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Comment Received From: Edward Moreno

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Sierra Club CA additional comments on Docket No. 17-BSTD-02

Additional submitted attachment is included below.



March 16, 2018

**Sierra Club Comments on 2019 Title 24 Building Energy Efficiency Standards Rulemaking
45-Day Language Update**

To the California Energy Commission,

The Sierra Club California thanks you for giving us the opportunity to comment on the 45 Day Express Terms for the 2019 Title 24, part 6 building energy efficiency standards. We appreciate that many of the changes in the 45 Day Express Terms are aligned with the comments in the November 30th Sierra Club letter.¹ We have a couple of unresolved issues that are described below

The Sierra Club seeks to protect and preserve the environment of California and the world. This set of revised building energy efficiency standards helps place California on a path towards a future where all buildings are zero net energy and are healthy places to work and live. We are similarly interested in minimizing impact on the outdoor environmental including light pollution, visual trespass, sky glow and circadian impacts on people and animals.

In particular we are asking the California Energy Commission to assure the updated standards for Controls for Outdoor Lighting [Section 130.2(c)] and Luminaire Cutoff [Section 130.2(b)] are at least as stringent as they were in the 2016 building efficiency standards.

Controls for Outdoor Lighting.

The 2016 Title 24 outdoor lighting controls standards had three levels of control.

1. Control capable of turning lights off during the day. Applicable to all lights.
2. Control capable of being scheduled lights. Applicable to all lights
3. Control that reduces lighting power between 40% and 90% in response to the areas vacated of occupants. Applicable to lights mounted less than 24 feet, and not exempted by exceptions 1-4 to Section 130.2(c)3.

The 45 Day Express Terms for Section 130.2(c), would allow for those outdoor luminaires where vacancy controls are required, to control based on daylight and vacancy and not install scheduling controls as has been required since the 2013 standards. This saves less energy than a lighting system that is controlled by all three control types including a scheduling control.

We recommend that the Commission modify this section to restore the stringency of the building energy code by requiring all three controls (daytime, scheduling and vacancy) for those applications that have required vacancy controls in the past. We support increased controls innovation as long as it provides

¹ http://docketpublic.energy.ca.gov/PublicDocuments/17-BSTD-01/TN221872_20171130T094945_Edward_Moreno_Comments_Re_17BSTD01_Sierra_Club_Comments_on_the.pdf

more energy savings. Thus we support the exceptions that would allow advanced controls such as bi-level motion controls that have different unoccupied dimming levels by time of night or with respect to elapsed time since motion was last detected. The Statewide Codes and Standards program has submitted a letter dated February 20th with suggested outdoor lighting controls code language that we support.² We have repeated the proposed code language here for clarity.

² http://docketpublic.energy.ca.gov/PublicDocuments/17-BSTD-02/TN222626_20180220T221554_Statewide_UTILITY_Codes_and_Standards_Team_Comments_45Day_Comme.pdf

(c) Controls for Outdoor Lighting. Outdoor lighting controls shall be installed that meet all of the following applicable requirements

EXCEPTION 1 to Section 130.2(c): Outdoor lighting not permitted by a health or life safety statute, ordinance, or regulation to be turned OFF.

EXCEPTION 2 to Section 130.2(c): Lighting in tunnels required to be illuminated 24 hours per day and 365 days per year.

1. Daylight Availability. All installed outdoor lighting shall be controlled by a photo control, astronomical time-switch control, or other control capable of automatically shutting OFF the outdoor lighting when daylight is available.

2. Scheduling Control. All installed outdoor lighting shall be independently controlled from other electrical loads by an automatic scheduling control. During normally scheduled unoccupied hours, power shall be reduced by at least 50%.

Exception 1 to Section 130.1(c)2: Lighting power reduction of controlled lighting may be overridden to normal operating power when occupancy is sensed by a control compliant with Section 130.2(c)3.

Exception 2 to Section 130.1(c)2: Scheduling controls are not required if lighting is controlled by controls compliant with Section 130.2(c)3 and that reduce lighting power between 50 and 75 percent when no activity has been detected in the area illuminated by the controlled luminaires for a time no longer than 15 minutes and reduce lighting power by at least 75% when no activity has been detected no longer than 60 minutes.

3. Areas where Motion Sensing Controls are required. Luminaires that are providing parking lot general hardscape lighting, outdoor sales lot lighting, vehicle service station hardscape lighting, or vehicle service station canopy lighting and where the bottom of the luminaire is mounted 24 feet or less above the ground shall be controlled by motion sensing controls or other controls that react to the area being vacated of occupants and meets all of the following requirements:

A. The lighting power of each luminaire shall be automatically reduced by at least 50 percent or OFF when no activity has been detected in the area illuminated by the controlled luminaires for a time no longer than 15 minutes.

