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Sent: Friday, May 04, 2018 4:45 PM

To: windows@energystar.gov

Subject: Comments on ES Storm Windows Draft 2 Version 1 Specification and Additional Analysis

Comments to methodology and criteria:

1. DOE (and PNNL) use the Energy Plus program for code determinations. Resfen uses the DOE2 analysis engine (no longer supported by DOE) that was developed 20+ years before Energy Plus. If ENERGY STAR is to be “better than code” then all storm window program development be halted until appropriate analyses can be performed. Additionally, the Resfen program does not report fan energy so it hasn’t been included in any of the payback calculations. High solar gain windows require larger fan energy year round and this is not accounted for in the northern minimum solar transmittance criteria.
2. Another concern to Resfen is the seasonal interior shading assumptions: open 2/3 time in winter and closed 2/3 time in summer. The IECC model code uses 50% shade closure for all seasons of the year. Recognizing that window operation/natural ventilation is an important component of the Resfen analysis EPA provides guidance on matching operable storms to operable windows. Will there now be an advisory/guidance included on following the shade operation?
3. The use of equal window area on all orientations is reasonable for determining average energy performance. This modeling shortcut fails on 2 of 4 orientations when used to determine a minimum solar gain. For ENERGY STAR to deem a minimum solar transmittance the analysis be performed for an asymmetric, west dominated, building. In this manner all orientations will achieve energy savings.
4. Payback, in either dollars or years, is highly dependent on fuel prices. The use of “average” or a single instance of pricing can be misleading in the economic analysis. Suggest that when new energy analysis methodologies are available (see item 1) that appropriate winter fuel prices are used for heating costs and summer electric prices be used for cooling costs.
5. Labels 1 & 2 on page 2 of the draft specification could be confusing when two Zone 4 compliant products (one as high solar gain vs. one with low solar gain) are displayed side by side. Under the context of the proposed solar control levels you may want to consider a third label specifically for climate zone 4. Note this issue goes away with my proposal in the first round to eliminate solar criteria in the north, or the new suggestion under item 3.

One curiosity: last comment period I noted that some of the Cardinal solar control laminate options used in the original analysis be reconsidered due to inherently high cost of hurricane glazing. Why was Cardinal’s LoE-i89 product removed from the evaluation? This is a hard coat product will emittance of 0.15 and solar transmission of 0.74. To the analysis routines used I suspect it would slot in as one of the best performing products.

Regards,

JL

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