

**Submitted Electronically**

August 20, 2021

Doug Anderson  
United States Environmental Protection Agency  
1310 L Street, NW  
Washington, DC 20005

Re: Comments and Recommendations on *ENERGY STAR<sup>®</sup> for Windows, Doors and Skylights Draft 1 Version 7.0* Specification

Dear Doug,

Thank you for the opportunity to participate in the EPA's process to review proposed changes to the ENERGY STAR program. I am writing to provide comments and recommendations on behalf of Andersen Corporation regarding the ENERGY STAR for Windows, Doors and Skylights Draft 1 Version 7.0 Specification ("Draft 1").

We appreciate that the EPA has requested feedback on the initial draft of the proposed Version 7.0 Specification. We hope that the EPA will carefully consider our views given our longstanding leadership position on this issue, our deep knowledge and understanding of customer requirements and preferences, and our extensive experience in designing, manufacturing, marketing, and selling windows and glazed doors for both new homes and for replacement in existing homes and buildings.

**Introduction**

As you know, the ENERGY STAR program is very important to Andersen, and we value our partnership with the EPA to promote energy efficient windows and doors. As you have heard us say before, changes to the program criteria can have a major impact on our business, particularly if significant product design changes are required (such as proposed in Draft 1). That said, Andersen has supported and continues to support EPA's general objective to reasonably improve the efficiency of the ENERGY STAR program criteria when justified over time while maintaining choices in products and features that consumers will find affordable, desirable, and cost effective.

To be blunt, we are very concerned that Draft 1 simply goes too far, too fast and abandons the more moderate and reasonable **incremental** approach to improving the efficiency of product criteria employed in the past. Draft 1 includes proposals for extreme decreases in U-factors for windows ranging from 18% to 20% in the North Central and Northern ENERGY STAR climate zones and includes a proposal for the same reduced U-factors for sliding glass doors in these climate zones (a 20-27% decrease). Practically speaking, the new criteria would require triple pane glass in the northern two-

thirds of the country, effectively requiring redesign of many, if not most of our product lines, significantly increasing our costs and pricing to our customers, and reducing the number and types of qualifying products available to consumers. In our view, these U-factors are overly aggressive at this time and, we believe, based on our market information will greatly reduce the demand for and market share of ENERGY STAR products in the Northern and North Central climate zones, and, as a result, the effectiveness and value of the program as shown by the current low customer demand for ENERGY STAR Most Efficient qualifying products.

It is important to keep in mind that energy savings from ENERGY STAR certified products can only occur when an ENERGY STAR certified product is purchased and installed. Specifying overly stringent requirements for the program may in some cases drive market transformation. However, specifying requirements that are too aggressive and which would come at a much higher cost, could deter consumers from replacing their inefficient windows with an ENERGY STAR certified product, and even more concerning, could result in the purchase of a less energy efficient window than the current Version 6.0 performance for replacement or new residential applications. The effect would be a sharp reduction in market share of ENERGY STAR products and undercut the ultimate goal of the ENERGY STAR program.

If EPA's goal is to increase energy efficiency and savings across the country, we believe that more moderate, incremental improvements to the current program, consistent with the strategy for changes in previous versions, would be a better, more viable course for meeting that goal. Encouraging replacement of the hundreds of millions<sup>1</sup> of clear single and dual pane glass products in current housing stock with current ENERGY STAR products, or with modest improvements via Version 7.0, would be a far more effective strategy than the proposed Northern and North-Central Zone requirements that would likely result in a far smaller percentage of actual windows purchased.

### **Energy Codes and Market Share**

At the outset, the ENERGY STAR Version 7.0 Criteria Analysis Report cites two primary considerations driving the proposed, aggressive Version 7.0 specification: (1) developments in the energy codes; and (2) current high market share of ENERGY STAR Version 6.0 products. We do not believe these two considerations support the specification changes proposed for Version 7.0.