B. Shall restore lighting to normal operating power when the area becomes occupied; and

C. No more than 800 ~~1,500~~ watts of lighting power shall be activated in a single motion sensing control zone, and

D. The lighting system shall be capable of being configured to automatically reduce power of each luminaire by at least 50 percent, but not exceeding 90 percent without turning the luminaires OFF

EXCEPTION 1 to Section 130.2(c)3: Luminaires with a maximum rated wattage of 40 watts each;

EXCEPTION 2 to Section 130.2(c)3: Applications listed as Exceptions to Section 140.7(a) shall not be required to meet the requirements of Section 130.2(c)3.

EXCEPTION 3 to Section 130.2(c)3: Luminaires located where trees or other obstructions block motion sensing between the luminaire and the area illuminated by the luminaire.

4. Timed Manual Override. Timed manual overrides are not required, but shall be allowed to override motion or scheduling controls for a duration not to exceed two hours. No more than 1,800 watts may be controlled per manual override control.

In addition to maintaining the stringency of the existing outdoor lighting controls requirements, the proposed exceptions will allow the use of advanced controls which have the capability of saving 6 GWh/yr statewide. These advanced controls would further reduce outdoor lighting late at night when there is no activity; this reduces the circadian disruption of animals and reduces sky glow for all of us who enjoy seeing the stars at night.

Luminaire Cutoff

The current (2016) Title 24 energy code luminaire cutoff (Uplight and Glare) requirements in Section 130.2(b) apply to most outdoor lighting rated over 150 Watts associated with "Nonresidential, high-rise residential and hotel/motel buildings." These requirements also apply to all residential outdoor lighting subject to Section 150.0(k)3B-D. These cutoff requirements reduce glare and uplight and reduce wasted light that is associated with visual trespass, glare and unnecessary lighting of the outdoor environment.

We support the changes to 45 Day Express Terms which has replaced the 150 Watt threshold with the 5,500 initial lumen threshold. As documented in the updated IOU CASE report,³ this 5,500 lumen threshold is equivalent to the amount of light from a 150 Watt Metal Halide luminaire when the wattage threshold was developed for the 2013 standards. This lumen-based threshold more accurately sets the threshold for glare requirements on the metric of merit, lumens. This lumen-based threshold is "future proofing" this section in that LED efficacies are expected to rise and if we were to maintain parity based on how much light exits the luminaire, a wattage based threshold would require an update each code cycle.

The proposed changes in the to 45 Day Express Terms references the BUG (backlight, uplight, glare) limits in the CALGreen mandatory requirements in Section 5.106.8 and removes Table 130.2-A and Table 130.2-B from the energy code. A letter from the Department of Housing and Community Development⁴ makes note that this section in Chapter 5 CALGreen is intended for nonresidential buildings only and that the CALGreen mandatory requirements for high rise and low rise residential buildings and hotel/motel reside in chapter 4. Currently there are BUG requirements in the residential mandatory section (Chapter 4) of CALGreen, "BUG parameters are included in CALGreen Section A4.106.10 Light Pollution Reduction; however this is a voluntary section and not mandatory unless adopted by local agencies..." HCD recommends that hotel/motel and all residential occupancy be exempted from Section 130.2(b).

We disagree with HCD's recommendation to roll back the scope of the environmental protections afforded by the cutoff requirements. We appreciate that HCD has identified a problem in the current structure of the requirements. As proposed in the 45 Day Express Terms, designers complying with the mandatory requirements in CALGreen may not be aware that the requirements for cutoff luminaires in the nonresidential section of CALGreen also apply to hotel/motel occupancies and some residential occupancies. We recommend that the following text be inserted into the residential mandatory Section 4.106 "Site Development" portion of CALGreen:

4.106.5 Light pollution reduction. Outdoor luminaires of 5,500 lumens or greater subject to the cutoff luminaire requirements in Title 24, part 6 Section 130.2(b) including applications in Title 24, part 6 Section 150.0(k)3 items B through D that reference Section 130.2, shall comply with the maximum zonal lumen requirements for Backlight, Uplight, and Glare in accordance with Section 5.106.8.

The Sierra Club is very supportive the 2019 updates to the Building Efficiency Standards. We have suggested a few changes that that we think will improve energy savings, spur innovation in outdoor

³ See the addendum at the end of the report for the rationale for the 5,500 lumen threshold.

http://title24stakeholders.com/wp-content/uploads/2018/01/2019-T24-CASE-Report_NR-Outdoor-Light-Sources-With-Addendum_December-2017.pdf

⁴ http://doCKETpublic.energy.ca.gov/PublicDocuments/17-BSTD-02/TN222688_20180223T095341_Emily-Withers-Comments_Dept_of_Housing_and_Community_Developmen.pdf

controls development, and reduce unnecessary light pollution of the night sky. Please contact us if you have any questions.

Respectfully submitted,

Eddie Moreno
Policy Advocate