



California Energy Commission

DOCKETED

14-BSTD-01

TN 74143

DEC 04 2014

Proposed Lighting Changes Title 24 Part 6 for 2016

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November 3, 2014



§ 110.9 Lighting Control Systems

General Requirements

- (b)4 (A) – 20 minute shutoff requirement for occupancy sensor systems (coordinates with 130.1 (c))
- (c)6.A. – Track current limiter change building official to inspecting authority.



§ 130.0 Lighting Controls and Equipment - General

General Requirements – watts rating

- (c) 6. Simplification of language
- (c) 6. (B.) LED tube prohibition removed
- (c) 9. (D.) Removed screw base prohibition



§ 130.1 Indoor Lighting Controls that shall be Installed

Controls – general

- (b) Simplifies multi-level control requirements
- (b) 3. Requires a manual dimmer when luminaires are dimmable.
- (b) 3. Eliminates A. through E. which required an additional automatic lighting control function - simplification



§ 130.1 Indoor Lighting Controls that shall be Installed

Controls – Automatic Shutoff

- (c) 1. (A.) Simplifies automatic shutoff control inputs
- (c) 1. Exception 3 changed to allow 0.05 w/sf of continuous night lighting in all buildings
- (c) 5. Clarifies that for offices 250 square feet or smaller, multipurpose rooms of less than 1,000 square feet, classrooms of any size, and conference rooms of any size, either a partial-on occupancy sensor or a vacancy sensor must be used



§ 130.1 Indoor Lighting Controls that shall be Installed

Controls – Automatic Shutoff

- (c) 6. Corrects partial-on/off to partial-off
- (c) 7. Corrects partial-on/off to partial-off
- Table 130.1-A changes top step of full size and U-bent fluorescent to 75-85%
- (c) 8. Eliminates use of Table 150-B regarding a high efficacy luminaire at the door of a hotel guestroom.



§ 130.1 Indoor Lighting Controls that shall be Installed

Controls - Photosensors

- (d) 2. (D.) 1. Allows photosensor control adjustment locations to be remote in a locked box or a box requiring a tool for access.



§ 130.2 Outdoor Lighting Controls and Equipment

Required Controls

- (c) 1. Clarification eliminates word “outdoor”
- (c) 2. Clarification replaces “automatic scheduling control” with “a photocontrol or an astronomical time-switch”
- (c) 3. (B) changes dimming reduction from 40-80% to 40-90%.
- (c) 3. (D.) deletes outdoor sales lots and outdoor sales canopies from Exception 1 (1500 watt limit)



§ 130.2 Outdoor Lighting Controls and Equipment

Circuit Limits

- (c) 3. (D.) adds an exception allowing filling station canopy lighting to exceed 1500 watt limit.
- (c) 4. deletes outdoor sales lots and outdoor sales canopies
- (c) 4. (B.) increases dimming range from 40-80% to 40-90%



§ 130.2 Outdoor Lighting Controls and Equipment

Uplighting and Glare Limits

- Table 130.2-A adds lighting zone zero (LZ0), adds column of values for LZ0, changes lighting zone names from OLZ to LZ.
- Table 130.2-B adds lighting zone zero (LZ0), adds column of values for LZ0, and changes lighting zone names from OLZ to LZ.



§ 130.4 Lighting Control Acceptance and Installation Certificate Requirements

General Requirements

- (a) clarifies that it applies to all projects
- (a) 1. Reduces certification to requirements in plans and specifications only
- (a) 2. Changed from completed to certifies; corrects original language
- (a) 2- 5 grammatical correction of list



§ 130.5 Electrical Power Distribution Systems

- Moves “terms and phrases” statement to end of section

Service Metering

- (a) Service metering – simplifies, clarifies.
- (a) 1. adds specific metering requirements
- (a) 2. adds tenant sub-meter requirements
- (a) adds exception for when the utility provides metering
- (a) Exception clarifies, eliminates extraneous language



§ 130.5 Electrical Power Distribution Systems

Disaggregation

- (b) revised general language
- (b) 1. allows up to 10% of load types to be aggregated
- (b) 2. allows for additive and subtractive measures to determine energy use and allows 10% aggregation of load types
- (b) 3. allows a whole building energy management system with measurement in lieu



§ 130.5 Electrical Power Distribution Systems

Disaggregation

- (b) Eliminates exceptions 1 and 2
- (b) 1. (A. and B.) eliminates lists associated with eliminating exception 2



§ 130.5 Electrical Power Distribution Systems

Voltage Drop

- (c.) simplifies voltage drop requirements
- (c.) exceptions changes circuits to systems



§ 130.5 Electrical Power Distribution Systems

Receptacle control

- (d) 1. Clarifies intent – lists methods of compliance, eliminates reference to lighting controls
- (d) 4. Requires manual 2 hour override when using automatic time switch control
- (d) 5. Requires holiday off for when using automatic time switch control