**First**, we note that ENERGY STAR Version 6.0 remains more stringent than, or at least equal to the 2021 IECC prescriptive requirements in nearly every respect. The only significant exception is that the IECC sets a maximum SHGC of 0.40 in climate zone 5. This change, however, appears to go unrecognized in the EPA Report and the proposed new criteria, which takes an opposite direction by encouraging SHGCs above the code maximum and instead proposes a minimum SHGC for this zone.

The 2021 IECC is the most recently published version of the national model energy code and was just affirmatively certified by US DOE in July 2021 as more efficient and to be considered by individual states for adoption.

<sup>1</sup>Based on estimated 25.2M single family detached homes with single pane windows from the [eia](#) website and EPA's estimate of 23.8 windows per home.

That means states are just beginning to review the new IECC code for possible adoption, and any new efficiency improvements in the model code will not happen until 2024 at the earliest, and would not be broadly adopted for many years. Outpacing the 2021 model energy code is simply not a justification for such a huge leap in stringency.

**Second**, regarding the high market share of ENERGY STAR products as reported in the Ducker Report, we believe the market shares in the Report may be unrealistically optimistic considering the data limitations and the inability of most manufacturers to provide accurate sales data as granular as the specific U/SHGC criteria of products sold by ENERGY STAR climate zone and specific zip code.

Further, the 2020 Ducker report captured market share data from approximately 40 manufacturers, yet over 160 manufacturers were listed on the recent EPA webinar and there are over 190 manufacturers listed on the ENERGY STAR website. Based on these facts, we believe the true market share of ENERGY STAR products, particularly in the Northern Zone, is not accurately reflected in the data collected and is likely much lower than the percentages shown in the analysis report.

**Third**, we also caution against assuming the market share of ENERGY STAR products will remain at or even near current levels if consumers face higher upfront costs or reduced choices in product offerings for either replacement or new residential applications. Moreover, consumers who decide not to purchase Version 7.0 products (due to higher prices or other issues) may not buy products that would have achieved Version 6.0 specifications (since those products will no longer be labeled as ENERGY STAR) or may not even buy replacement products at all in the case of existing homes or buy less expensive products with higher U Factors for new residential homes. The EPA should seriously consider whether an efficiency increase on a smaller number of products sold will outweigh the opportunity losses associated with the likely possibility that consumers will buy less energy efficient products--potentially less efficient than even Version 6.0 certified products. In other words, it does not seem reasonable for EPA to assume in its savings estimates that all of the windows purchased that do not qualify for Version 7.0 would otherwise continue to meet the Version 6.0 criteria. A more realistic assumption would be that windows that do not qualify for Version 7.0 would default to meeting the code requirements for the given region or locality.

Before moving forward, we strongly recommend that the EPA conduct and review additional analysis to show actual projected market share of products with the new Version 7 proposed criteria (and other alternatives) based on current market share of products that meet these criteria (instead of simply assuming 100% or even 50% of Version 6.0 products shipped will convert to Version 7.0 as assumed in the Report's national savings impact estimate).

#### **Specific Andersen Recommendations for Version 7.0 Draft 1:**

If EPA moves forward with a Version 7.0 specification at this time, Andersen offers the following specific recommendations on the proposed Version 7.0 criteria and climate zones:

- 1) Delay the effective date of a new specification to January 1, 2025, at the earliest (particularly for the Northern and North Central Zones)**

- 2) **Modify the ENERGY STAR Climate Zone map to move IECC Climate Zone 5 from the Northern into the North Central Zone**
- 3) **Modify the Northern Zone U-factor criteria for windows to 0.25**
- 4) **Do not adopt a minimum SHGC of 0.17 in the Northern Zone**
- 5) **Modify the North Central Zone U-factor criteria for windows to 0.27**
- 6) **Keep the same criteria for Sliding Glass Doors as the criteria for > ½ -Lite Swinging Doors consistent with the approach in Version 6.0 (do not apply window criteria)**
- 7) **Eliminate the Equivalent Energy Performance trade-offs in the Northern Zone**
- 8) **Adopt the proposed U-factor criteria for windows in the South Central and Southern Zones**
- 9) **Adopt the proposed > ½-Lite criteria for Swinging Doors (which should also apply to Sliding Glass Doors)**

#### **Support for and Discussion of Andersen Recommendations:**

Our comments on and rationale for each of these recommendations follows. We believe that our recommendations would result in a Version 7.0 program that provides significantly improved energy efficiency in each climate zone, compared with Version 6.0 for both windows and glazed doors, with criteria that are more reasonable and affordable to consumers than proposed. For the most part, these recommendations would keep reductions in U-factor criteria at this point to a more reasonable and moderate 10% or less, and more consistent with past changes to previous versions of ENERGY STAR program specifications.

