



November 14, 2008

Richard H. Karney, P.E.
ENERGY STAR[®] Program Manager
Department of Energy
Washington, DC 20585

RE: Proposed Revisions to *ENERGY STAR*[®] Program Requirements ¹

Dear Mr. Karney:

The American **Architectural Manufacturers Association** (AAMA) appreciates the opportunity to provide additional comments and suggestions related to the most recent proposed revisions to the *ENERGY STAR*[®] Program for fenestration products as presented in the *Windows, Doors, and Skylights Draft Criteria and Analysis*, ('Draft Analysis') dated August 6, 2008.

It is our intention to collaborate with the Department of Energy (DoE) to reduce energy consumption in existing and new homes, recommend increased enforcement of model energy codes, support the use of *ENERGY STAR*[®] as a means to communicate more energy-efficient choices for builders and homeowners, and to work with the DoE to drive innovations and technologies that will further the development of affordable and efficient fenestration products.

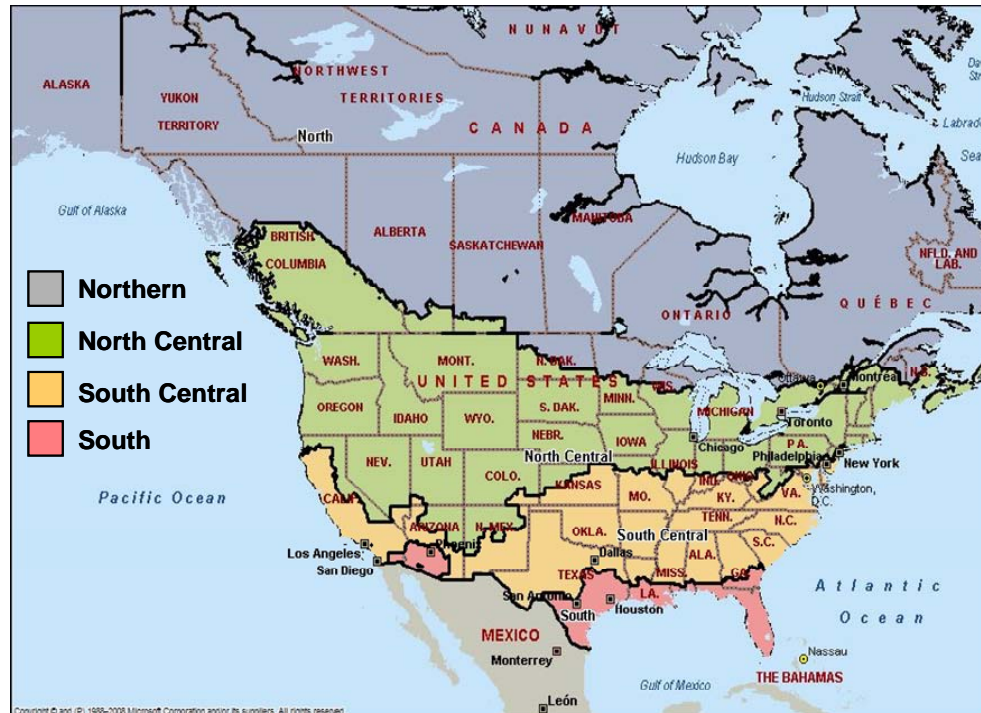
During the period provided to review the *ENERGY STAR*[®] Program, AAMA has held a series of meetings and conference calls to study not only the proposed criteria, but all of the proposed revisions to the Program. In our efforts to provide meaningful feedback on the Draft Analysis and to support the recommendations cited herein, AAMA members and staff have logged hundreds of hours performing analyses of the criteria and the reported energy savings.

Our comments to the proposed criteria include the following:

1. Guiding Principles
2. Scope of *ENERGY STAR*[®] Program
3. Timing and implementation
4. *ENERGY STAR*[®] zone maps
5. Performance criteria, general
6. Performance criteria for doors
7. Window considerations
8. Impact-rated products

¹ Skylights and Tubular Daylighting Devices are addressed in a companion letter from AAMA's Skylight Council.

