September 13th, 2013

Douglas W. Anderson
Manager, ENERGY STAR for Windows, Doors, and Skylights Program
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: ENERGY STAR® Windows Draft 2 Version 6.0 Specification

Dear Mr. Anderson:

The Northwest Energy Efficiency Alliance is a non-profit organization working to encourage the development and adoption of energy-efficient products and services. NEEA is supported by the region's electric utilities, public benefits administrators, state governments, public interest groups and efficiency industry representatives. This unique partnership has helped make the Northwest region a national leader in energy efficiency.

ENERGY STAR specifications are an important first step in accelerating the manufacturing and adoption of more efficient residential technologies. The Pacific Northwest has a long history of promoting the most efficient window technologies available, in some cases catalyzing the market introduction of new and more efficient window technologies. The PNW region's residential new construction and deep energy retrofit initiatives and utility programs continue to provide a driving force for the adoption of higher performance windows.

Our specific recommendations, detailed in the remainder of this letter, can be summarized as follows:

1) **The u-factor requirement for the Northern climate zone is insufficiently ambitious.**
2) **The "Equivalent Energy Performance" section for the Northern climate zone is unnecessary and is of questionable energy benefit.**
3) **The independent verification of specification compliance is very important and must be enforced by Energy Star.**

Northern Climate Zone u-factor Specification

The base u-factor specification for this climate zone – 0.27 – is insufficiently stringent. Typical area-weighted window u-factors for both new construction and retrofit applications in the Pacific Northwest currently range from 0.28 to 0.30. This is especially true for production builders. Many custom homebuilders are using triple-pane windows and double-pane 0.25 u-factor products. As a result, an Energy Star specification at 0.27 simply doesn't provide sufficient performance improvement and energy savings to be useful in programs that promote

Northwest Energy Efficiency Alliance
421 SW Sixth Avenue, Suite 600, Portland, OR 97204
503.688.5400 | Fax 503.688.5447
neea.org | info@neea.org

the use of higher performance windows. NEEA's window specification for its Next Step Home initiative is u-factor 0.25, with any SHGC. We're not aware of participating builders having trouble finding windows with which to meet the spec.

This could be because there are currently more than 600,000 individual window products listed in the NFRC directory with u-factors at 0.25 or lower, with the majority being two-pane products. We've been pleasantly surprised at the relatively low incremental costs of the higher performance products.[1] Our current market research (ongoing) suggests that two-pane product availability should not be an issue for a specification set at u-factor 0.25, which is what we strongly recommend.

Equivalent Energy Performance for the Northern Climate Zone

While the theory behind t his feature of the proposed specification is valid in theory, in practice we seriously doubt that any *net* energy gains provided by higher SHGC will offset the energy losses from the higher u-factors. The efficiency benefits of energy gains from higher SHGC values depend on a host of factors that cannot be controlled for in the specification. Solar access, house orientation, window area distribution, proper location and amount of thermal mass, house cooling loads and microclimate – all of these factors must be aligned in order to achieve sufficient heating contribution benefit to overcome the additional heating losses associated with the higher u-factors and any additional cooling energy use associated with the higher SHGC values.

We strongly suggest to EPA that there will seldom be sufficient net benefits to justify allowing higher u-factors, and we strongly recommend that EPA drop this provision in its specification.

Independent Verification Procedure (IVP)

While this issue wasn't directly addressed in the Draft 2 specification, NEEA strongly supports the IVP process, as it provides much stronger product performance assurance to consumers and much stronger energy savings assurance to utilities and consumers. We suspect that, because of their sophisticated manufacturing processes and more robust QA/QC processes, most of the larger manufacturers will see no serious problem with the IVP. But windows are a critical part of the building shell, providing daylighting, preventing heat loss and unwanted heat gain, and in the process, losing about 10 times the energy per square foot compared to that per square foot of wall adjacent to the window. So actual window performance is critical to the energy performance of the building. As performance improves and u-values decline, third-party performance verification will become more critical.

We strongly support EPA's IVP.

NEEA appreciates the opportunity to offer these comments and data to the EPA. Thank you for considering these comments in the development of the next draft of the ENERGY STAR residential windows specification.

Sincerely,

[1] Next Step Home builders are required to provide building cost information for the products and practices used to meet the program specifications.

Charlie Stephens
SENIOR ENERGY CODES AND STANDARDS ENGINEER
Direct 503.688.5457

NORTHWEST ENERGY EFFICIENCY ALLIANCE
421 SW Sixth Avenue, Suite 600, Portland, Oregon 97204
503.688.5400 | Fax 503.688.5447 | neea.org