- 1) **Delay the effective date for Version 7.0 until January 1, 2025, at the earliest (particularly for the Northern and North Central Zones)**

Should EPA decide to move forward with a Version 7.0 as proposed, we respectfully request that **the effective date be set for January 1, 2025** or later to allow manufacturers reasonable time for necessary product design changes, particularly given the reality of current long lead times for delivery and installation of new production equipment due to COVID-19. Some equipment manufacturers are indicating lead times out to over two years. Other concerns include availability of necessary raw materials and components to support new product configurations to meet the heightened ENERGY STAR requirements given significant supply chain constraints.

- 2) **Modify the ENERGY STAR Climate Zone map to move IECC Climate Zone 5 from the Northern into the North Central Zone**

IECC Climate Zone 5 should be moved from the Northern Zone to the North Central Zone. We recognize that the EPA considered this issue and rejected this recommendation in its Response to Comments on the Specification Discussion Guide Part 2, pages 10-11. We respectfully disagree and ask the EPA to reconsider this position for the following reasons:

**First**, it does not appear that this decision considered the recently established maximum 0.40 SHGC established for IECC Climate Zone 5 in the 2021 IECC, which is consistent with the North Central requirements and inconsistent with the Northern Zone requirements.

**Second**, EPA stated that “The 2021 IECC is now complete and EPA can proceed with more confidence on the direction of the codes.” (Response, page 11.) However, the Response does not mention the 0.40 maximum SHGC for Climate Zone 5, which is found in IECC Table R402.1.3 and in the IECC errata for Table R402.1.2.).

**Third**, the best and most efficient way to resolve this issue is to combine IECC Climate Zone 5 with the ENERGY STAR North Central Zone.

**Fourth**, and finally, we believe that Climate Zone 5 is otherwise much more like the North Central Climate Zone than the Northern Climate Zone. IECC Climate Zone 5 has a much more moderate climate overall for both heating and cooling, than IECC Climate Zones 6-8 (which make up the rest of the ENERGY STAR Northern Zone):

- Unlike Climate Zones 6- 8, both Climate Zone 4 and Climate Zone 5 have the same Cooling Degree Day (CDD) thermal criteria (< 6300; CDD50F) (see Table R301.3 of IECC); no CDD criteria are established for Climate Zones 6-8.
- As for Heating Degree Days (HDD), the Climate Zone 4 HDD range is between 3600 and 5400 (HDD65F); the Climate Zone 5 HDD range is between 5400 and 7200; while Climate Zone 6 to Climate Zone 8 HDDs span a much higher range -- from 7200 to greater than 12,600 HDD. (IECC Table R301.3)
- For prescriptive requirements, the IECC already combines Climate Zone 4 (Marine) and Climate Zone 5. (see IECC Tables R402.1.2 and R402.1.3.)

### **3) Modify the Northern Zone U-factor criteria for windows to 0.25**

Requiring a U-factor of 0.22 for the Northern Zone is too stringent -- effectively requiring triple pane for ENERGY STAR certified products. Recognizing this fact, the EPA cost effectiveness analysis for the criteria is based on triple pane. The proposed 0.05 reduction from 0.27 to 0.22 represents more than an 18% reduction in U-factor. This approach will set the requirement close to the same level as ENERGY STAR Most Efficient (similar triple pane products will be required for both programs in the Northern Zone, since Most Efficient requires a 0.20 U-factor). Given that sales of Most Efficient are extremely low (less than 2% based on the most recent Ducker Report), this would indicate that consumers are not showing a significant interest in purchasing triple pane products in the United States. EPA should temper the impact of this proposal by requiring a 0.25 U-factor, which would likely still require triple pane in many cases but allow more flexibility through a broader range of assemblies and products.

