

DOCKETED

Docket Number:	16-BSTD-02
Project Title:	2016 Nonresidential Lighting Alteration Enforcement
TN #:	210294
Document Title:	2016 Title 24 Lighting Alterations Compliance
Description:	Power Point presentation
Filer:	Hilary Fiese
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	2/12/2016 1:24:21 PM
Docketed Date:	2/12/2016



2016 Nonresidential Lighting Alteration Enforcement

Staff

Building Standards Office
Efficiency Division

2016 Nonresidential Lighting Alteration Enforcement Workshop
Imbrecht Hearing Room
February 9, 2016



Building Energy Efficiency – A Statutory Mandate

Warren-Alquist State Energy Resources Conservation and Development Act

Public Resource Code Section 25402

Requires the Commission to develop building efficiency standards, which includes lighting standards for existing buildings. The current standards address task and general area lighting levels, light switching and control mechanisms, and lighting energy budgets.



2016 Standards Update

- June 2015 California Energy Commission adopted the 2016 Building Energy Efficiency Standards, Title 24, Part 6, except Section 141.0 for alterations to existing lighting systems in nonresidential buildings is delayed. The delay is to provide adequate opportunity to address the public's concerns.
- Nov 2015 California Energy Commission adopted Section 141.0 for alterations to existing lighting systems in nonresidential buildings.
- Jan 2016 California Building Standards Commission (BSC) adopted Title 24, Part 1 and Part 6.
- Feb 2016 California Energy Commission staff held workshop about the enforcement of the 2016 Nonresidential lighting alteration Standards. The purpose of the workshop is to gather inputs on documentation requirements for existing conditions.



Purpose of Workshop

- The Workshop is an opportunity for stakeholders to comment on the lighting alterations enforcement.



How to Submit Comments After the Workshop

- Submit in writing via e-filing to the Dockets Unit by 5:00 p.m. (Pacific Daylight Savings Time) on February 23, 2016.

- The interested parties can e-file a comment at [Comment on a Proceeding](#), on the “Add Comment” webpage, select “2016 Nonresidential Lighting Alteration Enforcement” as proceeding under “View All Projects”, and type in the required information including contact information and comment information on the webpage.



Agenda

- Introduction – Introduce topic of meeting (enforcement of Section 141.0(b)2I – L), introduce panelists, outline challenges
 - Presentation of 2016 changes to Lighting Alteration sections
- Panel discussion of enforcement challenges and building department needs
 - Confirming existing conditions
 - Minimizing costs (dollars and time)
 - Keeping burden low
 - Verifying end-of-project installation
- Comments
- Next Steps
 - Schedule (Compliance Manual Update)



2016 Changes

- Clarification and simplification of lighting alteration regulatory language
- Retained area control, automatic shutoff controls, and occupancy sensors
- Added a compliance option for reducing lighting power of existing luminaires
- Increased the trigger for luminaire component modifications from 40 to 70 luminaires to provide relief for smaller projects
- An exception from acceptance testing for projects with added controls for fewer than 20 luminaires
- Established a threshold for daylighting controls when performing wiring alterations of 10 or more luminaires located in daylit zones.



What these pictures are about?





Indoor Lighting Alterations

Entire Luminaire Alterations include removing, and reinstalling luminaires, replacing or adding luminaires, and redesign of the lighting system that includes adding, removing, or replacing walls or ceilings. (Section 141.0(b)2I)





Indoor Lighting Alterations

Luminaire Component Modifications include replacing the ballasts or drivers and the associated lamps, permanently changing the light source, and changing the optical system such as reflectors.
(Section 141.0(b)2J)





Indoor Lighting Alterations

Lighting Wiring Alterations include wiring alterations that add a circuit feeding luminaires; that replace, modify, or replace wiring between a switch or panelboard and luminaires; or that replace lighting control panel, panelboards, or branch circuit wiring. (Section 141.0(b)2K)

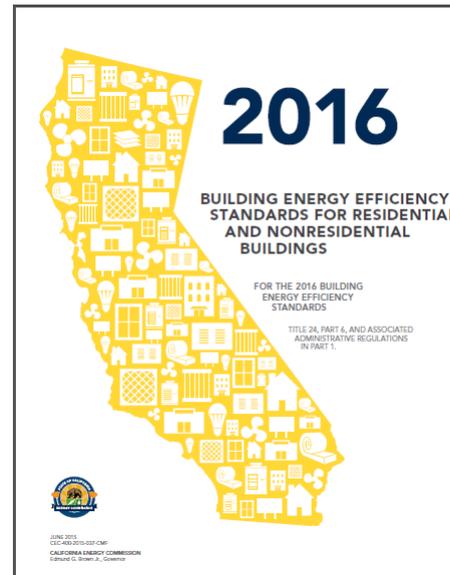




Compliance Goals

Compliance goals for lighting alterations:

- the installation meets the lighting power level specified in the Standards
- the installation provides the lighting controls functionality specified in the Standards.





Installed Lighting Power and Controls

Entire Luminaire Alterations

Luminaire Component Modifications

Three options for meeting the installed power requirements in the 2016 Standards:

- Installed lighting power that is greater than 85% to 100% of Table 140.6-C.
- Installed lighting power that is equal to or less than 85% of Table 140.6-C.
- Where total rated power of the replacement luminaires in the occupancy, compared to the total rated power of the existing luminaires in the occupancy, have 50% lower power in hotel, office, and retail occupancies, and 35% lower power in all other occupancies.

