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## VELUX

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## Skylight-Specific Concerns re: the Nonresidential Building Energy Efficiency Standards

To Whom it Concerns:

VELUX America Inc. is grateful for this opportunity to comment on the draft revisions being proposed for the nonresidential fenestration sections of the 2013 Building Energy Efficiency Standards, in Part 6 of Title 24, California Code of Regulations. The following comments are based on our understanding of the energy efficiency goals of the Commission, and the current state of the art regarding reasonably available and efficient products that can help reach those goals.

We reviewed the presentation posted on June 15, and the recording of the workshop, since we could not attend (in person or remotely) in real time. Based on that review, I spoke with Mr. Eric Shadd about several concerns and questions:

 The data sources consulted for VT on skylights (especially non-glass) are very suspect. To this day, there is no method sanctioned for obtaining credible, fair and accurate product VT ratings for non-specular and non-planar glazings frequently used for nonresidential skylights. Therefore, any VT-based analysis for such products should be considered very rough and potentially inaccurate. In addition, such analysis completely omits a special category of "skylight", Tubular Daylighting Devices (TDDs), which are so complex that entirely new light performance metrics are under development within NFRC and ASHRAE/IESNA.

Until there are fair, credible and accurate methods to determine whole product VT ratings for all skylights, to prevent gaming we suggest that VT limits not be included in any prescriptive or mandatory standards. We further believe any TDV analysis based on such data to be very preliminary and subject to wide errors.

2. The analysis of the many skylights included in the study effort utilized a new (and as yet untested, for skylights) NFRC method called CMAST. When probed, Mr. Shadd agreed that a fair number of the skylights included were actually "unit skylights" and were likely to have NFRC certified ratings that were not ascertained from NFRC's Certified Products Directory (CPD) for use in the study. Further, this method is not applicable to TDDs, which are finding many uses in nonresidential projects.





We have distilled a spreadsheet from the current NFRC Certified Products Database (CPD) for all "skylight" products which we will provide on request, to facilitate any future effort to refine the analysis using best available data. (It should be noted the same data was supplied to the residential windows study group; and is under review by, U.S. EPA consultants, D&R International, as they work to develop proposed criteria for the 2013 ENERGY STAR qualifying requirements.)

3. We were quite disappointed to find the wide disparity in the proposed Table 143 U-factor and SHGC maximums for skylights, depending on their glazing material and mounting detail. This material bias has been discredited in the 2012 IECC for windows, and should likewise be phased out for skylights. If there is to be any distinctions, it should akin to that for windows: "Operable Unit Skylights", "Fixed Unit Skylights" (including TDDs), and site-assembled "Sloped Glazing" systems. Furthermore, any U-factor maximums should be based on double and triple-glazed plastic units utilizing thermally-broken framing, and SHGC maximums should not be allowed to go below 0.30 so as to permit sufficient daylight to be transmitted to allow increased lighting savings.

We suggest the 2012 IECC prescriptive tables contain appropriate skylight values for California, and should be the basis for Title 24 in 2013, regardless of materials of construction.

- 4. Replacement of single or double glazed domed unit skylights with double-pane, argon-filled glass units warrants a separate cost effectiveness study using U-factors of curb-mounted modern designs, which are uniquely suited to this application. Separate "existing building" requirements might be appropriate.
- 5. We have not seen the background analysis for cost effectiveness, so we do not know what the assumed useful life of skylights was. We might suggest it may be lower than for windows, since it is not uncommon for unit skylight "lenses" to be replaced whenever roofing is replaced.

We look forward to future developments as the 2013 standards continue to take shape, and stand ready to provide help and feedback at the pleasure of the Commission and its contractor agencies.

Best Regards,

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