For a number of reasons, we do not think that the analysis in the EPA’s Report demonstrates that the proposed triple pane 0.22 U-factor is cost effective or that the payback is reasonable:

- EPA states that its goal is a payback “under 13 years”. (See EPA Webinar presentation, page 36). We believe this payback period is too long -- our experience tells us that many, if not

most, consumers would not consider this a reasonable payback period for the increased efficiency of triple pane when purchasing replacement windows. We suggest EPA aim for a payback period under 10 years. The double pane products with U-factors between 0.25 and 0.27 produced a much more reasonable payback period of less than 10 years according to the Report.

- EPA identified 15 market prices for an upgrade to triple pane ranging from below \$50 to above \$200. (See EPA Webinar presentation, page 19). EPA chose to “assume” a price of \$48, the third lowest, producing an 11.3 year “standard payback” against the “market baseline”. Had EPA chosen the median price of the range, the payback period would have been much longer and exceeded EPA’s under 13-year goal.
- For purposes of its payback analysis, EPA chose to compare the proposed reduced U-factor against two baselines – a “market” (0.35 U-factor) and a “code” baseline (0.30 U-factor). EPA did not compare its proposal with an ENERGY STAR Version 6.0 baseline (0.27 U-factor). In our view, EPA should do its payback analysis using the ENERGY STAR Version 6 criteria as the baseline, since the point of the analysis is to determine whether a new proposed set of criteria is better than and should replace the current Version 6 criteria. (EPA already found the ENERGY STAR Version 6 criteria cost-effective.) We believe that a payback analysis using Version 6 as the baseline would show a payback period far longer than EPA’s goal of under 13 years.
- For example, in comparing Version 6 to Version 7 in the Northern Zone, the premium upcharge using Table 7 would indicate an upcharge of \$36 (\$18-\$54). The estimated annual cost savings difference using Table 11 would be \$43.13 (\$113.99 - \$70.86). Using EPA’s payback methodology, this proposed change would yield a payback of almost 20 years in going from a Version 6 compliant product to a proposed Version 7 compliant product. This well exceeds EPA’s goal of an under 13-year payback.
- According to the Report, EPA’s so-called “market” baseline of a 0.35 U-factor is based on the “worst-case” performance for replacement windows offered in the market. (Report, pages 13-14.) As a result of this choice, most of the improvement in U-factor from this baseline is achieved at very little cost -- the reduction from a 0.35 to 0.28 U-factor cost a mere \$6/unit according to the Report; however, the reduction from 0.28 down to 0.22 cost 8 times as much or \$48/unit. (See EPA Webinar presentation, page 21). While the reduction from 0.35 to 0.28 is more clearly cost-effective, the payback on the reduction from 0.28 to 0.22 would be much longer than 13 years.
- While we believe using a Version 6.0 baseline is most appropriate for performing the payback analysis, as an alternative, using the code baseline (a 0.30 U-factor), which EPA also considered, is still a much better option than using the market baseline. The 0.30 U-factor in the code baseline is the same as the requirement set in the 2018 IECC, which the Report states is already effective in 17 states, including 14 out of 33 states in the Northern Zone. (EPA Webinar presentation, page 8.) Not surprisingly, EPA’s analysis showed that using the code baseline would result in a payback of 16.2 years, again much longer than EPA’s goal of under 13 years. (See EPA Webinar presentation, page 41).

