

Nonresidential Indoor Lighting Alterations

2016 Energy Code Permit Guide

Exceptions for All Cases

None of the lighting alterations requirements apply:

- to alteration of portable luminaires, luminaires affixed to moveable partitions, or lighting excluded as specified in Section 140.6(a)3.
- in an enclosed space where alterations involve two or fewer luminaires.
- to alterations that would directly cause the disturbance of asbestos, unless the alterations are made in conjunction with asbestos abatement.

Check any and all boxes that apply. Repeat for each enclosed space:

Entire Luminaire Alterations

<input type="checkbox"/>	The alteration within an enclosed space consists of removing and reinstalling a total of 10 percent or more of the existing luminaires: <ul style="list-style-type: none">• The alteration must meet (A) and (B), See "Requirements" section, next page.
<input type="checkbox"/>	The alteration within an enclosed space consists of adding new luminaires, replacing luminaires, or adding, removing, or replacing walls or ceilings along with any redesign of the lighting system: <ul style="list-style-type: none">• The alteration must meet (A) and (B), See "Requirements" section, next page.
<input type="checkbox"/>	The alteration within an enclosed space consists of replacing existing luminaires with new luminaires, but NOT in conjunction with adding, removing, or replacing walls or ceilings along with redesign of the lighting system: <ul style="list-style-type: none">• The alteration must meet (A) and (B) or (C), (D) and (E)(ii), See "Requirements" section, next page.

Luminaire Component Modifications

<input type="checkbox"/>	The alteration within any single floor or any single tenant space on the same floor consists of replacing the ballasts or drivers and the associated lamps in the luminaire, permanently changing the light source of the luminaire, or changing the optical system of the luminaire, in any single year, on 70 or more existing luminaires: <ul style="list-style-type: none">• The alteration shall not prevent or disable the operation of any multi-level, shut-off or daylighting controls. AND: <ul style="list-style-type: none">• The alteration must meet (A) and (B) OR (C), (D) and (E)(ii), See "Requirements" section, next page. Note: Lamp replacements alone and ballast replacements alone shall not be considered a modification of the luminaire if the replacement lamps or ballasts are installed and powered without modifying the luminaire.
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Lighting Wiring Alterations

<input type="checkbox"/>	The alteration within an enclosed space consists of wiring alterations that add a circuit feeding luminaires; that replace, modify, or relocate wiring between a switch or panelboard and luminaires; or that replace lighting control panels, panelboards, or branch circuit wiring: <ul style="list-style-type: none">• The alteration must meet (A), (D), (E)(iii), (F) and (G)(ii), See "Requirements" section, next page. Note: This does not apply to wiring alterations strictly limited to the addition of lighting controls.
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Requirements (as applicable for above scenarios that have been checked)

- A. **Lighting Power Allowance.** The alteration must meet the lighting power allowance in Section 140.6. Calculate the allowed lighting power by multiplying the square footage of the enclosed space by the ALP of the appropriate occupancy in Table 140.6-C (next page). The installed lighting power must be less than or equal to the allowed lighting power.
- B. **Lighting Power Allowance Control Options.** The altered luminaires shall meet the applicable requirements in Table 141.0-E. If installed lighting power is 85% or less of allowed lighting power, some control allowances apply.
- o If > 85%, the alteration must meet (D), (E)(i), (F)(i), (G)(i) and (H), below
 - o If ≤ 85%, the alteration must meet (D), (E)(i), and (F)(ii), below
- C. **Power Reduction:**
- The replacement luminaires in each office, retail, and hotel occupancy shall have at least 50 percent lower rated power than the existing luminaires being replaced
 - The replacement luminaires in all other occupancies shall have at least 35 percent lower rated power than the existing luminaires being replaced
- D. **Area Controls.** The controls shall meet the requirements of Sections 130.1(a)1, 2, and 3.
- E. **Shut-Off Controls.**
- i. The controls shall meet the requirements of Sections, 130.1(c).
 - ii. The controls shall meet the requirements of Sections 130.1(c)1A through C, 130.1(c)2, 130.1(c)3, 130.1(c)4, 130.1(c)5, 130.1(c)6A, and for parking garages 130.1(c)7B.
 - iii. The controls shall meet the requirements of Sections 130.1(c)1A through C, 130.1(c)3, and 130.1(c)4.
- F. **Multi-level Lighting Controls.** Multi-Level Lighting Controls are only applicable 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.
- i. The controls shall meet the requirements of Section 130.1(b).
 - ii. The alteration must be wired to create a minimum of one step between 30-70 percent of lighting power regardless of luminaire type, or meet Section 130.1(b).
- G. **Automatic Daylighting Controls.**
- i. The controls shall meet the requirements of Section 130.1(d).
 - ii. The controls shall meet the requirements of Sections 130.1(d) where wiring alterations include 10 or more luminaires that provide general lighting within the primary sidelit daylit zone or the skylit daylit zone, meet.
- H. **Demand Responsive Controls.** For alterations that affect more than 10,000 sf in a single building, the controls shall meet the requirements of Sections 130.1(e) if the alteration changes the area of the space, changes the occupancy type of the space, or increases the lighting power.

