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California Energy Commission
Attention: **Docket No. 12-BSTD-1**
Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

Your Reference: 2013 Building Energy Efficiency Standards
Docket No. 12-BSTD-1

Dear Sir/Madam:

We are a certified representative of Velux skylights, tubular daylighting products, and Velux solar thermal water heaters for the greater San Francisco Bay Area. As part of the Velux family, we wish to convey the following written comments which summarize key oral comments offered at the March 12 and 13 Commissioner Hearings and provide further comment on specific recommendations to make fenestration-related provisions clearer, more consistent and more likely to result in faster energy efficiency gains.

Velux America Inc. offers skylights, tubular daylighting devises and solar thermal water heaters across the U.S. and Canada, and certain similar products to the Velux companies in Australia, New Zealand and Japan. After almost 40 years of operations in the U.S., and with the benefit of our association with the global Velux Group and their 70 years of similar history in many European and Asian nations, we have gained a unique and broad understanding of the many benefits of incorporating our offerings in buildings, as well as the challenges we all face in learning to be more responsible stewards of the bounty of our earth.

Reflecting that understanding, and with our dedication to bringing daylight and fresh air into our interior environments in the most effective manner possible, we have become the most active producer in our market segments in codes and standards development. We trust our comments are seen in the context of Velux speaking the "de facto" spokespersons for all those in our industry who cannot dedicate the resources to assist in this capacity.

Skylights and Residential Daylighting

During oral comments, we stated that California has embraced daylighting in unprecedented ways. We can clearly see that in many of the provisions related to nonresidential standards that mandate daylighting, and extensive control of supplemental lighting to maximize effective use of daylight. Even though these standards are energy-focused, they have many non-energy benefits for the occupants and their employers, landlords, etc.

So far, however, in spite of the accelerated "Net Zero" schedule imposed on residential building standards development, there has been no corresponding inclusion of daylight-valuing provisions in those standards. On the contrary, there seems to be inexplicable reluctance to investigate just how much good daylighting practices can improve the energy performance in spaces where people live. The Residential Building Energy Standards need to address this deficiency at the earliest opportunity.

Velux has undertaken to help kick-start that process, so as part of these remarks, they referenced a report issued by Group 14 Engineering on February 19, 2012, A Study of the Energy Impacts of Residential Skylights in Different Climates, by Elizabeth Gillmore, P.E.; Sue Reilly, P.E.; et al. In this report, it is clear that when fenestration is optimized by including good daylight performance as a key constraint, significant heating and cooling energy savings, along with positive TDV results, are very achievable. Note that lighting energy savings were not included, although we know there is a positive, if currently unquantified benefit. Also note that the study did not consider benefits from enhanced natural ventilation that is possible when skylights with venting capabilities are selected.

Velux participated in the Workshops, and presented themselves and the new study at the Hearing, mainly for the short-term purpose of encouraging the Commission to propose language that fostered fewer hurdles to the use of residential skylights and tubular daylighting devises than was seen in the 45-Day Language. What Velux recommended (and still think is basic to a reasonable standard) as a proper response was for Table 150.1-A to contain appropriate skylight-specific content (as all other prescriptive energy codes do), but base it on using the most stringent ENERGY STAR qualifying criteria or slightly better. Such language did appear in a least one draft that was circulated by the Commission prior to the issuance of the 45-Day Language, so we were dismayed to find that it disappeared.

At this late date, we are not hopeful that such a change can be reinstated, even though Velux was not provided technical reasons for its removal - only "political" ones. However, as a stopgap for this version of the standards, we would ask for a stronger exception that recognizes the actual average amount of skylight products that are used for each new or existing single-family residence. We propose the following be used in the 15-Day Language:

> **EXCEPTION 2 to Section 150.1(c)3A:** For each dwelling unit up to ~~10~~ 16 square feet of skylight area with a maximum U-factor of 0.55 and a maximum of SHGC 0.30 are permitted to be used, and shall not be required to meet the total fenestration area and west-facing fenestration area requirements of Sections 150.1(c)3B and C.
>
> **EXCEPTION 2 to Section 150.2(b)1A:** Up to 16 square feet of skylight area with a maximum U-factor of 0.55 and a maximum of SHGC 0.30 are permitted to be used in any alteration.
> (Requires preceding exception to be numbered "EXCEPTION 1")