**4) Do not adopt the proposed minimum SHGC of 0.17 in the Northern Zone:**

The proposed U-factor of 0.22 requires, in essence, not just triple pane but multiple low-e coatings. The result is naturally a lower SHGC and Visible Transmittance (VT). Setting a minimum SHGC will add an unnecessary challenge and burden to manufacturers by further limiting qualifying glass types/coatings and configurations able to meet the U-factor criteria. There are several additional reasons to reject this concept:

- The proposed SHGC minimum conflicts with the direction set by the IECC, which set a maximum SHGC of 0.40 for CZ5, but no minimum SHGC.
- Historically, neither ENERGY STAR windows nor the energy codes have ever had a minimum SHGC requirement. Adding this requirement will likely create confusion in the market.
- We do not believe that the 0.17 SHGC minimum can be justified as a means to avoid dark glass. The choice of how much VT is desirable should be left to the consumer and not driven by establishing a minimum SHGC without significant, substantiated data.
- It will be difficult for products with grids (grilles) and/or higher frame to glass ratios to meet the criteria even though the glass is the same as other products.
- A minimum SHGC could have the unintended consequence of precluding the use of technology that provides the lower U-factors that EPA desires.
- Most new coatings on the market that possess the lowest U-factor characteristics have also inherently had lower SHGC. From a practical standpoint, adding a minimum SHGC makes the combined criteria a difficult target to hit for many glass and product manufacturers.

#### **5) Modify the North Central Zone U-factor criteria for windows to 0.27**

Requiring a U-factor of 0.24 for the North Central Zone is far too stringent, representing a 20% reduction from the current ENERGY STAR 6.0 requirement of 0.30. Based on our experience, a 0.24 U-factor is simply too low to achieve with double pane and a room-side low-e in most products (we do not agree with the payback analysis in the Report based on such a product since most windows using this combination would produce a higher U-factor). As a result, the proposed 0.24 U-factor level would likely drive manufacturers to use triple pane in many, if not most cases, to meet the new proposed specification, effectively requiring a triple pane (when combined with the proposed Northern criteria) for two thirds of the country and as far south as Virginia, which seems unreasonable at this point in time.

EPA should consider moderating the impact of this proposal by requiring a 0.27 U-factor. A change to a 0.27 U-factor would be a 10% reduction in U-factor from current Energy Star 6.0 requirements, a substantial step-change and more consistent with past ENERGY STAR program changes (for example, in the previous ENERGY STAR revision, the Northern Zone U-factor moved from a 0.30 to a 0.27 and the North Central U-factor from a 0.32 to a 0.30). We strongly recommend a U-factor of 0.27 to allow more flexibility and product selection options, rather than excluding most double-pane products (including many room-side low-e products) by selecting a 0.24 requirement.

The concerns we have identified with the cost effectiveness (payback) analysis for the Northern Zone also apply to the payback analysis for the North Central Zone. The EPA's cost benefit analysis in the

North Central Zone is also substantially based on a move from the market baseline of 0.35 down to 0.28, which the analysis assumes only costs \$6/unit, as compared with an additional \$23/unit to drop from 0.28 to between 0.24 and 0.26 (EPA Webinar presentation, p.21). In other words, the reduction of 0.07 U-factor costs \$6/unit while the remaining 0.04 U-factor reduction costs \$23/unit, almost 4 times as much. Thus, we would expect that the 0.04 U-factor reduction would have a much longer payback, suggesting that a move to 0.28 is more clearly cost effective, but the move to 0.24 may not be. Moreover, the analysis assumes the same cost to achieve 0.24 as 0.26, making the 0.24 look more cost effective, even though most of the products with this technology would not meet the 0.24, instead landing at 0.25 or 0.26 or higher.

The Report uses the market 0.35 U-factor as the baseline for the analysis. Unlike the Northern Zone, the EPA Report did not present a payback analysis for the North Central Zone using the code baseline. As with the Northern Zone baseline, a better approach would be to use a 0.30 U-factor as the baseline as currently specified in ENERGY STAR Version 6 for the North Central Zone. Using a 0.30 U-factor as the baseline would also match the code requirement of 0.30 for the climate zone (IECC CZ 4) in the 2021 IECC.

Finally, the North Central U-factor criteria should be less stringent than the Northern criteria in all cases. Interestingly, under the Equivalent Energy approach for high SHGC products proposed, Northern U-factors can be as high as 0.26. As a result, the U-factor for the North Central should be above 0.26.