If the above requirements apply to your installation, the following forms are required:

- NRCC-LTI-01-E: Certificate of Compliance - Indoor Lighting
- NRCC-LTI-03-E: Certificate of Compliance - Indoor Lighting Power Allowance
- NRCC-LTI-02-E: Certificate of Compliance - Lighting Controls Credit Worksheet (if you are taking controls credits)
- NRCC-LTI-05-E: Certificate of Compliance - Line Voltage Track Lighting Worksheet (if you are installing track lighting)

Acceptance Testing of Lighting Controls

Acceptance testing requirements of Section 130.4 are required for alterations where lighting controls are added to control more than 20 luminaires. The following forms must be provided to the building inspector.

- NRCA-LTI-02-A: Lighting Control Acceptance Document (for non-daylighting controls that control more than 20 luminaires)
- NRCA-LTI-03-A: Automatic Daylighting Control Acceptance Document (for daylighting controls that control more than 20 luminaires)
- NRCA-LTI-04-A: Demand Responsive Lighting Control Acceptance Document (for demand responsive controls that control more than 20 luminaires)
- NRCA-LTI-05-A: Institutional Tuning PAF Acceptance Document

For more information on 2016 Title 24 Part 6 requirements:

- Visit www.energy.ca.gov/title24/2016standards/
- Contact the energy code hotline at (800) 772-3300 or email: title24@energy.ca.us
- Contact the BayREN Codes & Standards Program by email: codes@bayren.org

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TABLE 140.6-C AREA CATEGORY METHOD - LIGHTING POWER DENSITY VALUES (WATTS/FT²)

PRIMARY FUNCTION AREA		ALLOWED LIGHTING POWER (W/ft ²)
Auditorium Area		1.5 ³
Auto Repair Area		0.9 ²
Beauty Salon Area		1.7
Civic Meeting Place Area		1.3 ³
Classroom, Lecture, Training, Vocational Areas		1.2 ⁵
Commercial and Industrial Storage Areas (conditioned and unconditioned)		0.6
Commercial and Industrial Storage Areas (refrigerated)		0.7
Convention, Conference, Multipurpose and Meeting Center Areas		1.4 ³
Corridor, Restroom, Stair, and Support Areas		0.6
Dining Area		1.1 ³
Electrical, Mechanical, Telephone Rooms		0.7 ²
Exercise Center, Gymnasium Areas		1.0
Exhibit, Museum Areas		2.0
Financial Transaction Area		1.2 ³
General Commercial and Industrial Work Areas	Low bay	0.9 ²
	High bay	1.0 ²
	Precision	1.2 ⁴
Grocery Sales Area		1.2 ^{6 and 7}
Hotel Function Area		1.5 ³
Kitchen, Food Preparation Areas		1.6
Laboratory Area, Scientific		1.4 ¹
Laundry Area		0.9

PRIMARY FUNCTION AREA		ALLOWED LIGHTING POWER (W/ft ²)
Library Area	Reading areas	1.2 ³
	Stack areas	1.5 ³
Lobby Area	Hotel Lobby	1.1 ³
	Main entry lobby	1.5 ³
Locker/Dressing Room		0.8
Lounge Area		1.1 ³
Malls and Atria		1.2 ³
Medical and Clinical Care Area		1.2
Office Area	> 250 square feet	0.75
	≤ 250 square feet	1.0
Parking Garage Area	Parking Area	0.14
	Dedicated Ramps	0.3
	Daylight Adaptation Zones ⁹	0.6
Religious Worship Area		1.53
Retail Merchandise Sales, Wholesale Showroom Areas		1.2 ^{6 and 7}
Theater Area	Motion picture	0.9 ³
	Performance	1.4 ³
Transportation Function Area		1.2
Videoconferencing Studio		1.2 ⁸
Waiting Area		1.1 ³
All other areas		0.6

FOOTNOTES FOR TABLE 140.6-C:

See Section 140.6(c) 2 for an explanation of additional lighting power available for specialized task work, ornamental, precision, accent, display, decorative, and white boards and chalkboards, in accordance with the footnotes in this table. The smallest of the added lighting power listed in each footnote below, or the actual design wattage, may be added to the allowed lighting power only when using the Area Category Method of compliance.

Footnote number	Type of lighting system allowed	Maximum allowed added lighting power. (W/ft ² of task area unless otherwise noted)
1	Specialized task work	0.2 W/ft ²
2	Specialized task work	0.5 W/ft ²
3	Ornamental lighting as defined in Section 100.1 and in accordance with Section 140.6.(c)2.	0.5 W/ft ²
4	Precision commercial and industrial work	1.0 W/ft ²
5	Per linear foot of white board or chalkboard.	5.5 W per linear foot
6	Accent, display and feature lighting - luminaires shall be adjustable or directional	0.3 W/ft ²
7	Decorative lighting - primary function shall be decorative and shall be in addition to general illumination.	0.2 W/ft ²
8	Additional Videoconferencing Studio lighting complying with all of the requirements in Section 140.6(c) 2Gvii.	1.5 W/ft ²
9	Daylight Adaptation Zones shall be no longer than 66 feet from the entrance to the parking garage	