Lighting controls requirements:

Comply with applicable control requirements of Table 141.0-E, or those listed in the section of 141.0(b)2I or 2J.



Illustrative Control Requirements for Entire Luminaire Alterations

Applicable Section 130.1 Control requirements:	(New Option) Lighting power is reduced by 35/50% compared to existing	Resulting lighting power, compared to the lighting power allowance specified in Section 140.6(c)2, Area Category Method	
		Lighting power is ≤ 85% of allowance	Lighting power is > 85% to 100% of allowance
Section 130.1(a)1, 2, and 3 Area Controls	Yes	Yes	Yes
Section 130.1(b) Multi-Level Lighting Controls – only for alterations to general lighting of enclosed spaces 100 square feet or larger with a connected lighting load that exceeds 0.5 watts per square foot	Not Required	Bi-level control for each enclosed space, minimum one step between 30-70 percent of lighting power regardless of luminaire type, or meet Section 130.1(b)	Yes
Section 130.1(c) Shut-Off Controls	Yes	Yes	Yes
Section 130.1(d) Automatic Daylight Controls	Not Required	Not Required	Yes
Section 130.1(e) Demand Responsive Controls – only for alterations > 10,000 ft ² in a single building, where the alteration also changes the area of the space, or changes the occupancy type of the space, or increases the lighting power	Not Required	Not Required	Yes



Installed Lighting Power and Controls

Lighting Wiring Alterations

Meet the installed lighting power requirement of Section 140.6.

For lighting controls :

Comply with control requirements listed in the section of 141.0(b)2Kii, iii and iv.

Meet daylighting control requirement if the threshold of the quantity of luminaire located in daylit zone is triggered.



Uniform Approach to Diverse Projects - Examples of Lighting Alteration Project Types

- [Examples of Lighting Alterations](#) – Indoor lighting alterations



Outdoor Lighting Alterations

Alterations with increase in Lighting Power

When there is an increase of lighting power (connected lighting load), the added luminaires or the altered luminaires shall meet:

- controls requirements for outdoor lighting, of Section 130.2(c).
- lighting power requirements of Section 140.7.

5 luminaires or 50% of existing luminaires are replaced

Exceptions for alterations where replacement luminaires have at least 40 percent lower power compared to existing luminaires.

(NO increase of lighting power)

If the threshold is triggered,

- the alterations must meet controls requirements of Section 130.1(c)1 and (c)3 for parking lots and outdoor sales lots and where the luminaires are mounted at 24 feet or less above ground.
- for all other applications and the luminaires are mounted greater than 24 feet above ground, the alteration must meet 130.1(c)1 and either 130.2(c)2 or controlled by lighting control systems that automatically reduces lighting power.
- in addition, the alteration must meet lighting power requirements of 140.7.



Outdoor Lighting Alterations

**5 luminaires or 10% of
existing luminaires are
replaced**

**(NO increase of
lighting power)**

If the threshold is triggered,

- the alterations must meet controls requirements of Section 130.1(c)1 and (c)3 for parking lots and outdoor sales lots and where the luminaires are mounted at 24 feet or less above ground.
- for all other applications and the luminaires are mounted greater than 24 feet above ground, the alteration must meet 130.1(c)1 and either 130.2(c)2 or controlled by lighting control systems that automatically reduces lighting power.



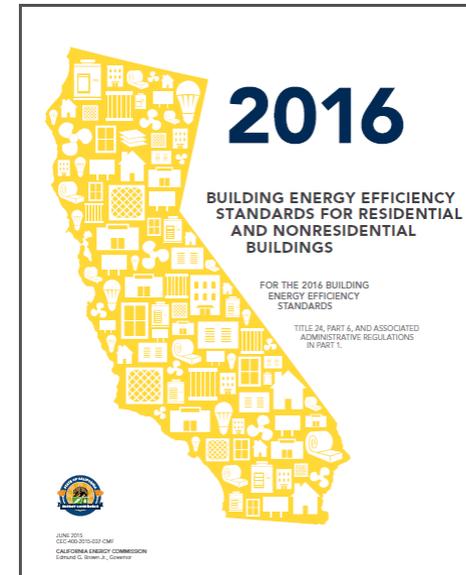
Uniform Approach to Diverse Projects - Examples of Lighting Alteration Project Types

- [Examples of Lighting Alteration](#) – Outdoor lighting alterations



Panel Discussions of enforcement challenges and building department needs

- Confirming existing conditions
- Minimizing costs (dollars and time)
- Keeping burden low
- Verifying end-of-project installation





Comments

Comments / Suggestions ?

Anything that we miss?





Next Steps

- Schedule

Feb 9th: Workshop on enforcement

Feb 23rd: Last day for receiving comments on enforcement

Mar 1st: Posting of draft version of 2016 Lighting Alteration compliance documentations including forms and manual subchapter of lighting alterations

Mar 15th: Last day for receiving comments about the posted 2016 Lighting Alteration compliance documentations including the manual subchapter

Apr 13th: Present 2016 Lighting Alteration compliance documentations at Business Meeting for adoption



Adjourn

Thank you for attending and your participation in the discussions!