**6) Keep the same criteria for Sliding Glass Doors as the criteria for the > ½-lite Swinging Doors, consistent with the approach in Version 6.0 and earlier versions of ENERGY STAR**

We strongly supported EPA's decision to separate the criteria for doors, (particularly glazed patio doors) from the window criteria, which started with Version 5.0 and was continued in Version 6.0. We also supported establishing a single set of criteria for glazed doors (both sliding and swinging with > ½-Lite). We believe this is a sound approach that should be continued.

EPA's proposal to change course and apply window criteria to sliding glass doors would have a significant impact on manufacturers of these products. In the Northern climate zone, this proposal would require almost a 27% reduction in U-factor for sliding glass doors from Version 6 requirements (from 0.30 down to 0.22). Similarly, in the North Central climate zone, the required U-factor reduction would be 20%. These changes would drive sliding glass doors to triple pane, requiring product design, equipment, and production changes, which seems unreasonable and unsubstantiated. In addition, please note that the cost-effectiveness issues addressed above as to the criteria for windows in the Northern and North Central Zones also apply to sliding glass doors.

We are also concerned about the practicality of broadly specifying triple pane sliding glass doors for ENERGY STAR, given the weight of the additional glass and other design considerations. Setting different criteria if the door slides versus swings (in or out) also sends a confusing message to customers (particularly if triple pane is required in one case while double pane is a possible solution



in the other). The likely result of these considerations is that fewer customers will purchase ENERGY STAR products in the sliding glass door market.

The fact that sliding glass doors have been added to the same criteria as windows in the Most Efficient category is not a good reason to require the same treatment under the main program, just as the fact that sliding glass doors were not subject to the window criteria in the main ENERGY STAR program did not preclude different treatment for such doors under Most Efficient.

### **7) Eliminate the Equivalent Energy Performance trade-offs in the Northern Zone**

In our view, the proposed SHGC trade-off options have numerous flaws. These trade-offs are inconsistent with the model codes, send the wrong message to consumers, and promote products that are not broadly suitable and are not truly equivalent. The proposed trade-offs would dilute beneficial U-factors in exchange for promoting SHGCs that only make sense in a passive solar design.

In short, we recommend that they be eliminated for the following reasons:

- **First**, promoting SHGCs above 0.40 in the Northern zone with its current configuration is inconsistent with the recently published 2021 IECC, which as noted previously, establishes a maximum 0.40 SHGC in IECC Climate Zone 5 (similar to CZ 4), recognizing the benefits of reducing peak demand, reducing HVAC sizing, etc. Specifically, three of the trade-offs (for SHGCs of 0.40, 0.45 and 0.50) would directly conflict with the 0.40 maximum in the IECC, while the 0.35 trade-off would conflict with the spirit of the IECC requirement.
- **Second**, given the importance of ENERGY STAR to existing homes and the replacement window market, encouraging high SHGC glass would be a very bad recommendation for most existing homes that are not designed for passive solar. For example, high SHGC glass in certain orientations, particularly west (and to a lesser degree east and south without an overhang) will, in addition to possible increased energy use, have a likelihood of causing significant occupant discomfort and dissatisfaction due to the increased solar gain. Since the orientation of the window is not known in advance, it would be far better to leave it to the consumer to choose the correct SHGC for their home in the Northern climate zone. As the ENERGY STAR program plays a major role for replacement products (energy codes drive new construction); assuming the existing home is adequately designed for passive solar is neither practical nor substantiated.
- **Third**, the equivalent analysis conducted for the Report does not appear to account for potential increased energy use resulting from the occupant adjusting the thermostat lower, to increase cooling to offset heat gain and associated discomfort. Given the large shift in SHGC (from below 0.30 to possibly above 0.50), the impacts could be particularly severe.
- **Fourth**, the potentially high SHGCs contemplated by the trade-off proposal will also most likely result in larger cooling systems with higher costs to consumers (these higher costs do not appear to have been considered in the analysis in the Report). Similarly, higher SHGCs mean increased electric utility summer peak demands with higher costs related to more electric generating capacity for utilities.
- **Fifth**, the U-factors proposed are likely to result in use of surface 4 low-e to avoid triple pane construction which will increase interior surface condensation concerns. Therefore, the

consumer will be frustrated both in the winter (condensation risk) and summer (unwanted heat gain and discomfort). Due to these issues, we find that our retailers are most often unwilling to promote surface 4 low-e coatings.

