May 9, 2019

Washington State Energy Code Technical Advisory Group
State Building Code Council
Department of Enterprise Services
1500 Jefferson, P.O. Box 41449
Olympia, Washington 98504-1449

Submitted Via Email to: krista.braaksma@des.wa.gov

Re: Public Comment on WSEC-29

Dear Energy TAG:

Thank you for the opportunity to provide comment on the proposals on the agenda for your May 10, 2019 meeting. The Foam Sheathing Committee (FSC) is a Self-Funded subgroup of the Plastics Division of the American Chemistry Council ("ACC") with member companies: Atlas Roofing, BASF, DowDuPont, GAF, Hunter Panels, Johns Manville, Kingspan Insulation, and RMAX. This letter expresses concerns with WSEC-29 which would reduce the energy efficiency of the code by weakening the requirements in Section R406.

WSEC-29 makes two changes. The first change is to add a new footnote in option 1b of Table R406.2. The stated purpose is to correct a "probable error" regarding continuous insulation R-values for walls in option 1b of Table 406.2. The claim is that the requirement for an "R-21int+R4ci" wall in Table 406.2 option 1b would eliminate use of 1" EPS because it is not consistent its R-value of 3.5 per inch as suggested in the proposed new footnote 'd'.

This is not an error for two reasons. First, EPS of R-4.0 per inch is available per ASTM C578 as "Type II". This is the appropriate insulation type and R-value for EPS and it would allow 1" thickness to be used. Second, use of Type II EPS is also important for fastening of cladding through a layer of foam plastic insulation as required in Section R703.15 of the International Residential Code (IRC) adopted by the State of Washington. Specifically, refer to Table R703.15.1 footnote 'c' that requires use of Type II EPS per ASTM C578 to meet the minimum 15psi compressive strength requirement.

There are two lower compressive strengths and lower R-value variants of EPS in ASTM C578 with 10psi and 5psi compressive strength that would not satisfy the requirement of Table R703.15.1 of the IRC (Washington Residential Code) for use on walls. These relate to Type I and Type XI EPS materials which are not compliant unless specifically designed as an alternative to account for the difference in compressive strength and R-value. Further, these have a R-per-inch of 3.1 and 3.6, neither of which align with the suggested R3.5 in the proposed footnote 'd' to Table 406.2.

Thus, the current code provision requiring an "R-21int+R4ci" wall in option 1b of Table 406.2 is correct and properly coordinates energy and building code requirements. Also, without adjusting R-values upward for other assemblies in option 1b of Table 406.2, this proposal

would result in a reduction in energy efficiency and is not neutral as indicated in the proposal.

WSEC-29 makes a second change to the "R-21int + R12ci" basement wall requirement in option 1c of Table 406.2, reducing the continuous insulation requirement from R12 to R10. The stated purpose is to allow use of 2-inch-thick XPS foam for the continuous insulation (ci) component. Since XPS has an R-value of 5.0 per inch, this would allow 2-inches of XPS to be used instead of 2.5 inches, or would allow 2.5 inches of Type II EPS (R-4.0 per inch) to be used instead of 3 inches.

This is a reduction in the energy efficiency of option 1c in Table 406.2. The proponent's Economic Impact Data Sheet does not reflect the reduction in insulation value and resulting increased energy use.

The purpose statement further claims that the current requirements are problematic. It then suggests changing the code to favor a particular material. ACC supports not only energy efficiency, but also material choice flexibility and notes that many materials participate in the continuous insulation market.

The statements regarding constructability are not accurate. The "R12ci" component of the basement wall insulation could be placed on the interior side of the basement wall, thus, not interfering with exterior finishes and in this location could use 2-inches of polyiso rigid foam board per ASTM C1289 as permitted by the energy code. If 2-inches of XPS rigid foam board insulation is desired for the exterior of the basement foundation, Option 1b permits this application using only 1" of XPS or just over 1" of EPS. Thus, the provisions of Table 406.2 are correct and provide options to address the concern raised in the reason statement.

Finally, with regard to both of the above parts of the proposal and both concerns raised, Table 406.2 allows complete flexibility to gain the required credits for different Efficient Building Envelope options by use of a UA analysis which is easily performed by hand calculation or, more commonly, by use of available (free) on-line software such as REScheck (https://www.energycodes.gov/rescheck ). Thus, the options for a given credit level can be customized to meet a specific need, including material type and thickness, or application without a decrease in energy efficiency.

We hope these comments are helpful as you move forward with this important code advancement.

Sincerely,

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