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California Energy Commission

DOCKETED

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To: The California Energy Commission
Building Energy Efficiency Standard Rulemaking
Docket Number 15-BSTD-01
DOCKET@energy.ca.gov

Declaration Statement

I am submitting these comments solely as a private citizen. I previously worked on earlier editions of the Title 24 Building Energy Efficiency Standards, and I retired from the California Energy Commission more than one year ago.

COMMENTS

Following are specific sections of the proposed 2016 Standards with my comments following each section.

I have not yet reviewed all of the sections of the Standards, and may submit additional comments on a later date.

Part 6, Section 100.1(b) Definitions

Shut-off Controls is any lighting control capable of automatically shutting OFF all of the lighting in a space when the space is typically unoccupied.

Comment:

Shut-off controls are not required to always shut off all of the lighting in a space according to Section 130.1(c).

Section 110.9(b)4 F

All Occupant Sensing Control types shall be programmed to turn OFF all or part of the lighting no longer than 20 minutes after the space is vacated of occupants, as specified by the applicable controls requirements of Section 130.1(c).

Comment:

This is in conflict with Section 110.9(a)3.

Self-Contained Lighting Controls, as defined in Section 100.1, shall be certified by the Manufacturer as required by the Title 20 Appliance Efficiency Regulations.

Title 20 requires occupant sensing devices to shut off within 30 minutes.

Section 120.6(f) 4

Lighting and ventilation shall remain operational in the event that the elevator cabin gets stuck when passengers are in the cabin.

Comment:

It is not appropriate for energy efficiency standards to include mandatory safety issues. Safety issues would be under the authority of a different regulating body. It would seem more appropriate to change the word “shall” to “may.”

Section 120.6(f)5. Elevator Lighting and Ventilation Control Acceptance.

Before an occupancy permit is granted for elevators subject to 120.6(f), the following equipment and systems shall be certified as meeting the Acceptance Requirement for Code Compliance, as specified by the Reference Nonresidential Appendix NA7. A Certificate of Acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.14.

Comment:

Section 25402 of the Public Resources Code requires a cost effectiveness analysis for all new energy measures. For any modifications to acceptance testing requirements, I would expect a cost effectiveness analysis to include, at a minimum: labor rates, and how many hours the proposed acceptance testing technician will have to work; at what size or scope threshold acceptance testing becomes cost effective; and what are the set-up/take down costs, and documentation costs, regardless of size or scope of the project.

I have not found a cost effectiveness analysis for this measure in any cited document relied upon.

Section 120.6(g)2. Escalators and Moving Walkways Acceptance.

Before an occupancy permit is granted for escalators and moving walkways subject to 120.6(g), the following equipment and systems shall be certified as meeting the Acceptance Requirement for Code Compliance, as specified by the Reference Nonresidential Appendix NA7. A Certificate of Acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements specified in NA7.15.

Comment:

Section 25402 of the Public Resources Code requires a cost effectiveness analysis for all new energy measures. For any modifications to acceptance testing requirements, I would expect a cost effectiveness analysis to include, at a minimum: labor rates, and how many hours the proposed acceptance testing technician will have to work; at what size or scope threshold acceptance testing becomes cost effective; and what are the set-up/take down costs, and documentation costs, regardless of size or scope of the project.

I have not found a cost effectiveness analysis for this measure in any cited document relied upon.

The only document I have been able to locate in the record, regarding acceptance testing for Elevator Lighting and Ventilation Control Acceptance and Escalators and Moving Walkways Acceptance is as follows:

http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/dru_title24_parts_01_06/2016%20T24%20CASE%20Report%20-%20Proposals%20Based%20on%20ASHRAE%2090.1%202013-Sep2014.pdf

2.3.3 Acceptance Testing

The required acceptance tests are described below. The Statewide CASE Team is still developing the code language to describe the acceptance tests. The next version of this report, which will be submitted to CEC in the fall of 2014, will include the proposed code language for the acceptance tests.

Section 130.0(c)5

Luminaires and luminaire housings ~~manufactured~~ with incandescent screw base sockets shall be classified only as incandescent. Field modifications, including but not limited to hard wiring of an LED module, shall not be recognized as converting an incandescent luminaire or luminaire housing to a nonincandescent technology for compliance with Part 6 unless such sockets are removed.