1. **Guiding Principles.** AAMA 's participation in the *ENERGY STAR*[®] Program criteria development is based upon the following guiding principles:
 - **Focus on that which will yield the greatest impact.** Reducing the heat loss and unwanted solar heat gain associated with the existing stock of single-pane windows, skylights and glass doors in the U.S. represents the single-greatest opportunity to decrease energy use in the fenestration portion of the building envelope.
 - **Affordability is critically important.** Affordability should be regarded as one of the foundational elements of the process used to determine Program parameters, and is necessary to achieve the desired consumer-driven outcome (i.e., the purchase of reasonably-priced high-performance fenestration products).
 - **Return-on-Investment matters.** Closely related to affordability is the delivery of energy savings; such savings must translate into immediate reductions of consumer utility expenditures if the criteria are intended to drive consumer behavior. Without the benefit of a reasonable return-on-investment, the *ENERGY STAR*[®] Program will lose any relevance to the consumer.
 - **Do not look past daylighting and ventilation.** Windows, skylights and glass doors are an important element of residential construction in the U.S., providing natural light and ventilation to the occupants. Continued reductions in SHGC requirements will result in unacceptably low visible light transmittance. The *ENERGY STAR*[®] requirements should provide a lower limit to SHGC coefficients in order to maintain the performance of glazing packages and provide an acceptable value for VLT.
 - **Equivalent alternatives are just that—equivalent.** Different approaches that save equivalent energy should be closely scrutinized; increasing the stringency of any particular factor (*U-factor*, SHGC) based on preconceived notions has proven to yield less-than-optimum results. The proposed standard must not exclude some products which would have equivalent or lower life-cycle energy and environmental impacts.
 - **Simplicity trumps complexity.** All other things being equal, a simpler Program more readily understood by the consumer is superior to an overly-complex program.
2. **Scope of *ENERGY STAR*[®] Program.** The DoE must clarify that *ENERGY STAR*[®] applies only to low-rise residential construction. It is understood that a program for fenestration used in commercial construction is under consideration, and such a program must incorporate structural and other parameters not included in the residential *ENERGY STAR*[®] Program. Specifiers need to be advised that non-residential construction must consider many factors other than energy efficiency, and that residential *ENERGY STAR*[®] products are often not an appropriate choice in such construction.
3. **Timing and Implementation.** The dates of implementation of the new criteria must take into consideration the logistics and seasonality of product manufacturing as well as the timing of new product launches. We recommend January 1, 2010 for phase I roll-out, and January 1, 2015 for phase II.
4. ***ENERGY STAR*[®] Zone Maps.** We recommend removal of Zone 5A from 2009 phase I criteria and the establishment of four climate zones for North America that closely follow the IECC climate zone map (see Proposed Climate Zone Map, next page).



Proposed Climate Zone Map

5. **Performance Criteria, General.** We believe that the *SHGC criteria* in the *central and northern climate zones* should be reevaluated. Imposition of unreasonable upper limits on SHGC coefficients preclude the benefit of capturing ‘free’ solar heat gain during the heating season which can result in overall annual energy savings.

Similarly, reasonable *U-factor criteria* in the *southern climate zone* should be established. Now that the IECC has established a 0.65 *U-factor* requirement in climate zone 1, we anticipate the DoE will follow suit and implement a 0.60 *U-factor* in this zone. By so doing, the performance trade-offs up to the code limit (0.65) can be re-established. AAMA cannot support lower *U-factor* requirements for this zone; the 0.50 *U-factor* was rejected at the recent IECC hearings as not cost effective, and being harmful to certain fenestration framing materials while favoring others.

6. **Performance Criteria, Doors.** We support the DoE proposal for a single climate zone for doors as well as the proposal to set the qualification criteria by percent glazing. However, we feel that the definition of amount of glazing should be consistent with the NFRC definition. We also feel that the DoE should include sliding doors in the same table as side-hinged doors. *ENERGY STAR*[®] criteria should consider all door assemblies in like manner and not distinguish them by operation.
7. **Window Considerations.** We recommend ignoring **grids** (muntins); if a product without grids qualifies, then the same product with grids should also qualify. This significantly reduces the complexity of the program for manufacturers and results in a negligible difference in the amount of realized energy savings.