§ 130.5 Electrical Power Distribution Systems

Receptacle control

- (d) 7. Prevents using countdown timers
- (d) 8. Requires providing controlled circuits and marking for open office furniture systems
- (d) 9. requires controls for at least 50% of hotel guest room outlets with 30 minute shutoff
- Exception 1 eliminates words “non-residential”



§ 140.6 Prescriptive Requirements for Lighting Systems

Reduction of Wattage using controls

- (a.) 2 (H.) eliminated paragraph allowing PAF for partial off controls
- (a.) 2 Re-lettered (I.) to (H.)
- (a.) 2 (J.) eliminated paragraph allowing PAF for dimming controls
- (a.) 2 Re-lettered (K.) to (I.)
- (a.) 2 (L) eliminated paragraph allowing PAF for partial on controls



§ 140.6 Prescriptive Requirements for Lighting Systems

Lighting wattage exclusions

- (a)3. (C.) Performing arts dressing rooms added
- (a) 3. (T.) ATM machines in garages deleted, (U.) and (V.) re-lettered.
- (a) 3. (V.) re-lettered, revised to refer to § 120.6 (f)



§ 140.6 Prescriptive Requirements for Lighting Systems

Lighting power adjustment factors

- Table 140.6-A deleted rows of partial on occupancy, dimming systems, and combined manual dimming with partial on occupancy



§ 140.6 Prescriptive Requirements for Lighting Systems

Allowed Lighting Power Density

- Table 140.6-B reduced whole building power allowances (5-10% on the average)
- Table 140.6-C reduced area category power allowances (5-10% on the average), added footnote 10 for ATM's in garage
- Table 140.6-G, reduced general lighting power allowances (5-10% on the average)



§ 140.7 Requirements for Outdoor Lighting

General

- (a.) exception 6 (ATM) eliminated
- (a.) exceptions 7-13 renumbered
- (a.) exception 9 (now 8), bridges and tunnels eliminated
- (d.) Bridges and tunnels included in hardscape



§ 140.7 Requirements for Outdoor Lighting

Lighting Power Allowance

- Table 140.7-A hardscape power allowances reduced (typically 35-40%), lighting zone LZ0 added with no allowance, note added
- Table 140.7-B, additional power allowances reduced (typically 35-40%), lighting zone LZ0 added with no allowances



§ 141.0 Alterations

General

- (b.) 2. (I.) Lighting systems deleted in its entirety
- (b.) 2. (I.) Indoor lighting modifications in place and lighting system alterations combined and simplified
- (b.) 2. (J.) Indoor lighting wiring alterations simplified
- Sections (J.) through (M.) re-lettered (K.) through (N.)
- New Table 141.0-E replaces tables 141.0-E and 141.0-F



§ 141.0 Alterations

Electrical

- New part (O.) requires electrical alterations to meet 130.5.
- New part (P.) requires demand response for spaces >10,000 sf



Non-Residential Summary

- Reduces the number of control options, making dimming almost totally mandatory
- Reduces indoor lighting power about 10%, not across the board
- Reduces outdoor lighting power about 40% across the board
- Cleans up awkward language and conflicts in many sections



§ 150.0 Residential

Lighting

- (k.) 1. (A.) All luminaires to be high efficacy
- (k.) 1. (B.) Deleted hybrid luminaires; added new junction box requirements.
- (k.) 1. (C.) Replaced with new section requiring hardwired high efficacy recessed luminaires
- (k.) 1. (G.) allows screw based luminaires with JA8 complying lamps to be high efficacy



§ 150.0 Residential

Lighting controls

- (k.) 2. (A.) Replaces control requirements to require SSL7A certified dimmers
- (k.) 2. (J.) requires a vacancy sensor on at least one light source in garages, bathrooms, laundry and utility rooms
- (k.) 2. (K.) requires vacancy sensors or dimmers on all JA8 complying lighting
- Exceptions for small closets and stairs



§ 150.0 Residential

Other Interior Lighting Changes

- (k.) 3. through 8. room-specific sections deleted (kitchens, internal cabinets, bathrooms, garages, utility rooms, laundry rooms, other rooms, recessed lighting)



§ 150.0 Residential

Exterior Lighting Controls

- (k.) 9 renumbered (k.) 3
- (k.) 3. (A.) revised to require
 - High efficacy source; and
 - Optional photo control and motion sensor; or, photo control+time switch or astronomic control, both with 6 hour max. overrides
- (k.) 3. (B.), (C.) and (D.) clarifies requirements for multiple residential units between residential and non-residential outdoor lighting; renumbered to match prior changes



Residential Summary

- Allows JA8 complying screw based lamps to count as high efficacy, EXCEPT when recessed in ceiling
- Generally simplifies requirements