Alternately, the area exception portion may be struck in the first instance:

> **EXCEPTION 2 to Section 150.1(c)3A:** For each dwelling unit up to ~~10~~ 16 square feet of skylight with a maximum U-factor of 0.55 and a maximum of SHGC 0.30 are permitted to be used. ~~, shall not be required to meet the total fenestration area and west-facing fenestration area requirements of Sections 150.1(c)3B and C.~~

Skylights Needing Replacement

California residents have traditionally embraced skylights for decades, and more recently, tubular daylighting devices. What the 45-Day Language effectively says to those who might just want to replace their faded, leaky, usually plastic and often tinted existing skylights (with average U-factors double and triple what are typical for current standard residential skylights) is - 1) you can use a non-standard, very expensive and heavy triple-glazed sealed glass skylight, or 2) you can put an opaque roof assembly in the rough opening and hope it doesn't leak at the seams, or 3) you will just have to continue to waste lots of energy, pay the higher bills, and live with the leaks and the mold issues that will likely result.

We are confident this is not what the Commission intends for this very common situation, and is amendable to inserting an appropriate exception after the current exception to Section 150.2(b)1B:

> **EXCEPTION 2 to Section 150.2(b)1B:** Replacement skylights with a maximum U-factor of 0.55 and a maximum of SHGC 0.30 are permitted to be used.
> (Requires preceding exception to be numbered "EXCEPTION 1"

If this is acceptable, please consider making consistent changes to TABLE 150.2-B

Alternatively, this added exception and changes to TABLE 150.2-B would not be necessary if Table 150.1A is changed as recommended previously.

Other Suggestions for 15-Day Language

In addition to the above recommendations, which we referenced in the oral comments because they are most critical to our industry's future viability in California, we now list several other suggestions to improve the standards in other sections:

SECTION 10-102

Add Definition after NFRC 202:

> NFRC 203 is the National Fenestration Rating Council document entitled "NFRC 203, Procedure for Determining Visible Transmittance of Tubular Daylighting Devices." (2012).

Also, change the year of NFRC 202 to 2012

> Reason: NFRC technically approved both procedures at the recently held spring meeting, and is actively seeking participating laboratories so implementation can proceed in a timely manner. NOTE: Both 202 and 203 (or neither) should be included - to only select one is not justified, as both types of products provide the same benefit.

SECTION 100.1
Suggest moving the following to the FENESTRATION grouping (editorial):

RELATIVE SOLAR HEAT GAIN
SHADING COEFFICIENT
SKYLIGHT
SKYLIGHT AREA
SKYLIGHT TYPE
WINDOW
WINDOW AREA
WINDOW TYPE

SECTION 110.6
Correct EXCEPTION 2 to Section 110.6(a)4 as shown (editorial):

EXCEPTION 2 to Section 110.6~~1116~~(a)4: If the fenestration product is an alteration consisting...

Add to Section 110.6(a)4:

EXCEPTION 3 to Section 110.6(a)4: If a skylight with non-flat or diffuse glazing is not covered by NFRC 200, VTc may be determined using ASTM D1003: for tubular skylights VT shall be rated using NFRC 203.

Reason: These products cannot be rated in accordance with NFRC 200. NFRC is a new procedure, and ASTM D1003 is referenced in the IECC for this purpose.

For Tables 110.6-A and 110.6-B, consider adding new default values for double-pane products that use argon-filled IGU and low solar gain low-e coatings.

SECTION 150.2(b)2
Correct "TAB~~L~~LE 150.2-B" in first sentence.

We look forward to future developments as the 2013 standards continue to take shape, and stand ready to provide help and feedback as requested.

Best Regards,

Archie Mares
President

Dennis Dow
Vice President

cc: Dan Besmer, District Sales Manager, VELUX America Inc.
cc: Steve Kent, Senior Sales Representative, VELUX America Inc.