the criteria is complex, just as very complex calculations are currently used to determine the U and SHGC numbers, but these complex calculations need never be seen by the consumer or manufacturer. Therefore, performance trade-offs can be used to strengthen the scientific credibility of the Energy Star program while maintaining its relative simplicity.

Finally, although we represent both aluminum extruders and aluminum window manufacturers, the importance of adopting performance-based ratings goes beyond specific material issues. Many of our manufacturers sell both aluminum and vinyl products, and see the value and need for both product types in the marketplace. By basing qualification on total energy performance rather than only rigid prescriptive criteria, you ensure that the Energy Star program is fair, flexible, and credible for all participants in this industry. Furthermore, you will prevent the U.S. from falling behind other international programs. The Canadian Energy Star program, European Window Energy Rating System, and Australian Window Energy Rating Scheme already use material-neutral, performance-based systems which allow for trade-offs in various window properties (U, SHGC, and air leakage).

We are pleased that the Department has taken the next steps towards performance-based ratings which will enhance the credibility and success of the Energy Star Windows program. We look forward to our continued participation in the program, and as always, please contact us if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Greg Patzer", with a stylized, cursive script.

Greg Patzer  
Director of Communications and Government Relations