Additionally, Table 13 in EPA's Report (page 21) clearly shows that each of the four "equivalent energy" options are not truly equivalent:

- While the Report claims equivalent energy use, the Report concedes that the energy cost/bill savings from the equivalent options, which is far more tangible and important to a consumer, is far from equal.
- In other words, according to EPA's own analysis, a customer in CZ5, for example, will save \$110 per year on their energy bills with the 0.22 window as compared with only \$70 per year with the 0.26 window "equivalent option" – the 0.26 window has more than 1/3 less energy cost savings. We do not understand how a \$40 difference in energy savings can be considered "equivalent" and argue they would not be viewed that way in the eyes of the consumer.
- Consumers may be misled into thinking that their energy savings would be the same with any of the "equivalent" models, but this is incorrect.
- Any "equivalent" option should be required to save as much in energy costs as the standard product.
- The Report tries to explain this away by noting that consumers would enjoy a shorter payback period with these options. This argument misses the point that consumers should not be led to think that the options are "equivalent" when they are not.

Finally, two of the "equivalent" trade-off U-factors for the Northern Zone (0.25 and 0.26) are higher than the U-factors proposed for the North Central zone, which sends another confusing message to consumers. For this reason, the North Central U-factor should be increased above 0.26, or these "Equivalent Energy Performance" options should be eliminated, or both. The points raised here further support moving the IECC Climate Zone 5 into the North Central Zone.

#### **8) Adopt the proposed U-factor criteria for windows in the South Central and Southern Zones**

We support the adoption of the proposed changes in U-factor for windows in the South and South Central Zones.

#### **9) Adopt the proposed > ½ lite criteria for Swinging Doors (which should also apply to Sliding Glass Doors)**

We support the proposed U-factor criteria for glazed swinging doors with greater than ½-Lite. A 0.02, roughly a 7% reduction in U-factor, is a reasonable step change improvement. This same proposal should also be applied to sliding glass doors.

#### **10) More analysis needed on cost increases for product material types other than vinyl**

Nearly all of EPA's analysis was focused on vinyl vertical sliding products. These products are not representative of the wide range of products and materials currently sought by consumers, and we are concerned that the product criteria proposed are too narrowly targeted to these specific

products. More analysis should be done on vertical sliders of other material types such as vinyl clad, wood, and other composite materials.

## Conclusion

In summary, we strongly recommend that EPA make the following changes to the proposed criteria for Version 7.0:

- Delay the effective date of a new specification to January 1, 2025, at the earliest (particularly for the Northern and North Central Zones)
- Modify the ENERGY STAR Climate Zone map to move IECC Climate Zone 5 from the Northern into the North Central Zone
- Modify the Northern Zone U-factor criteria for windows to 0.25
- Do not adopt a minimum SHGC of 0.17 in the Northern Zone
- Modify the North Central Zone U-factor criteria for windows to 0.27
- Keep the same criteria for Sliding Glass Doors as the criteria for > ½ -Lite Swinging Doors consistent with the approach in Version 6.0 (do not include with the window criteria)
- Eliminate the Equivalent Energy Performance trade-offs in the Northern Zone
- Adopt the proposed U-factor criteria for windows in the South Central and Southern Zones
- Adopt the proposed > ½-Lite criteria for Swinging Doors (which should also apply to Sliding Glass Doors)

We thank you for listening to and carefully considering our comments and concerns and hope you will adopt our recommendations. We reserve our right to update and change our views on these and any other issues as this matter progresses. Please let me know if you have any questions or comments or would like to discuss any of our analysis or recommendations.

Sincerely,



Mark T. Mikkelson  
Director, Corporate Regulatory Affairs