Comment:

It is not appropriate for the Energy Standards to require that sockets be removed, because doing so will often violate the Underwriters Laboratory listing of a luminaire. It is more appropriate to continue to classify luminaires manufactured with incandescent sockets as incandescent luminaires.

EXCEPTION to Section 130.0(c)9:

Luminaires in areas covered by Section 130.0(b).

Comment:

This appears to create confusion with Section 130.0(b), because there is language contained within Section 130.0(b) that relates to both residential and nonresidential lighting Standards. Therefore, proposed Exception to Section 130.0(c)9 could be broadly interpreted to cover both residential and nonresidential applications:

“...In buildings containing these functional areas, all other functional areas, such as common areas, shall comply with the applicable nonresidential lighting Standards.”

EXCEPTION 1 to Section 130.1(a)2:

In malls, auditoriums, retail and wholesale sales floors, industrial facilities, convention centers, and arenas, the lighting control shall be located so that a person using the lighting control can see the lights or area controlled by that lighting control, or so that the area being lit is annunciated.

Comment:

For clarity, “industrial facilities,” should be relisted as, “commercial and industrial storage, and general commercial and industrial work areas.” Additionally, parking garage areas should be allowed to use a manual switch that is not accessible to unauthorized personnel, because there is a public safety risk when allowing an unauthorized person to have access to the ON/OFF switch.

Section 130.1(b)3

~~Each luminaire shall be controlled by at least of one of the following methods:~~

Dimmable luminaires shall be controlled by a dimmer switch that allows the manual ON and OFF functionality required by Section 130.1(a) and is additionally capable of manually controlling lighting through all required lighting control steps.

Comment:

This language appears to prohibit the use of multi-scene programmable controls for use as a dimmer control. A multi-scene programmable control would save energy similar to any other dimmer control.

Section 130.1(d)2Di

Photosensors shall be located so that they are not readily accessible to unauthorized personnel. ~~and~~ The location where calibration adjustments are made to automatic daylighting controls shall not be readily accessible to unauthorized personnel and may be inside a locked case or under a cover which requires a tool for access.

Comment:

Adding, “and may be inside a locked case or under a cover which requires a tool for access” is overly prescriptive and superfluous. Adding this language implies that no other methods of limiting access are recognized by the Standards, thus being inappropriately restrictive, and stifling creativity and innovation.

Section 130.1(e) Demand Responsive Controls.

Lighting power in buildings larger than 10,000 square feet shall be capable of being automatically reduced in response to a Demand Response Signal; so that the building’s total lighting power can be lowered by a minimum of 15 percent below the total installed lighting power. Lighting shall be reduced in a manner consistent with uniform level of illumination requirements in TABLE 130.1-A.

Comment:

Citing Table 130.1-A for uniformity requirements implies that each and every luminaire must be dimmed by 15%. It is often not technically feasible to control each individual luminaire to comply with all of Sections 130.1(a), (b), (c), (d), and (e). This is particularly true with luminaires in daylight zones that are required to be separately multi-level controlled from luminaires in non-daylit zones, for which technical feasibility is further impacted by full daylight, partial daylight, and no daylight acceptance tests required in Nonresidential Appendix NA-7. There are also conflicts with some of the control percentages associated with other subsections in Section 130.1.

Furthermore, there are scenarios, such as a grocery store, where shedding an entire layer would be more practical, desirable, and technically feasible, than trying to demand shed each and every luminaire.

Additionally, there will be occasions where lighting systems complying with Table 130.1-A will not be able to comply with this section. Following are some examples:

- If a significant number of luminaires are in spaces with less than 0.5 watts per square foot, then the remaining luminaires will need to be shed by something greater than 15%.
- Small wattage fluorescent, HID, Induction, and “other” light sources are not required to have a step in the 85% range.

Another unresolved issue is, according to Exception 1 to Section 130.1(b), classrooms are not required to comply with Table 130.1-A. Therefore, it is not technically feasible to require lighting in classrooms to be demand controlled according to the current language.

Because the goal of the Standards appears to be the ability to shed the electric load by 15%, and because lighting is not the only electric load in many buildings, it would make sense to move the demand responsive control requirements to Section 130.5, and allow designers to shed 15% from the building's entire electric load. This would allow more flexibility, as well as making this measure become technically feasible. Because the entire electric load is often a combination of lighting plus other loads, greater savings will be realized by moving the demand responsive control requirement to Section 130.5.