

## DOCKETED

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## CALIFORNIA ENERGY COMMISSION

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## ***Staff Supplement to CASE Report #2019-NR-LIGHT5-F***

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**Date:** 11/13/2017

**Pages:** 2

**Author:** Simon Lee

**Subject:** Advanced Daylighting Design, 2019-NR-LIGHT5-F

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### DESCRIPTION OF PROPOSED REGULATORY CHANGES

CASE report #2019-NR-LIGHT5-F, titled Advanced Daylighting Design, proposes to make the following changes to the Standards:

1. Advanced Daylighting Design (Daylighting Devices for Power Adjustment Factors):  
The proposed measure will allow Power Adjustment Factors (PAFs) for indoor lighting that are controlled by daylighting controls when specific technologies are installed with the vertical fenestration on the proposed building. The proposed technologies include: fixed slats (louvers), light shelves, clerestories, and daylight redirection devices.
2. Minimum VT Interpretations for Tubular Daylighting Devices (TDDs):  
The proposed change provides clarification (by way of offering an interpretation) of the existing Minimum Visible Transmittance (Min VT) requirements for Tubular Daylighting Devices (TDDs).
3. Update to Daylit Zones Definitions:  
The proposed change provides clarification on the interpretation of daylit zone definitions for situations involving atrium spaces in buildings and large exterior overhangs on buildings.

Staff agrees with the proposed changes to add fixed slats, light shelves, and clerestories as the daylighting devices for Power Adjustment Factors, and has made appropriate revisions to the Express Terms. Staff has made the following changes to Section 140.3(d) and 140.6 to the proposed Express Terms:

- Categorized the PAFs as “Daylighting Devices Power Adjustment Factors” in lieu of “Daylighting design strategies” as proposed in the CASE Report;
- Added a new subsection for clerestory glazing as one type of daylighting devices allowed and included a set of installation and performance requirements for the qualifying devices;
- Added a new subsection for interior and exterior horizontal slats and included a set of installation and performance requirements for the qualifying devices;
- Added a new subsection for interior and exterior light shelves and included a set of installation and performance requirements for the qualifying devices;
- Added a new Table 140.3-D for Projection Factor required for qualifying slats and light shelves;

- Added a new Equation 140.3-D for Projection and Distance Factor Calculation.

Staff agrees with the proposed changes about minimum VT for Tubular Daylighting Devices (TDDs) to Table 140.3-B and Section 110.6, and has incorporated substantially similar changes into the proposed Express Terms.

Staff agrees with the proposed clarifications of daylit zone definitions requirements of Section 130.1(d) to large overhangs and atrium spaces, and has incorporated substantially similar changes into the proposed Express Terms. New definitions associated with large overhangs have been added in Section 100.1 to the proposed Express Terms.

Staff does not agree with the proposed daylight redirection devices listed under Item #1 and the associated changes to Section 140.3 and 140.6. The optical performance of the proposed daylighting redirection devices is the key factor for delivering energy savings. However, there is no industry consensus rating system to quantify or certify the optical performance of these devices. As a consequence, the proposed power adjustment values for these devices are not based on published standards or industry-consensus evaluation processes. Without a product rating system and a credible testing procedure, it is impossible to ensure the energy performance of the daylight redirection devices. For the above reasons, Staff did not include this proposed change in the Express Terms.

#### STAFF ANALYSIS AND CONCLUSION

Staff has analyzed the submitted CASE report and reached the following conclusions for the measures included in the Express Terms:

- Based on the evidence presented in the CASE Report, the measures, as proposed, appear to be cost effective and the author appears to have appropriately followed the Energy Commission's Life Cycle Cost methodology.
- Measure costs premiums presented in the CASE Report appear reasonable and appropriate for the measure proposed.
- Measure energy savings presented in the CASE Report appear to have been appropriately modeled and appear credible.