Labels. We also recommend that products manufactured before the phase I effective date should not be required to be re-labeled.

Insulating Glass Units. We propose to work with the DoE to develop solutions for IG units shipped through or installed in high altitude regions.

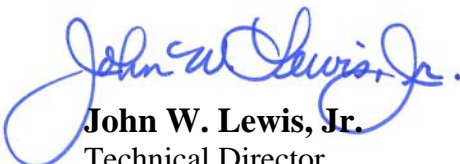
8. **Impact-rated products.** AAMA strongly recommends alternate criteria for impact-rated products. The IECC now recognizes the difference in these important products, and has adopted separate *U-factor* requirements for hurricane products. The DoE indicated they will be examining this issue; we stand ready to assist in this examination.

Conclusions: AAMA request that additional analysis of alternatives to the proposed *ENERGY STAR*[®] Program be completed before finalizing the criteria. AAMA would like the opportunity to provide input to the analysis and to the selection of window criteria used as the basis of the analysis. Given our inability to access the calculations used to derive the Program parameters, further analysis and comparison by AAMA is not feasible; this work will have to be completed in partnership with LBNL.

A preliminary analysis of alternate *U-factor* and SHGC criteria has shown promising results,² and is consistent with one of AAMA's guiding principles: "**Equivalent alternatives are just that—equivalent.**" We see **no justification** for eliminating manufacturing options which provide fenestration manufacturers with viable alternatives to abandoning current production methods, at **great cost, for little if any increase in the annual energy savings realized!**

The American Architectural Manufacturers Association looks forward to partnering with the Department of Energy in finalizing the revisions to the performance parameters and other key considerations of the highly-successful *ENERGY STAR*[®] Program for windows, doors, and unit skylights.

Sincerely,



John W. Lewis, Jr.
Technical Director
**American Architectural
Manufacturers Association**

² This analysis is presented in the *Appendix*, page 5.

Appendix ~ Energy savings analysis.

The following chart provides estimated window energy savings based on revised SHGC criteria of 0.25 coupled with $U = 0.60$:

Phase 1 AAMA Proposed Criteria and Model Criteria			
Climate Zone	Corresponding IECC Zone	U-Factor	SHGC
		Requirement	Requirement
N	7, 8	≤ 0.3	NR
NC	5, 6	≤ 0.32	NR
SC	3, 4	≤ 0.35	≤ 0.3
S	1, 2	≤ 0.6	≤ 0.25

Original Table 5				
Table 5: Phase 1 Window Energy Savings by Zone				AAMA Savings Comparable to Table B-5
Climate Zone	Consumption		Savings (tBTU)	Savings (tBTU)
	2006 IECC (tBTU)	Phase 1 ENERGY STAR (tBTU)		
ES5a	12.17	11.84	0.33	0.26
ES5	18.88	18.7	0.18	0.48
ES4	73.93	73.54	0.38	0.79
ES3	62.89	61.24	1.65	1.18
ES2	49.37	45.28	4.09	4.03
ES1	35.29	33.41	1.88	1.48
National			8.51	8.21

The AAMA proposal is estimated to save slightly less in phase I than the DoE criteria proposal. As the above data was based on methodology employed by AAMA to use the DoE's results and scale them by a comparative effect on the *Resfen 6* house types used by LBNL, and given that inconsistencies are present in the current modeling techniques, the energy savings for the AAMA approach can be considered to be statistically equivalent to the savings resulting from the criteria proposed by the DoE.

We must emphasize *that this is an estimate*, and part of our request to the DoE for better modeling techniques to confirm the energy savings results for all proposals currently or potentially under consideration.

This preliminary analysis of alternate criteria is consistent with one of AAMA's guiding principles: **"Equivalent alternatives are just that—equivalent."** We see no justification for eliminating options which provide fenestration manufacturers with viable alternatives to abandoning current production methods, at *great cost, for little if any increase in the annual energy savings realized!*

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