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Via Email

California Energy Commission

Docket No. 15-BSTD-01

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California Energy Commission

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TN # 75430

MAR 17 2015

Re: Stairwell Lighting Control Requirements

Dear Docket Office:

The Title 24 lighting control requirements for stairwells pose safety issues, are confusing, inconsistent, and vague. Following are comments regarding the stairwell lighting control requirements in Title 24.

- EXCEPTION to Section 130.1(a)1: Up to 0.2 watts per square foot of lighting in any area within a building may be continuously illuminated during occupied times to allow for emergency egress, if:
The term, “during occupied times,” is not defined. It would appear that any building in which there are nighttime custodians would require the stairwell lights to be readily available at any time. Otherwise, it would be a safety and security risk to require nighttime staff to enter into dark stairwells.
- Section 130.1(a)2. The lighting controls shall meet the following requirements: B. Be operated with a manual switch that is located in the same room or area with the lighting that is controlled by that lighting control; and
It is not clear if stairwells are classified as separate rooms or areas for each story of a building, or if the sum total of all stories is considered a single area. Therefore, do stairwells require a manual switch on each floor, or can they have them only on the top and bottom floors?

- 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.

The purpose of this exception appears to be to restrict public access to light switches in spaces where the general public should not turn off the lights while other people may also be occupying the space. Stairwells have the same security and safety issues as the other space types listed in this exception, in that stairwells should not be turned off by unauthorized personnel when they are in use, and therefore should be included in this list of exceptions.

- Section 130.1(b) Multi-Level Lighting Controls. The general lighting of any enclosed area 100 square feet or larger, with a connected lighting load that exceeds 0.5 watts per square foot shall meet the [requirements of this section...]

Because stairwells are allowed 0.6 watts per square foot, they appear to be required to comply with this section. This causes challenges in that this section basically requires dimmable lighting systems, so that the partial-off and partial-on requirements in Section 130.1(c) really means partial-dimmed-on and partial-dimmed-off, and not partial-on or partial-off. This requires very expensive lighting controls to comply with.

- EXCEPTION 2 to Section 130.1(b): An area enclosed by ceiling height partitions that has only one luminaire with no more than two lamps.

A single section of steps within a stairwell should be considered an enclosed area because it occupies only one story of a building.

- Section 130.1(c) Shut-OFF Controls; 1B. Separate controls for the lighting on each floor; This appears to mean that each section of stairs in a stairwell must have isolated automatic shutoff controls. If that is true, it creates some technical challenges that are very expensive to comply with. Stairwells need to be specifically addressed related to this language.

- EXCEPTION 1 to Section 130.1(c)1: Where the lighting is serving an area that is in continuous use, 24 hours per day/365 days per year.

This should be applied to a stairwell if it is always in use, such as when a custodian crew works every night.

- Section 130.1(c)3. If an automatic time-switch control, other than an occupant sensing control, is installed to comply with Section 130.1(c)1, it shall incorporate an override lighting control that: [Complies with Section 130.1(a)...]

This appears to mean, when using the automatic time-switch control option in stairwells, there must be a manual override switch on each and every floor, otherwise someone might enter a section of stairs with no means to turn the lights back on. If this is true, that could require a whole lot of override switches. Stairwells need to be separately addressed related to this requirement.

- Section 130.1(c)6. Areas where partial ON/OFF occupant sensing controls are required in addition to complying with Section 130.1(c)1.
For stairwells, the relationship between Sections 130.1(c)1, 130.1(c)6 and 130.1(c)7 is confusing. Section 130.1(c)1 requires 100% of the lighting to be automatically shut off, and it allows an occupancy sensor to be used for compliance. However, because Section 110.9 requires all occupant sensing devices to automatically turn off lights within 30 minutes, it presents a challenge if choosing to use occupant sensing devices to shut off both tiers, as required when combining all of these sections

- Section 130.1(c)6C. Lighting installed in corridors and stairwells shall be controlled by occupant sensing controls that separately reduce the lighting power in each space by at least 50 percent when the space is unoccupied. The occupant sensing controls shall be capable of automatically turning the lighting fully ON only in the separately controlled space, and shall be automatically activated from all designed paths of egress.

Stairwells are sometimes occupied 24 hours per day; including such times as such as when there is a night custodian. Such stairwells should not have to comply with this requirement.

Does this language require a separate occupancy sensor for each section of stairs within a stairwell? What about when there are a large number of stories in a high rise building? Are the occupancy sensors supposed to turn on only one section of stairs, or in the case of a large number of stairs, may they control the entire length of stairs from only the bottom floor to the top floor?

Likewise, if using a timeclock to control one of the two required levels of light, would a manual override switch need to be located on each and every floor?

- Section 130.1(c)7. Areas where partial ON/OFF occupant sensing controls are required instead of complying with Section 130.1(c)1; ... A. Lighting in stairwells and common area corridors that provide access to guestrooms and dwelling units of high-rise residential buildings and hotel/motels shall be controlled with occupant sensing controls that automatically reduce lighting power by at least 50 percent when the areas are unoccupied. The occupant sensing controls shall be capable of automatically turning the lighting fully ON only in the separately controlled space, and shall be automatically activated from all designed paths of egress.

Again, it is not clear if an entire multi-story stairwell must be controlled by one, or multiple occupant sensing controls

- 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 Responsive 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.

It is not always feasible, or at least it would be very expensive, to install manual multi-level dimmer controls on each floor of a stairwell, and automatic shutoff of tier 1 of the lighting, and override switches on each floor, and automatic occupant sensor for tier 2 of the lighting on each floor, and possibly even separate daylight controls...in addition to demand response controls, in some stairwells. Has the cost to install all of these controls in stairwells ever been evaluated, particularly because the allowed power level is only 0.6 watts per square foot?

Because stairwells are allowed only 0.6 watts per square foot, which means during a demand response event there would be no more than 0.51 watts per square foot of lighting, making the stairwells dimly lit, even during times of full occupancy of the building.

Stairwells should be exempt from the demand response requirements.

- Section 141.0 Alterations. How many of the Section 130.1 lighting controls are required to be installed when doing a lighting alteration in a stairwell? Has there ever been an investigation into the costs associated with installing all of the required lighting controls in an existing stairwell?

This is a extremely important issue to address since it pertains to Safety.

Yours truly,



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