

August 23, 2021

US Environmental Protection Agency  
1200 Pennsylvania Avenue NW  
Washington, DC 20004

Re: ENERGY STAR Residential Window D1.v7 Specification

ENERGY STAR Team,

I write as an engineer and private citizen in support of the proposed draft 1 version 7 revisions to the ENERGY STAR residential windows requirement. In summary,

- Whether traditional double pane, triple pane, or advanced thin triple pane, **ample window offerings currently exist in the market** to meet the new U-value and SHGC targets, in wide enough variety to ensure both competition and advancement
- The **windows market is ripe for an outside trigger** (such as this ENERGY STAR provision) to motivate adoption, similar to above-code programs' successful encouragement of high-R opaque wall assemblies
- Unlike opaque wall assemblies, windows are farther behind on the first-cost/performance curve – the **“bang for the buck” opportunity is ready to be exploited**
- Higher-performing windows can **significantly improve a building's energy performance**, since windows are already the “weak link” – in cold climates, the code-mandated thermal resistance of windows is an order of magnitude lower than for walls.
- **Design dollars are much better spent improving the thermal resistance of the lowest performing element (windows, even at 15% to 40% surface area)**; thermodynamics dictates that this investment raises the average much faster than similar increases to the highest performing elements.
- Builders value one-and-done solutions, as evidenced by their strong support of code provisions which grant them credit for equipment efficiencies above the federal minimum. While not cost-free, **high-performing windows are a straightforward solution with an easy “yes” answer**, while still allowing flexibility in type and manufacturer.
- Cold climate builders will especially appreciate the **flexibility provided by Section C Table 5: Equivalent Energy Performance for Windows** which is supported by simulation and analysis
- ENERGY STAR's high market share and continuous evolution as a design aid (beyond a leading above-code certification) positions the program to **impact both builders and manufacturers in a positive way – through encouragement rather than mandate.**
- The **improvements contained in version 7 are in no way too ambitious.** Even guidance from the “Pretty Good House” movement includes window assembly values of U-0.2 to U-0.13 for cold climates.

My background positions me to understand the value proposition of the proposed ENERGY STAR window performance improvements – I've been a commercial HVAC designer working closely with architects and developers on net-zero and LEED projects (SmithGroup, DC [SG]); a building scientist with Home Innovation Research Labs (HI) experiencing first-hand the natural (and reasonable) conservatism of builders, and am now a research engineer with Pacific Northwest National Laboratory (PNNL), and a current reviewer of ENERGY STAR Multifamily High Rise residential projects. Thank you so much for your kind attention, and especially the hard work of developing and supporting this technical recommendation, which I wholeheartedly support.

Sincerely,

Patti Gunderson  
P.E., LEED AP BD+C, CPHC